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HEART RATE VARIABILITY AS AN INDICATOR OF SYMPATHO-VAGAL BALANCE IN CHRONIC DISEASES

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Introduction. Heart rate variability (HRV) refers to beat-to-beat interval changes in the electrocardiogram (ECG) or photoplethysmography. According to recent studies, HRV methods can provide additional information in diagnosing and screening patients for cardiovascular diseases or autonomic neuropathy. The purpose of the studies were to evaluate the use of different HRV methods in evaluating these diseases.

Material and methods. The studies were conducted on 62 patients with different cardiovascular and systemic diseases. Cardiac signal was recorded for 10 minutes using the photoplethysmographic method (on the second finger of the right hand). Data was analyzed and plotted using Kubios HRV software and statistical analysis was performed using Microsoft Excel.

Results. Most of the recorded traces had to be manually cleared of artifacts (especially moving artifacts of the hand and ectopic heart beats). HRV parameters were, generally, significantly lower in patients with chronic diseases (personal history of myocardial infarction and diabetes mellitus) and, also, in patients treated with beta-blockers. 3D-plotting of the Poincare diagram provided more visual information compared to 2D-plotting, which could be used to classify autonomic disturbances in diabetic patients.

Conclusion. Analysis of HRV parameters could provide important information in risk-stratification of chronic patients, especially those with chronic diseases. Further studies are needed in order to clearly associate HRV parameter values with disease progression or severity of complications.

DEXPANTHENOL INFLUENCE ON EXPERIMENTAL TESTS OF ANALGESIA

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Introduction. Pain is considered a physiological process that informs the individual of the limits of adaptability, the occurrence in the life of harmful agents that compromise the integrity and functional capacity. Pain is a common phenomenon in all animals, similar to that felt by humans. The analgesic effects in animals are comparable therapeutic effects in humans, which allow extrapolation of the experimental results to clinical use. At the moment there are very few studies about the possible effects of analgesics and applications Dexpanthenol (Bepanthene®). In this study we aimed conducting a simple experiment that requires no sophisticated equipment, but that could be the starting point for more detailed tests.

Material and methods. The experiments were performed on a total of 40 white rats, Wistar, weighing between 152 g and 220 g. The animals were obtained from Biobase University of Medicine and Pharmacy Iuliu HatieganuCluj Napoca. Dexpanthenol (Bepanthene®), 5% solution for injection, was administered intraperitoneally using a 10 microliters Hamilton syringe, into 3 doses at random.

Results. Experimental animals were tested using a device that detects the perception threshold of pain sensation, Analgesic-meter (Ugo Basile). The values obtained were processed statistically in Microsoft Office 2003 using Student t-test. We felt that significance $p \leq 0.05$. Measurements performed at 4 hours after the injection, a strong increase of the pain threshold is maintained, and 24 hours.

Conclusion. Dexpanthenol effects are dose dependent. Average doses administered, Dexpanthenol keep increasing the painful threshold to 24 hours.

GENETIC ASSOCIATION OF ADIPOQ 276G>T GENE VARIANT WITH TYPE 2 DIABETES MELLITUS AND DIABETIC NONPROLIFERATIVE RETINOPATHY: A CASE-CONTROL STUDY

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Introduction. Diabetic Retinopathy (DR) is a microangiopathic complication with a significant impact on the morbidity of Type 2 diabetes mellitus (T2DM) patients, actively influencing the evolution and prognosis. The present study has been performed with an objective to investigate the genetic association of ADIPOQ 276G>T gene variant with T2DM and diabetic nonproliferative retinopathy in a Caucasian population group.

Material and methods. The study comprised of 198 controls and 200 cases without a medical history of high blood pressure or dyslipidemia (independent risk factor for retinopathy), unrelated subjects selected from Cluj County Clinical Hospital. Genotypes were determined by PCR restriction fragment length polymorphism, followed by gel specific enzymatic digestion of the amplicons and gel electrophoresis for the resulting DNA fragments. Also, ophthalmological assessment with binocular indirect ophthalmoscopy and a standard fundus retinography was carried out in all diabetic subjects.

Results. Genotype distribution was not different between T2DM patients and controls. 93(46.96%) of T2DM patients had GG genotype, 76 (39.89%) GT and 26(13.13%) TT genotype. In controls, 92 (46.00%) subjects were carriers of the GG genotype, 88(44.00%) had GT genotype and 20 (10.00%) had TT genotype. Statistical and comparative analyses (Fisher's exact test) for dominant and recessive models did not reveal a risk of T2DM or DR ($\chi 2$ =0.487, P=0.10, [OR]=1.01; $\chi 2$=0.547, P=0.08, [OR]==0.98, respectively).

Conclusion. In this study, 276G>T polymorphism of AdipoQ gene is not associated with T2DM or DR. This findings suggests the need for a higher number of patients to prove an influence on the prevalence of diabetes and DR, because of the proximity to the level of statistical significance.

Acknowledgements: This work was supported by Internal Grants of "Iuliu Hatieganu" University of Medicine and Pharmacy.

AN EVALUATION OF ANDROID FREE EVIDENCE-BASED MEDICAL APPLICATION

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Introduction. The widespread adoption and use of mobile technologies is opening new and innovative ways to improve health and health care delivery. The objective of this study was to identify and describe those medical applications that are evidence-based.

Methods. The study was undertaken during the period 1-30 October 2016. An evaluation form was developed to characterize the evidence based medical apps available in Google Play. Besides the general characteristics and evidence based aspects several criteria in regards of interactivity, functionality, esthetics, contents were considered.

Results. 147 healthcare apps were displayed based on the used keywords and were included in the analysis. 43 were excluded due to the need for payment, malfunction after installation or games/animations that used medical terms while 84 of them did not offer references in the content. 20 apps were included in the study and analyzed. This study showed that all evidence based medical apps are educational applications and 85% of them offered medical news. Only 2 medical applications (Medscape and Dynamed) included all the criteria of evidence-based medical information (references, level of evidences, and grade of recommendation). Medscape had a number of downloads of >1,000,000+. 60% of the analyzed applications offered websites as references and 58% of them original articles. 50% of evidence based medical applications were developed in USA and 55% of them had the last update in 2016. Regarding the benefits brought by the evidence based medical applications 60% had a score evaluation between 0 and 2, with a total score of 20 out of 100. The best score was obtained at the functionality section (67.53/100). All evidence based medical apps were built to be use by physicians and less by patients.

Conclusion. Our study show that just 2 out of 20 mobile medical applications are „ideal" since brought together all the requirements that every application designed for medical use should fulfill.

SOCIAL MEDIA AND HEALTH-RELATED INFORMATION: SURVEYS DEVELOPMENT AND VALIDATION

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Introduction. Surveys are used to obtain information from people in order to ascertain facts, habits, opinions and attitudes. Social media monitoring and analysis has rapidly become a key element in evaluating how products or services are perceived and used by customers. Listening to the consumer, via social media gives real time information on shifting opinions and reactions within the business environment. The aim of the research was to develop and validate 4 self-administered questionnaires to measure use of social media to retrieve health-related information by different categories of population: consumers, healthcare professionals, medical students and healthcare providers.

Methods. It was defined a 6 steps process which consisted of a literature review, construct definition of, writing the survey items, pretesting on prospective respondents, reconciliation of the definitions found through the literature with the suggestions made by the target audience and final revision by a pool of experts. For all the 4 questionnaires there were 3 main focus areas identified: general social media usage, social media usage for medical information, demographics.

Results. In the testing phase, the majority of the responders were healthcare consumers (68.2% - 95% CI [63.59 - 72.58]). Based on the 2 questions - Likert scale of evaluation, the Healthcare Provider's questionnaire went ahead without any changes, having the means for all the questions above 4. The student's questionnaires could not be validated because of the low response rate (2.76% - 95% CI [1.38 - 4.83]). The Healthcare Consumer's and Healthcare practitioner's questionnaires had questions to be revised.

Conclusions. The findings strongly suggest that 3 out of the 4 questionnaires built are appropriate and represent a reliable instrument for the measurement of social media usage for medical information purposes.

ROMANIAN MEDICAL DOCTORS' OPINIONS ABOUT THE USE OF PHYTOTHERAPEUTIC PRODUCTS IN STRESS

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Introduction. Phytotherapy (P) in Romania is part of the medical competences. Phytotherapeutic products (PP) are recognized for their therapeutic effects. Recent studies show the usefulness of PP, also in stress (S). The objective was to assess the opinion of Romanian medical doctors (MD), about PP use in stress and anxiety.

Material and methods. MD of different medical specialties (n=93), without a P accredited training, voluntarily responded to a complex questionnaire having the topics (T): T1) importance of medical education accredited for the P and PP use in stress management; T2) P and PP effects on stress; T3) PP use in stress prevention; T4) PP recommended for stress modulation.

Results. MD majority of participants responded as follows: 1) T1 - medical education about using P and PP in stress management is important, but the time for MD preparation may be an impediment; 2) T2 - MD have information about PP effects and use for stress prevention and therapy, but this information is incompletely structured; 3) T3 - PP could be useful in stress prevention; 4) T4 - MD know little about PP indicated for stress modulation.

Conclusions. 1) According to MD participants, preparing for the P use in stress it is important. 2) MD participants considered that PP benefits in stress, even if they do not know them well yet, deserve attention. 3) MD participants admitted the importance of PP recommendation, by MD that are P accredited. 4) Evaluate MD proved interest in using P and PP for stress modulation.

Acknowledgements. We address our thanks to all participating doctors.

CYP2C9 AND CYP2C19 POLYMORPHISMS AND RISK OF NSAIDS-INDUCED UPPER GASTROINTESTINAL BLEEDING

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Introduction. Cytochrome P450 is involved in the metabolism of various exogenous and endogenous substances, especially CYP1, CYP2 and CYP3 families. CYP2C9 is involved in the metabolism of some NSAIDs, while CYP2C19 isoenzymes are responsible for the metabolism of proton pump inhibitors (PPIs). Single-nucleotide polymorphisms represent an important source of inter-individual variability of pharmacologic effects of both NSAIDs and PPIs. The aim of this study is the analysis of CYP2C9 and CYP2C19 polymorphisms in patients with NSAIDs-induced upper gastric bleeding (UGB).

Material and methods. Forty patients diagnosed with UGB by endoscopy were included in this study. All patients followed a chronic treatment with an NSAIDs for anti-inflammatory effect or with aspirin as antiplatelet drug, prior to this study. The endoscopy was performed at the presentation to emergency unit. The presence, number of gastric or duodenal lesion were noticed.

Results. The mean age of the sample population was 65.67±14.63 years. 52.5% of patients followed a NSAIDs treatment for their anti-inflammatory, antipyretic or analgesic effects. Most frequent was gastric localization and 81.3% patients had only one ulcer lesion. There was no correlation between NSAIDs or aspirin as antiplatelet and the number of ulcer lesions (p=0.6, p=0.9). Regarding CYP2C9*3 allele, 90% patients had wild genotype. CYP2C9*3 was correlated with the number of ulcers (p=0,02) but not with their location (p=0.9). For CYP2C19*2, 72.5% of patients had wild genoype, while for CYP2C9*17, 57.5% of patients had same genotype, but none of them was correlated with the number or localization of ulcer lesions.

Conclusion. NSAIDs or aspirin as antiplatelet are not correlated with the number of gastric or duodenal ulcer lessions. The presence of CYP2C19*2 genotype and CYP2C19*17 are not correlated with the number or location of ulcers, while CYP2C9*3 genotype is correlated with the number of ulcers but not with their location.

ETHNIC DIVERSITY AND MULTICULTURALISM IN THE CLUJ SCHOOL OF MEDICINE

CRISTIAN BÂRSU

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Introduction. Ethnic diversity is a significant factor which stimulates dialogue and creativity.

Nowadays in Romania, the presence of national minorities from the ethnic, historic and cultural point of view provides close ties between Romanians and the nations of which these nationalities are part.

Multiculturalism was one of the ways of collaboration between the majority and ethnic minorities. Multiculturalism – though was one of the useful factors in the formation of a democratic society – was not always enough to create a permanent tolerance between different ethnic groups. The only factor which provides an integrative and tolerant frame is inter-culturalism, because it is based on inter ethnic dialogue.

Objective of our study: the reflection of multiculturalism and ethnic diversity in the tradition of Cluj Medical School.

Results. A significant example was the History of Medicine Chair. Its members had Romanian, Hungarian, Hebrew or French origin.

Different personalities of various ethnic groups from the past of the Cluj Medical School were the followings: Hungarian: Z. Purjesz, I. Orient, I. Fazekaş etc., Hebrew: S. Izsák, H. Straus, A. Kaufmann, M. Schapira, German: E. Popper, H. Roth, Armenian: I. Iacobovici, Polish: V. Baroni and Gh. Badenski, Bulgarian: I. Proinov, Italian: I. Quai, Greece: C. Levaditi, Macedo-Romanian: N. Minovici etc.

During the interwar period, in the Cluj Medical School was created a symbiosis between the Romanian medical tradition, the French one and the German-Hungarian tradition.

Conclusion. The collaboration between professors and students of different ethnic groups from the past is a guarantee of the good management of an outstanding ethnic diversity of students in our university in present.

INFLUENCE OF A VALERIANA OFFICINALIS PRODUCT ON SUBJECTS UNDERGOING NOISE STRESS

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Introduction. Valeriana or Valeriana officinalis (VO) is a medicinal plant widely used in the treatment of sleep disorders and anxiety. The objective of the study was to highlight the action of VO product on subjects undergoing a noise stress (NS).

Material and methods. Healthy volunteers subjects (N = 24 males) were organized into two groups: 1) control (C = 12), without treatment; 2) with VO treatment (V = 12). Parameters evaluated: anxiety (A) and heart rate (HR). Evaluation moments for A and HR: T1 = before the VO treatment start; T2 = at the end of VO and 15 min before the NS start; T3 and T4 = 15 min and 24 h after the NS. NS was represented by the exposure to noise for 4 min (71 dBA). Statistical evaluation was made on the basis of Student test.

Results. The parameters were significantly reduced to V group compared to the C: immediately before (A, $p = 0.004$; HR, $p = 0.02$) and after (A, $p = 0.01$; HR, $p = 0.05$) NS.

Conclusions. 1) VO influence was significantly more intense on A than on HR, at T2 and T3. 2) Under the VO influence, A and HR were significantly reduced at T2 and T3. 3) There were differences between V and C, in the dynamic evolution of the A and HR. 4) VO product used can be effective, safe and affordable to modulate A and HR in the NS, in healthy subjects.

Acknowledgements. We addressed our thanks to all participants and Dacia Plant company.

INFLUENCE OF PHYTOTHERAPIC PRODUCT CONTAINING SCHISANDRA CHINENSIS ON MENTAL AND PHYSICAL STRESS

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Introduction. Schisandra chinensis (SC) is known for its anti-stress effect. This study aimed to highlight the influence of a phytotherapic product containing Schisandra chinensis (PSC), on mental (MS) and physical (PS) stress.

Material and methods. Voluntary healthy subjects (30 men), were randomized divided in: a) control group (C=15), that received no treatment; b) PSC group (SC) that received PSC for 21 days before stress. The analyzed indicators were anxiety (A) and salivary pH (SpH). Both groups were subjected successively to a MS, represented by a mathematical calculation, followed by a PS, of pedaling to a cycloergometer. The parameters determinations were made: before PSC (T1), after PSC and 15 minutes before MS (T2), 15 minutes after MS and before PS (T3) and 15 minutes after PS (T4). Statistical evaluation was based on the Student t test.

Results. Value parameters were significantly lower in SC compared to C: at T2 (A, p=0.005) T3 (A, p=0.001; SpH, p=0.05) and T4 (A, p=0.003; SpH, p=0.03). The parameter values increased after PS, compared to MS: significantly for C and insignificantly for SC. SC influence was higher on A than on the SpH. PSC influence was more intense after MS and before PS for A, and after PS, for SpH

Conclusions. 1) There were significant differences between PSC and C, for the dynamic developments of A and SpH. 2) Succession of MS followed by PS, influences A and SpH more than just MS. 3) Under the PSC influence, A and SpH were significantly reduced also before (T2) and after MS (T3) and PS (T4). 4) We suggest the PSC use for A and SpH modulation, in mixed mental and physical stress.

Acknowledgement. We addressed our thanks to all participats.

INFLUENCE OF PLEASANT VERSUS UNPLEASANT MUSIC AND FILM ASSOCIATION ON PHYSICAL STRESS

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Introduction. Music and film may influence our psychological and functional state. The objective was to highlight the influence of music and film association (MFA) on stress response, in physical effort.

Material and methods. Sedentary voluntary subjects (42 men) participated. Stress was represented by an intense physical effort, on Monark Ergomedic 839E. Study had three phases: 1) control, 6 days the same effort without MFA (C); 2) then 6 days the same effort with unpleasant MFA (U); 3) then other 6 days after the same effort with pleasant MFA (P). Assessments were done: 24 hours before C (T1); 15 min after C and before U-MFA (T2); 15 min after U-MFA and before P-MFA (T3); and 15 min after P-MFA (T4). Analyzed indicators were: anxiety (A) and heart rate (HR). Statistical evaluation was made on the basis of Student test.

Results. At all phases, differences were significant for A (T2-T3, p=0.03; T3-T4, p=0.001) and HR (T2-T3, p=0.05; T3-T4, p=0.003). A and HR values were significantly lower for P-MFA compared to U-MFA.

Conclusions. 1) U and P MFA significantly influenced A and HR. 2) Changes were significantly more intense to P than to U. 3) P-MFA may be an effective, safe and accessible modulation path for this physical effort model. 4) Further studies concerning the MFA use, could bring additional benefits in physical stress modulation.

Acknowledgement. We addressed our thanks to all participants.

ETHICAL AND LEGAL ISSUES CONCERNING SURROGATE MOTHERS IN THE ROMANIAN LEGAL AND MEDICAL CONTEXT

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Introduction. In the last years, in Romania we are facing with cases in Courts where the mother of a child decline the fact that she is actually the real mother of the child, asking to the judge to recognize another woman as the real mother of the child. Romanian civil law system recognize only a mother for a child, according to the adage Mater Semper Certa Est. As objectives, I set up the following: presenting cases of surrogate mothers reported by Romanian Courts; analyzing the consequences of these cases for legal point of view; identifying ethical issues raised up by the practice of surrogate mothers.

Method. As a method I will use case report method. I will, also, present the current legal framework in Romania.

Results. When someone decide to have a child but using someone else who will carry out the pregnancy it is absolutely important to be informed about what it means and what are possible issues from legal point of view for the child, for the family and for the society. At present, Romania doesn't have any specific legislation on Assisted Reproductive Medicine, including the surrogacy. These topics are new and strange for legislators, judges and society. But for medical doctors, who deal with in vitro fertilization practices, it is a reality. The main questions in front of these practices are: What can we forbid without interfering into the personal freedom? How can we define the best interest for the child born in this context? From ethical point of view, we are facing with new realities, like the segmentation of the social and the familial identity, between a biological, a surrogate, a social and a legal mother and a biological, a social and a legal father.

Conclusion. My conclusion is that we need to do work together and to propose solutions for all involved. We need to be able to act in a legal way, to prevent confusions and frustrations of parents, but also to respect and implement rights of children who have two or three mothers at the same time.

CHITOTRIOZIDASE AS A MARKER FOR CRITICAL LIMB ISCHEMIA: A PILOT STUDY

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Introduction. Critical limb ischemia (CLI) is a disease which affects a great variety of persons. Chitotriosidase enzyme levels are usually tested as markers for cardiac disorders. This study aimed to evaluate if the blood levels of chitotriosidase could be used as a biomarker for CLI.

Material and Methods. A matched case-control study was conducted on a groups of 40 patients admitted at the Second Surgical Clinic with the diagnosis of critical limb ischemia (CLI group) or varicose veins (control group) between January 2015 and November 2016. Gender was the matched criterion.

Results. Twenty subjects with age between 31 and 77 years old were included in each group. The mean age of the investigated sample was 57.53±12.60, with significantly higher values on CLI group compared with controls (59.15±12.83 vs. 55.90 vs. 12.47, $p<0.0001$). A significantly higher percentage of subjects included in the sample were as expected men (85%, $p<0.001$). Most of investigated subjects from both groups live in urban areas (case: control = 60%:65%) and were with high school diploma (78%). A significantly higher percentage in CLI group were smokers (85%, $p<0.0001$); opposite, a significantly lower percentage of subjects were smokers in control group (15%, $p<0.0001$). One subjects in each group had no expression of chitotriosidase enzyme. The ranges of the chitotriosidase enzyme were from 290 to 1530 in CLI group (605.50±373.47) and respectively from 80 to 440 in control group (200.50± 111.14), with significantly higher values in CLI group ($p=0.0002$).

Conclusion. Serum chitotriosidase activity is significantly increased in individuals suffering from critical limb ischemia compared with subjects with varicose veins. Higher levels could be explained by the presence of atherosclerosis in the pathogenesis of critical limb ischemia.

HIGH-FREQUENCY SONOGRAPHY IN EVALUATING NAIL CHANGES IN PATIENTS WITH PSORIASIS VULGARIS

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Introduction. Psoriasis vulgaris is a chronic systemic inflammatory disease with genetic determinism that affects the skin, nails and joints. Nail involvement in patients with psoriasis are generally determined by clinical examination, high – frequency ultrasound (HFUS) representing a new approach to noninvasive diagnostic evaluation of the impact of the disease upon nail unit. Using HFUS we assessed the morphostructural changes and nail vascularity in the nail unit of patients with psoriasis, and evaluated whether there were differences among psoriatic patients with and without nail involvement.

Material and methods. Nail plates and nail bed changes, nailfold vessel resistance index (NVRI), power and color Doppler blood flow appearances were investigated in 23 patients with moderate-to-severe psoriasis, with and without nail involvement, and compared to those of 11 healthy participants.

Results. Ventral nail plate deposits were present only in psoriasis patients. Irregular or totally fused nail plates and increased nail plate thickness was frequently observed in psoriasis patients compared to controls. NVRI was increased in psoriatic patients' nails compared to controls (0.62 vs. 0.57, $p<0.0001$). In the psoriasis patient group there was significant statistical difference in NVRI in patients with nail involvement compared to those without (0.66 vs. 0.55, $p<0.0001$).

Conclusions. High-frequency gray scale sonography provides valuable information regarding morphostructural changes in nail unit structure in patients with psoriasis. Power Doppler imaging enables blood flow assessment in psoriasis nail induced changes.

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EFFECTS OF CARBONATED MINERAL WATER TREATMENT IN CHRONIC OBLITERATIVE ARTERIAL DISEASE - A CASE REPORT

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Introduction. Băile Tuşnad Spa Resort is recognized for its role in the prophylaxis and rehabilitation treatment of cardiovascular diseases, including chronic occlusive arterial disease, due to the presence of natural therapeutic factors: carbonated mineral waters through their peripheral and central vasodilator effects, mofettes, a stimulating bioclimate.

Aim. This study aimed to assess the clinical effectiveness of natural therapeutic factors in Băile Tuşnad with the purpose of continuing rehabilitation treatment in a patient with chronic occlusive arterial disease, in order to encourage walking, reduce cardiovascular risk and improve the quality of life.

Material and method. Patient N.M., aged 75, with cardiovascular risk factors, was operated in 2012 for L4-L5 lumbar canal stenosis. In 2013, he was diagnosed with peripheral lower limb ischemia syndrome stage IIB Fontaine, predominantly left claudication at about 100 m, for which balloon angioplasty was performed. The patient attended rehabilitation treatment, which consisted of carbonated mineral water baths for 15 minutes, aerotherapy for 30 minutes daily for stimulation of walking, massage therapy, kinesiotherapy, performed daily for 16 days over 3 years in Băile Tuşnad, and in 2016 at the Rehabilitation Hospital in Cluj-Napoca. He was clinically assessed before and after treatment based on the Visual Analogue Scale for pain, the 10-meter walking test, adverse reactions, Doppler ultrasound.

Results. At the end of treatment, there was an improvement of the walking distance and speed, a significant improvement of walking, claudication occurred at more than 300 m, and pain in the lower limbs decreased.

Conclusions. Rehabilitation treatment with natural therapeutic factors influenced the clinical and functional picture, causing a significant improvement of the quality of walking and of the quality of life.

HIV-TUBERCULOSIS – THE WORLD'S MOST DEADLY DUO. CASE REPORT – FOLLOW UP

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Introduction. Worldwide, TB disease is one of the leading causes of death among people with HIV. According to the World Health Organization (WHO), approximately one-third of the world's population is infected with tuberculosis (TB), with a 5% to 10% lifetime risk of progressing to active disease. At the end of 2014, TB contributed to one third of the 1.2 million deaths from HIV/AIDS and HIV was responsible for 25% of the 1.5 million TB deaths.

Material and methods. We report the case of a male patient, 33 years old, who was hospitalized for dyspnea, fever, night sweats, asthenia. Thoraco-pleural-pulmonary radiography shows only a fibrous appearance of the right upper lobe. 3 years ago, the patient presented in our service accusing muccopurulent cough, loss of appetite, insidious onset 3 weeks prior to hospital admission.

Results. At this point, the diagnosis is acute tracheobronchitis, but 3 years ago the diagnosis was secondary cavitary pulmonary tuberculosis of the right upper lobe, BAAR positive, new case, 1st regime of treatment. Non-specific sputum examination revealed fungal (candida spp) infection, Ziehl Neelsen sputum examination was positive (2 samples). Antituberculous therapy was temporarily interrupted, due to adverse reactions. CD4-CD8 ratio was very low, also with an inconclusive result of Elisa testing for the detection of anti-HIV antibodies. The Westernblott method had a positive result, and therefore the patient was transferred to the Infectious Diseases Cluj-Napoca Hospital for antiretroviral therapy.

Conclusion. With the antiretroviral treatment (Lamivudine, Ziagen, and Stocrin), associated with anti-tuberculosis therapy, the evolution of this patient was good. The pulmonary tuberculosis was declared cured after 12 months. The patient has a good adherence to treatment, and also a gradual and steady increase of CD4 level until this date, with no TB recurrence.

SPONTANEUS CAROTID- CAVERNOUS SINUS FISTULA – CASE REPORT

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Introduction. Carotid – Cavernous Fistulas (CCFs) are abnormal connections between the carotid artery and the cavernous sinus. These lesions may be classified according to several criteria: angiographically, as direct or dural; pathogenetically, as spontaneous or traumatic; and hemodynamically, as high flow and low flow.

Background. Spontaneous CCFs are rare and usually indirect and idiopathic; spontaneous closure is possible and mostly seen in women older than 50 years and hypertension is the most associated disease with fistulas. CCFs can be unilateral or bilateral. Unilateral CCFs can cause bilateral eye symptoms, whereas bilateral CCFs can present with unilateral eye symptoms. Signs like proptosis, chemosis, and nerve palsy are mostly seen at the side of the fistula. The anatomy and behavior of CCFs being so variable, it is essential to tailor their management to each situation. Treatment should be conservative for benign lesions while surgical approach is indicated in high-flow direct CCFs and if the patient cannot tolerate the symptoms, or if signs of ocular morbidity occur .

Case presentation. We report the case of a 56-year-old woman who was admitted to our clinic with complaints of: bilateral pulsatile exophthalmos, bilateral chemosis, bilateral VI nerve palsy, left orbital bruit, left III and IV nerve palsy and diffuse headache. Computed tomography angiography of the head and digital subtraction angiography of the intracranial vessels was performed for diagnostic and treatment.

Conclusions. In this case report, we discuss the presentation, causes, diagnosis and management of spontaneous CCFs in patients presenting on neurologist.

PARTIAL EPILEPTIC SEIZURES: A DIAGNOSTIC CLUE FOR BRAIN TUMORS

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Introduction. Astrocytomas are central nervous system neoplasms with the ability to infiltrate tissues. MRI is the first choice in brain tumor evaluation. A small part of cortex tumors can determine seizures in early stages, even though they might not be visible on MRI.

Case presentation. A 59 years old male patient was admitted to the Neurology Department of the County Emergency Hospital from Cluj complaining of involuntary movements of the right upper limb and right hemiface that started 2 days before admission. The patient is known to have sinus tachycardia and mild hypertension. Neurological evaluation did not reveal any pathological changes at that moment. A native CT scan revealed just an arachnoidal cyst in the posterior fossa. Because the symptoms persisted, an MRI was performed. It revealed a lesion in the left precentralgyrus without enhancement after contrast administration. SPECT/MRI and CT with intravenous contrast were also performed, highlighting the same lesion, hyper-intense on T2-weighted images but without vasogenic edema nor mass effect. The pacient received treatment with carbamazepine and nebivolol with no change in seizure frequency. Later he underwent surgery. The histopathologycal exam revealed the tumor type as being anaplastic astrocytoma grade OMS III. He received adjuvant radio and chemotherapy. Favorable clinical evolution, without seizures after surgery.

Conclusion. Brain tumors might be difficult to diagnose and can be missed in early phases. Cerebral MRI spectroscopy is very useful in order to guide you toward the right diagnosis but the histopathological examination remains the gold standard in the diagnosis of tumors. Early diagnosis is fundamental, since proper treatment may increase life expectancy.

Particularities. Even though the evaluation was very complex, it was difficult to establish a precise diagnosis. The presence of superficial brain pathology was revealed by the patient's clinical manifestation.

DIFFICULTIES IN DIAGNOSING NON-SPECIFIC ENCEPHALITIS

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Introduction. Encephalitis is characterized by a diffuse or focal neuropsychological dysfunction. Etiologies include infectious and non-infectious causes. The viral prodrome typically consists of fever, headache, nausea and vomiting, lethargy and myalgias. Seizures occur in 2-67% of cases and may have an early or late onset. Besides blood and urine tests, a lumbar puncture should be performed in all cases of suspected encephalitis.

Case presentation. A 30 year old male patient was admitted to the Neurology Department of the County Emergency Hospital from Cluj-Napoca complaining of intense headache, low grade fever, vomiting, confusion, behavioral disorders, sleep disorder and psycho-sensory seizures. Due to the symptomatology, acute encephalopathy is suspected, and the patient is hospitalized in the Infectious Disease Department. He underwent antibiotic, antiviral and anticonvulsant therapy. Given the persistence of polymorphic seizures, the patient was resubmitted in the Neurology department where the explorations continued. Blood tests revealed a mild leukocytosis and hepatocytolysis syndrome. Cerebral MRI and CT scan did not display any abnormalities. The EEG pointed out a generalized slow pattern. A psychiatric examination could not provide us with a psychiatric diagnosis. Because the symptomatology persisted we repeated the cerebral MRI. It showed a few right temporal lesions, gyral, without enhancement and mild general edema in the affected region. Also the border between white and grey matter was no longer defined.

Conclusion. Because of the polymorphic manifestations, encephalitis might be a difficult diagnosis that can be missed. Early diagnosis is fundamental, since immediate treatment is necessary.

Particularities: Even thought there were predominant psychiatry symptoms, continuing the investigations helped us find the right diagnosis and give a treatment that saved the patient's life.

THE ADVANTAGES OF BOLUS ADVISOR FOR AUTOMATIC CALCULATION OF PREPRANDIAL INSULIN REQUIREMENTS IN PATIENTS WITH TYPE 1 DIABETES

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Introduction. Mental adding up of insulin boluses is complex and time-consuming , patients may rely on empirical estimations. Many patients are limited in their ability to perform these calculations because of inadequate literacy and inadequate numeracy. In addition, mental bolus calculation does not take into account the effect of the active insulin that remains from the initial bolus ("insulin on-board"), potentially resulting in severe hypoglycemia.

Material and methods. We report 2 cases from Diabetes, Nutrition and Metabolic Diseases Department Emergency Clinical County Hospital Cluj. The first case, a 13 years old girl with type 1 diabetes (T1D) in the last 1.5 years, with current HbA1c 8.4% and the second case, a 24 years old male, known T1D in the last 13 years, current HbA1c 11.14%. Given the high glycemic variability, repeated hypoglycemia episode, we decided to install continuous subcutaneous infusion insulin, subsequently we established: the rate of basal insulin, insulin sensitivity factor and the insulin-to-carbohydrate ratio. These data were inserted in the multipurpose blood glucose meter.

Results. By using Bolus Advisor, a component of the multipurpose blood glucose meter, blood glucose values were maintained within normal limits. Thus, case I did not present daytime hypoglycemia as Advisor Bolus took into account parameters introduced and the insulin still active. Case II, presented in glycemic targets, avoiding hypoglycemia because Bolus Advisor took into account physical activity performed by the patient.

Conclusion. Bolus Advisor allows more accurate prandial insulin dosage, allows optimal glycemic control, may encourage better patient adherence, reduce risk of hypoglycemia by "double bolusing", personalize the insulin treatment.

THE INFLUENCE OF ALCOHOLIC HEPATITIS ON THE OUTCOME OF PATIENTS WITH LIVER CIRRHOSIS AND ASCITES

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Introduction. Alcoholic Hepatitis (AH) is a form of liver injury induced by chronic alcohol abuse, which combined with liver cirrhosis and ascites may lead to a high mortality rate. We evaluated the influence of AH to assess the outcome in patients with liver cirrhosis and ascites.

Materials and Methods. In this retrospective transversal study we used the following inclusion criteria: patients diagnosed with liver cirrhosis and ascites, who were hospitalized in the Regional Institute of Gastroenterology and Hepatology, Cluj-Napoca over a period of 18 months (January 2012–June 2013). The diagnosis of AH was based on: the chronic and active alcohol abuse, hyperbilirubinemia (>5mg/dl), elevated aspartate aminotransferase (AST) and alanine aminotransferase (ALT) levels with AST/ALT ratio of >2.

We divided our patients in two groups (with AH and without AH), and we compared the following data: hepatic encephalopathy, hepato-renal syndrome, upper gastrointestinal bleeding, spontaneous bacterial peritonitis, Child-Pugh class, MELD score and 6 month mortality rate.

Results. A total of 763 patients were included (280 women, 483 men) with the mean age of 60.41 years. The etiology of cirrhosis was the following: alcohol induced 42.3%, viral infection 37.6%, mixed etiology (alcohol and viral) 10.7% and other causes 9.3%. AH was identified in 11.5% of patients.

We encountered the following differences between the two groups (with AH and without AH): hepatic encephalopathy 77.3% vs 54.5% ($p<0.001$), hepatorenal syndrome 8% vs 3.4% ($p=0.076$), upper gastrointestinal bleeding 26.1% vs 20.4% ($p=0.275$), spontaneous bacterial peritonitis 17% vs 10.4% ($p=0.091$), Child C class 73.9% vs 31.9% ($p<0.001$), MELD score 23.7(±6.01) vs 15.41(±5.27)($p<0.001$), 6 month mortality rate 18.2% vs 7.6%($p=0.002$).

Conclusions. Patients with AH presented a significantly higher frequency of hepatic encephalopathy and C class of the Child score, higher MELD score and 6-month mortality rate than patients without AH.

SMOKING CESSATION NATIONAL PROGRAM – CHALLENGES OF SMOKING CESSATION

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Introduction. The STOP SMOKING program is the acronym of Smoking Cessation National Program, which is the largest control tobacco program in Romania. The success of smoking cessation is a challenge due to difficulty of smokers to quitting smoke.

Aim. The aim of the study was to evaluate if bupropion SR was effective for smoking cessation among people who addresses to STOP SMOKING and which are the characteristics of people with nicotine dependence.

Methods. This was an observational descriptive study during January 2013 to December 2015. The study include 572 peoples that addresses to STOP SMOKING program and received pharmaceutical therapy for 8 weeks with 300 mg bupropion SR (150 mg once daily for 3 days and then 150 mg twice daily) with follow-up at 12 weeks after initiation of therapy.

Results. From all, 52.24% were male; the top of age that address to our smoking cessation program was 30-39 years (30.49%). The median of number of packs per year was 20 and the median of daily costs was 2 euro/day; taking into account the marital status the majority were married and also with kids and 324 from 572 peoples had associated diseases. There were 333 of non-smokers (58.26%) and 238 (41.74%) of smokers after 12 weeks of follow-up after the therapy initiation (there were no significant statistical differences between the final status of smoker/non smoker ($p=0.59$); no significant differences were observed between groups of age, marital status, daily costs, associated diseases and final status of smoker/non smoker ($p=0.63$, $p=0.55$, $p=0.08$, $p=0.33$).

Conclusion. Bupropion SR was effective in promoting smoking cessation on short-term smoking cessation among peoples who address at STOP SMOKING. More strategies are needed to sustain abstinence among people quit smoke in Smoking Cessation National Program, in order to improve health status.

EXPERIENCE OF SLEEP LABORATORY FROM CLUJ NAPOCA, REGARDING THE RISKS AND PATTERNS OF OBSTRUCTIVE SLEEP APNEA SYNDROME

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Introduction. The activity of Sleep Laboratory is focused on the diagnosis and treatment of sleep breathing disorders, especially on obstructive sleep apnea syndrome (OSAS). The pattern of OSAS patient should always be recognised and addressed for evaluation in an Sleep Laboratory.

Aim. The aim of this study was to evaluate the OSAS patients charactersitics of subjects which adress to Sleep Laboratory.

Methods. We conducted an observational, descriptive, retrospective study in Sleep Laboratory of University of Medicine and Pharmacy „Iuliu Hatieganu", during January 2013 to December 2013 regarding the risk factors and patterns of OSAS.

Results. From all 148 subjects, 79.05% were males; 89.19% - were between 30-69 years age. Mean neck circumference was 45.97±5.31 cm and mean abdominal circumference was 116.36±17.26 cm, mean body mass index (BMI) was 33.35± 6.90 kg/m2. The mean medium oxigen saturation was 92.41 4.40%, the mean minimum oxigen saturation was 74.40±14.53%. The mean Epworth Sleepiness Scale (ESS) was 9.74±4.65. More than half of the subjects (55.14%) had severe OSAS with apnea hipopnea index > 30 events/sleep hour. There was a significant statistical corelation between AHI and neck circumference, abdominal circumference, medium oxigen saturation, minimun oxigen saturation, (p=0.000), Epworth Sleep Scale (p=0.001).

Conclusion. The knowledge of risk factors and patterns of OSAS throught medical specilities and general population, will increase the adresability to Sleep Laboratories of sleep apnea patients for early diagnosis and treatment.

A SEVERE CASE OF DEEP VENOUS THROMBOSIS IN A CHILD WITH COMBINED INHERITED THROMBOPHILIA

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Introduction. Although pediatric thrombosis is considered to be rare and is still underdiagnosed, it is now recognized as a significant source of morbidity and mortality among children. The role of thrombophilia in the development of thrombosis is still controversial. Few therapeutic protocols for pediatric DVT exist, most of them extrapolated from adults, despite the differences between hemostatic system in adults and children.

Materials and methods. We report a case of an 11 years old boy who first presented with an episode of pneumonia. After 5 days he developed intense pain in the lower abdomen, pain and swelling in the left lower limb.

Results. The venous compression with Doppler ultrasound and CT angiography revealed a deep venous thrombosis extended from the left femoral vein to the left iliac vein and inferior vena cava. D-dimer and factor VIII levels were high and four traits of thrombophilia were found: a heterozygous mutation for factor V Leiden, a severe deficiency in antithrombin III, reduced protein S activity and a heterozygous mutation for PAI-1. Using the Manco-Johnson risk assessment we stratified our patient in the high risk group, therefore the anticoagulation therapy was maintained for one year (initially with enoxaparin and after that with oral acenocoumarol). As the long-term complication our patient developed a post-thrombotic syndrome.

Conclusions. Deep venous thrombosis in children is a multifactorial pathology, arising from a combination of genetic and acquired predisposing factors. Investigation of inherited thrombophilia in children with DVT is important for tailoring the therapy and establishing the risk of recurrences.

LEFT HEART MORPHOMETRY IN NEWBORN WITH INTRAUTERINE GROWTH RESTRICTION

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Chronic hypoxia during fetal period increases myocardial stress but the myocardium is in a process of development and change and will respond by a globular hypertrophy of the left ventricle.

The purpose of the study was to assess cardiac morphometry of left heart in neonate with intrauterine growth restriction (IUGR).

Methods. A transversal study was conducted at Neonatal Ward at First Gynecology Clinic, Emergency Hospital Cluj-Napoca on infants with intrauterine growth restriction (IUGR) who were discharged from June 2014 to June 2015. Evaluation of cardiac function was performed on the first day of life and one month.

Results. They were included in the study 40 infants with intrauterine growth restriction and 21 infants with appropriate weight for gestational age (AGA). The dimensions of left ventricular end diastolic, systolic interventricular septum and posterior wall were significantly lower than those of the newborn to AGA ($p < 0.05$). The Z score for the interventricular septum in diastole, posterior wall was higher to 5% of infants with IUGR. In time Z score had pathological values from 1 month. Birth weight was correlated with the increase in size of the left ventricle at 1 month ($p < 0.05$).

Conclusions. Left ventricular dimensions are significantly lower than those of the newborn to appropriate gestational age.

Birth weight is correlated with the increase of left ventricular dimensions at 1 month.

QUALITY OF LIFE IMPAIRMENT AND PSYCHOLOGICAL IMPACT OF PSORIASIS

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Introduction. Psoriasis is a chronic skin condition presenting with erythematous, thick, flaking plaques, often associating a number of comorbidities. Patients with psoriasis go through years of treatment for the cutaneous manifestations of this condition, many times without being screened for comorbidities. Our literature review aims to highlight the psychological impairment associated with psoriasis, as well as to fundament the requirement for psychological screening and proper management of psoriasis patients.

Materials and methods. Our study is based on a PubMed search inquiry using the terms "psoriasis" AND "psychological impact" AND "quality of life". Following the search, relevant articles were selected and included in our database. We excluded articles published in languages other than English, articles published before 2010 and articles with missing links or abstracts.

Results. A major psychological burden of psoriasis was identified. Patients with psoriasis systematically developed depression, anxiety and suicidal ideation. As well as lowering quality of life parameters, these manifestations seem to have a negative impact on the evolution of the disease itself.

Conclusion. Psychological comorbidities are a significant aspect, worth considering in psoriasis patients. As such, it is vital to screen these patients and offer the option of counseling if the need arises.

A MALIGNANT PHEOCHROMOCYTOMA IN A CHILD WITH VON HIPPEL-LINDAU MUTATION

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Introduction. Pheochromocytoma is a rare neuroendocrine tumour that arises from chromaffin cells of the sympathetic nervous system. Over one third of pheochromocytomas are associated with germline mutations.

Aim. The aim of this presentation is to outline the rarity of this particular malignancy in children, and to underline its complex diagnostic and therapeutic approach, and the necessity of thorough follow-up.

Methods. We described a 3 year-old girl with an inherited right adrenal malignant pheochromocytoma, with the mother diagnosed with von Hippel-Lindau syndrome.

Results. Genetic tests revealed the presence of the VHL c 244 C>g (p. Arg 82 Gly) heterozygote mutation in the mother, as well as in the child. After 6 months from the complete resection of the tumor, the patient is without any clinical symptoms, with normal blood pressure, normal ophthalmoscopy, no tumor markers and no evidence of tumor on cerebral or abdominal MRI.

Conclusion. Malignant pheocromocytoma is rare in children. A complex and lifelong follow-up is needed, as it is known that VHL mutation may cause at a later age retinal angiomas, cerebellar and spinal hemangioblastomas, relapsed pheochromocytoma, pancreatic and renal cysts, clear cell renal cell carcinoma and endolymphatic sac tumors.

INSULIN PUMP THERAPY – PRACTICAL ASPECTS

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Background. Continuous subcutaneous insulin infusion (CSII) therapy is a more physiologic and modern insulin treatment addressed mainly to type 1 diabetes mellitus (T1DM) patients. The advantages of this treatment are reduced risk of hypoglycemia and glycemic variability, higher adherence and better glycemic control.

Aim. The objective of this study was to evaluate the short-term practical aspects related to insulin pump installation.

Subjects and method. Between Jan-Oct 2016, 21 persons with T1DM were switched to insulin pump Accu-Chek Spirit Combo. Mean age was 16.87 (±12.62, 7-63) years. T1DM duration was between 8.83 (±11.42) years. Per protocol, total basal rate represents initially 80% from the basal insulin dosage, being checked by "fasting test" in three different moments in three different days. Analyzed parameters: HbA1c, glycemic values, total basal rate/24h and total daily dose (TDD) of insulin before and after insulin pump. Data were analyzed with Microsoft Excel and SPSS.

Results. Main reasons for switching to CSII therapy: high glycemic variability (43-400 mg/dl) (24%), poor glycemic control (76%), mean HbA1c 8.32% (±1.31, 6.60-11.14). It was obtained significant differences (p=0.043) with an average of 0.31 ui/kgc between TDD/24h at admission (0.88ui/kgc) and TDD/24h discharge (0.57ui/kgc) in 67% of cases. There has been an average glycemic/24h on admission 160 (±40.83)mg/dl and the mean glycemic/24h discharge 160 (±43.48)mg/dl. It was noticed a difference (p=0.079) between basal rate at admission 15.99(±8.72)ui and at the discharge 17.40 (±8.27) ui with the increase of +1.41 ui basal needs.

Conclusions. The results support the protocol used in our Centre. Following CSII therapy, total daily basal insulin is reduced. Short-term CSII is associated with the decreased number of hypoglycemic events and also the variability of blood glucose levels in most of the cases. Periodic follow-up of patients is needed for long-term control.

PROGNOSTIC VALUE OF IMMUNOHISTOCHEMISTRY MARKERS IN PANCREATIC CANCER PATIENTS

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Introduction. Epidemiologic studies revealed that pancreatic cancer (PC) was the fourth fatal cancer in both men and women. The pathology hallmarks are represented by late diagnosis, early metastasis, few treatment alternatives, poor prognosis and absence of specific markers for this matter. The objective of this study was to evaluate different molecules as prognostic factors for patients with PC that underwent chemotherapy treatment.

Materials and methods. The samples from diagnosed patients with metastatic adenocarcinoma of the pancreas that underwent chemotherapy at The Oncology Institute „Prof. Dr. Ion Chiricuţă" Cluj-Napoca were analyzed by immunohistochemistry (IHC). For each patient the expression of several markers involved in tumor proliferation (VEGF, VEGFR, ki67, b-catenin), apoptosis (Bcl-2, p53) or immune response (CD4, CD8, PD1, COX2) was evaluated on tumor tissue provided by biopsy from pancreatic primitive tumor or liver metastasis. Correlation of evaluated molecular markers with performance status, hematological evaluation or tumor response to chemotherapy was made using Kaplan-Mayer statistical analysis.

Results. Our results have suggested that over expression of molecular markers involved in tumor proliferation and low expression of apoptotic or immune markers seems to be associated with poor prognostic in patients with pancreatic cancer. This is a pilot study, the results should be confirmed using the samples from more patients.

Conclusions. PC remains a pathology that needs further investigations due to the complexity of the disease and its poor outcomes. The lack of a specific prognostic marker remains an unresolved matter that has attracted a great deal of attention and further studies must be performed in this direction.

SOLITARY PULMONARY NODULE: THE BIG PROBLEMS OF SMALL THINGS

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Introduction. Despite the existing evidence that most of the time (75% of cases) solitary pulmonary nodules (SPN) are of benign etiology they tend to be over investigated, even in patients who don't have risk factors for lung cancer.

Aims. To present the challenges of solitary pulmonary nodule management in the light of current recommendations.

Methods. Two male patients of 59 and 65 year old were sent in the respiratory medicine outpatient clinic for evaluation, in the context of acute exacerbation of chronic bronchitis. They were both heavy smokers (50 PA and 80 PA) without significant medical history.

Results. In both patients, clinical examination was remarkable and spirometry showed obstructive syndrome. Chest X-ray: SPN localized in the right upper lobe in the first patient and inferior right lobe in the second patient. Chest CT was performed: in the first patient- nodule without parenchymal calcifications, weak contrast captation and irregular outline. The second patient had a nodule with calcification, it was raised the suspicion of pulmonary hamartoma. The bronchoscopy was non-diagnostic in both patients. The first patient performed a PET-CT, that revealed a moderately active nodule (SUV max = 3), and the surgical intervention was performed. The histopathological examination revealed adenocarcinoma. The second patient had a surgical intervention and the lung hamartoma diagnosis was made.

Conclusion. Selection of patients requiring surgical intervention should be carefully done to avoid unnecessary gestures.

GLYCEMIC AND WEIGHT CONTROL IN PATIENTS WITH TYPE 2 DIABETES TREATED WITH EXENATIDE LAR

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Introduction. Exenatide LAR has glycemic and weight lowering effects. The aim of this study was to evaluate the effects of 6 month treatment with exenatide LAR on glycemic control (HbA1c) and weight, on patients with type 2 diabetes (T2D), treated in Cluj Diabetes Center.

Material and methods. The retrospective, observational study included patients with T2D, age ≥ 18 years, initiated with exenatide LAR. Exclusion criteria: patients with other types of diabetes, neoplasia, personal history of pancreatitis or gastro-intestinal motility disorders, pregnant women, amputations during the study. We analyzed the treatment plan before the initiation of the exenatide LAR and at 6 months after the initiation. We assessed the presence of diabetes complications, modifications in anthropometric indices and HbA1c.

Results. We included 36 subjects with T2D initiated with exenatide LAR during 2008-2016. The group baseline characteristics were: 52.8% females, mean age 55.78 (±9.59) years, diabetes duration at initiation 6.13 (±5.29) years. Before the initiation, 19.4% patients were treated with monotherapy, 61.1% with double therapy and 19.4% with triple therapy. The main antihyperglycemic classes used in the treatment before the initiation, were sulfonylureas (61.1%), basal insulins (22.2%), DPP-4 inhibitors (16.7%). Every patient was treated with metformin. During the 6 months studied, treatment plan modifications occurred in 33.3% of the patients. We found clinical and statistical significant differences ($p<0.05$) between the initiation moment and after 6 months of treatment with exenatide LAR in the reduction of HbA1c (reduced with 1.54% (±1.44)). The mean weight was reduced with 0.5 kg (±6.33). No significant differences were noted in the incidence of chronic complications and comorbidities.

Conclusions. The treatment with exenatide LAR lowered HbA1c in treated patients. The reduction in weight was clinical but not statistical significant.

EVALUATION OF PAIN AND DEPRESSION IN COLORECTAL CANCER PATIENTS

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Introduction. Colorectal cancer (CCR) represents the second most common types of cancer in both women and men. Characteristically, 25% of patients present metastasis at the diagnosis time when the only therapeutic option remains chemotherapy and the prognostic are reserved. In these cases the incidence of mental disorders, especially depression and anxiety, is high, due to the fear of pain associated cancer.

Material and methods. Twenty-one patients with metastatic CCR from the Oncology Institute „Prof. Dr. Ion Chiricuţă" Cluj-Napoca were included in the study. For each patient, pain's intensity was evaluated by using unidimensional methods as visual analogue scale (VAS) and multidimensional methods like projection of pain on the silhouette and Mac Gill questionnaire for the type of pain. Depression and anxiety presence were measured applying Beck Depression and State-Trait Anxiety Inventories. Patients were evaluated twice – at the moment of diagnosis and one month later after initiation of pain treatment and psychological support. Correlations between demographic characteristics, pain evaluation and mental disorders were conducted by using statistical analysis.

Results. Our study confirmed the high incidence of pain in colorectal cancer patients (78%), the most patients suffering moderate - to – severe pain. Also high level of anxiety and depression was remarked in CCR patients.

Conclusions. High correlation between intensity of pain and depression was observed. An intensive psychological support was associated with a better quality of life and less pain.

OUTCOME OF CATHETER ABLATION FOR ATRIAL FIBRILLATION IN THE REHABILITATION HOSPITAL CLUJ-NAPOCA

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Introduction. Rehabilitation Hospital has the only Cardiac center from Cluj that performs atrial fibrillation (AF) ablation. Pulmonary veins ablation is the most effective treatment in patients with paroxysmal AF. The procedure is based either on electro-anatomical mapping in case of radiofrequency or radiological visualization of the PV in case of cryoablation. In patients with persistent AF, ablation aims to isolate the PV and also modify the substrate of the left atrium (LA) by linear or point-by-point ablation.

Materials and methods. Seventy-six patients with paroxysmal and persistent AF were ablated in our department between November 2010 and November 2016 either by radiofrequency or by cryoablation. There were 47 paroxysmal forms and 29 persistent AFs. All the patients had transesophageal echocardiography and angio-computed tomography before the ablation, for exclusion of LA and LA appendage thrombus and for the assessments of PV anatomy. Survival curves were calculated in terms of AF recurrence after a successful ablation.

Results. The ablation was realized circumferentially, guided by electrical PV potentials in case of PV isolation and point-by-point inside the atria for substrate modification. Carto 3 three-dimensional system and NAVX-Saint Jude system were used for navigation inside the heart. Cryoablation was carried out using the Medtronic CryoAblation system by freezing the PV antrum at -40 degrees for electrical isolation. Kaplan Meyer survival curves showed that 68.4% of the patients were free of AF at a mean follow-up of 48 months with no significant difference between paroxysmal (70.2%) and persistent (65.5%) forms of AF (log-rank=0.9).

Conclusion. Catheter ablation is an effective therapeutic strategy for some paroxysmal and persistent AF patients. Although 68% success is seen with single procedures, long-term freedom from atrial arrhythmia can be achieved, but multiple procedures may be required but multiple procedures may be required.

VENTRICULAR TACHYCARDIA IN A PATIENT WITH OLD MYOCARDIAL INFARCTION: A CASE REPORT

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Background. Ablation for ventricular tachycardia (VT) in patients after myocardial infarction is important, not for its relative frequency, but for the profound influence this procedure has on quality of life.

Methods. We report a case of a 62-year-old man with recurrent monomorphic ventricular tachycardia related to an old inferior myocardial infarction. Due to drug-refractory ventricular tachycardia, we decided to perform an electrophysiologic study, a 3D mapping and ablation.

Results. At the end of the procedure, no VT was inducible. At follow-up, no episodes of VT were recorded.

Conclusion. Radiofrequency ablation represents a useful tool in the management of recurrent ventricular arrhythmias post-myocardial infarction.

EVALUATION OF THE PATIENT WITH ANGINA PECTORIS AND NORMAL CORONARY ANGIOGRAMS

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Introduction. Earlier studies reveal that 20% of patients with angina pectoris referred to coronary angiography have normal coronary angiogram. Normal coronary arteries status is defined as no visible disease or luminal irregularities (less than 50%) as judged visually at coronary angiography.

The aim of this study was to see the mode of clinical presentation, to identify the group of patients with normal coronary status, define their characteristics and risk factors.

Material and methods. We analyzed the medical history (anamnesis, family history, age, sex, smoking, body mass index, lipid status, hypertension, diabetes mellitus type 2, 12-lead electrocardiography, exercise test and the therapies administered) of 102 patients referred to our Cardiology Department for coronary angiography with the suspicion of ischaemic heart disease due to typical chest pain. The patients have been examined over period January-June 2014. The database was created using Microsoft Office Excel 2010. SPSS 15.0 (SPSS Inc, Chicago, USA) was used for statistical analysis and data description.

Results. Patients presented with angina pectoris and had normal coronary angiography findings were 21%. The number of females was twice as the number of males (70% vs 30%). Our patients generally have hypertension (67%), excessive body mass index (71%) and lipid disorders (81%). The standard 12-lead electrocardiogram had limited utility in the detection of coronary artery disease .There is no association between exercise test results and coronary angiography. (p=0.91) 43% patients used angiotensin-converting enzyme inhibitor, 38% used a Ca-antagonist and 33% used nitrate. The number of patients using aspirin, beta-blockers and statins was adequate.

Conclusions. Careful examination and optimal treatment are needed in patients with angina pectoris and normal coronary angiograms. Positive lifestyle changes are important elements of treatment and improvement of the quality of life in those patients.

BLOOD SELENIUM, MAGNESIUM AND ERYTHROCYTIC MAGNESIUM IN DIABETICS WITH NON-ALCOHOLIC STEATO-HEPATITIS

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Introduction. Diabetes is a disease increasingly found in adults, associating obesity, dislypidemia and liver steatosis. Recent data revealed changes in some oligominerals levels in blood and cells in this diseases, including blood levels of selenium and magnesium.

Material and methods. Our study focused on 68 type 2 diabetics, mean aged 54.5 years with a mean duration of the diabetes of 14.4 years with no history of hepatitis but with non-alcoholic steatohepatitis (NASH); 20 cases also had obesity. Everyone has been clinically and laboratory tested for dyslipidemia but also performed ECG, X-ray, retina examination. We measured the blood level of magnesium (Mgs) and selenium and intraerythrocitary magnesium (Mge). The measurements were performed after normalizing the glucose levels in those lacking major complications of diabetes.

Results. The results showed the control group having normal values Se: 160µg/dl, Mgs: 1.96 mg/dl (in blood), Mge: 4.76mEq/l (in cells); the diabetics had reduced values of those minerals in their cells and blood (Se: 96 µg/dl, Mgs: 1.74 mg/dl Mge: 3.87mEq/l); diabetics with NASH had even worse values detected (Se: 84.5 µg/dl, Mgs: 1.56 mg/dl Mge: 2.68 mEq/l). The worsening of the laboratory findings were consistent with abdominal obesity and some vascular changes visible on the retina exam.

Conclusion. The study connects those values with clinical-biological data, suggesting a positive relation between Se and Mg deficit and a faster and more severe evolution of the diabetes associating NASH. We conclude that the Mg and Se deficit may worsen the prognosis of diabetes, needing substitutive treatment.

FULMINANT HEPATIC FAILURE DUE TO AN UNUSUAL DUAL INFECTION: A RARE PRESENTATION IN THE EMERGENCY DEPARTMENT. A ROMANIAN CASE REPORT

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Introduction. Fulminant hepatic failure (FHF) is rarely diagnosed in the Emergency Department (ED), with viral hepatitis and toxics as acetaminophen being the two leading causes. Other various causes have been reported, such as mushrooms intoxication, amiodarone infusion, heat stroke, herpes simplex; some etiologies remain indeterminate. We are reporting the case of a 54yo male, with no previous invalidating conditions, who was diagnosed with FHF in the ED after accusing malaise, abdominal pain, vomiting and diarrhea for the last 2 days.

History report and clinical exam. A patient from a rural environment presented to the ED suddenly accusing watery diarrhea, biliary vomiting and loss of appetite for the last 2 days. The triage code was red and immediate volume replacement resuscitation was needed. The physical exam revealed distended jugular veins, prolonged capillary refill time, intense jaundice and abdominal sensibility in the right upper quadrant.

Lab data report and ED management. A severe metabolic lactic acidosis with increased anionic gap was diagnosed on ABG; point-of-care biomarkers were used to detect severe thrombocytopenia, renal insufficiency, heart failure and inflammation. The lab results indicated severe hepatic failure (ASAT=28667 U/L, ALAT=7371 U/L). The ED treatment was supportive, initially aiming to correct hypovolemia and the metabolic acidosis. Acetylcysteine was administered once the FHF was documented. Considering the sudden onset of the condition, blood and urine toxicology samples were drawn and inquiries were made to determine a possible toxic agent. The patient was transferred to ICU for immediate dialysis, but unfortunately died after 5 days due to multiple organ failure caused by hepatitis B infection and salmonella bacteremia.

Conclusion. Acute hepatitis B is considered a leading cause of FHF in the developing countries. The association of salmonella bacteremia in an apparently immunocompetent adult ensured a very poor prognosis.

INTERNALIZED STIGMA IN SCHIZOPHRENIA

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Introduction. Internalized stigma also referred as self-stigma it is described as a subjective perception of shame, devaluation, marginalization, withdrawal and secrecy. It is also known that self-stigma has a variety of implications in different aspects of patients lives including: impaired social adaptation, unemployment, reduced medication adherence, low self-esteem, hopelessness, demoralization.

The aim of our study was to evaluate the impact of internalized stigma on global functioning, social functioning, treatment adherence in patients with schizophrenia.

Methods. We included in this study 67 outpatients diagnosed with schizophrenia, stable from the point of view of the symptoms for at least 3 month. We evaluated these patients using the PANSS rating scale to asses symptoms, ISMI scale for internalized stigma, GAF for global functioning and QOLI for social functioning.

Results. Our findings suggest that in patients with schizophrenia higher levels of internalized stigma are associated with lower symptoms severity, with poorer social functioning and greater rates of unemployment. Also a rate of greater treatment adherence was observed in patients lower levels of self-stigma.

Conclusions. It appears that self-stigma is widespread and that it is associated with adverse outcomes and it is very important how it can be resisted or reduced in order to improve the quality of life of patients.

CAN THE RIGHT VENTRICULAR DIASTOLIC FUNCTION AND THE ARTERIAL PULMONARY HYPERTENSION IN PATIENTS WITH END STAGE RENAL DISEASE BE IMPROVED BY HEMODIALYSIS ?

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Objective. There is few data concerning the right ventricular diastolic performance in end stage chronic renal failure patients and even less data concerning the effect of hemodialysis on right ventricular performance in these patients. In the present study we tried to document if hemodialysis in end stage renal failure patients can improve right ventricular dysfunction and influence the degree of arterial pulmonary hypertension..

Methods. Sixty-six end stage renal failure patients with altered RV diastolic performance but preserved RV ejection fraction, were included in our study, before starting hemodialysis. The patients were studied by echo Doppler before and after 6 months of hemodialysis. RV diastolic function was evaluated in all 66 patients.

Results. We documented altered RV diastolic filling parameters in all our patients at the start of hemodialysis , but also at 6 months of hemodialysis. Emax was decreased at the start and at 6 months of study (34.4+/-6.6, versus 35.4+/ 8.8 cm/sec), while A max was increased (49.6+/-12.2 versus 48.4+/-12. cm/sec). E wave PHT was found prolonged at the start and end of study (63.3+/-9.2 versus 62.4+/-6.2 msec.) and also E wave DT (130.6+/-30.3 versus 128.4+/- 28.6). The right ventricular ejection fraction remained in normal limits at the start and at the end of study. We documented a moderate arterial pulmonary hypertension in all our patients, which was not ameliorated by regular hemodialysis. Systolic arterial pulmonary pressure did not improve during hemodialysis (33.6 +/- 9.1 at the start of study, versus 31.4 +/-6.2 at 6 months).

Conclusion. In spite of regular hemodialysis the RV diastolic performance remains altered in patients with end stage renal failure. Also the arterial pulmonary hypertension was not influenced in these patients, in spite of hemodialysis.

ACUTE PULMONARY HYPERTENSION AFTER CHEMOTHERAPY WITH PACLITAXEL AND CISPLATIN. COULD SYSTEMIC CAPILLARY LEAK SYNDROME BE THE CULPRIT?

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Systemic capillary leak syndrome is a rare disorder characterized by recurrent attacks of increased capillary permeability and plasma extravagation, associating systemic arterial hypotension or even shock, generalized edema, hypoalbuminemia and hemoconcentration. The cause is unknown, FDA reported 33 cases of SCLS after the same treatment.

Case report. We present the case of a 67 y.o female patient, that underwent chemotherapy for ovarian cancer. She presented with dyspnea and swelling of the legs, symptoms developed gradually after the 3rd chemotherapy session with paclitaxel and cisplatin. At admission: BP 80/45 mmHg, HR 105/min, SaO2 87%, swelling of the legs and puffy eyes. ETT showed severe pulmonary hypertension ,a minor pericardial effusion, preserved systolic left ventricular function, normal left ventricular filling pressure. The previous echocardiography performed was normal. A CT angiogram excluded a pulmonary embolism but there was a bilateral pleural effusion. The patient had no previous history of COPD or asthma.

The blood work: increased Ntpro-BNP, hypoproteinemia, hypoalbuminemia, a slightly increased creatinine level, metabolic hypochloremic alkalosis,hypoxemia. She was treated with low doses of furosemide i.v and hydrocortisone, and a partial clinical improvement was seen after only 3 days. The echocardiography performed after 1 week showed only a minor pulmonary hypertension , no pericardial effusion and a reduction of the pleural effusion.

Comments. SCLS is a possible culprit because the pressure in the pulmonary artery decreased after 1 week of treatment. Other arguments are hypoalbuminemia and the remission of the pulmonary hypertension, the visceral effusions and the edema, after treatment with cortisone and beta 2-agonists, treatment also recommended by a few studies in the literature.

THE CORRELATION BETWEEN SERUM THYROGLOBULIN AND CIRCULATING TUMOR CELLS IN FOLLICULAR THYROID CARCINOMA

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Introduction. Thyroid cancer is a disease with a good prognostic and high survival rates, but having a marked growth of incidence all over the world in the last years. This entails looking for new prognostic factors that help in the diagnosis and correct treatment of this pathology. Analysis of circulating tumor cells (CTC) in patients with different malignancies is nowadays a new research tool, which can improve the diagnosis and prevent the metastatic disease. Serum thyroglobulin (Tg) measurement is also very important in monitoring differentiated thyroid carcinoma, especially as a marker of residual or recurrent disease after radical treatment.

This study compares the clinical significance of circulating tumor cells and blood thyroglobulin values, trying to establish a correlation between these two biomarkers. We expect to be directly proportional relationship between Tg and CTC levels.

Material and methods. We conducted a prospectively study of 26 patients with follicular thyroid carcinoma between May 2015 and October 2016. The average age is 47.8 years, with a maximum age of 77 years and a minimum of 22 years. Most patients are female – 84.6%. Venous blood was collected at one month postoperatively to determine the CTC level, but also to analyze the serum-Tg. For statistical analysis of the data we used Student's t-test, in SPSS.

Results. At half of patients were not detected circulating tumor cells in venous blood. The other patients had an average of 5 CTC/6 ml of blood. The average value of Tg in the patient group without CTC, was 68.7 ng/ml compared to 87.8 ng/ml in patients with CTC. Clinical association of these two factors revealed a P=0.84, demonstrating that there is no statistically significant correlation between the values of the two markers.

Conclusion. This study demonstrates that although the average value of serum-Tg is higher in patients with CTC, there was no statistically significant association between these two markers or any causal relationship.

THE ANALYSIS OF THE ADJUVANT BIOMARKERS IN THE DIAGNOSIS OF NEONATAL SEPSIS

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Introduction. Sepsis remains one of the main causes of morbidity and mortality in the neonatal population from developing countries. Despite advances in medicine, early and accurate diagnosis of neonatal sepsis remain a major challenge. The present study wants to reveal the relevance of TLR-2, TLR-4, IL-6 and TNF α as biomarker in diagnosis of early neonatal sepsis.

Material and methods. The study was performed on 33 newborns. The study group was represented by newborn with signs and symptoms suggestive of a systemic infection with requiring complete sepsis assessment and antibiotic treatment. The control group was represented by healthy newborns. We usually performed complete blood counts, C reactive protein (CRP), blood culture. Moreover, we also performed for this group interleukins 6 (IL-6), tumor necrosis factor (TNF-α) in the first and third day of life and Toll like receptors TLR-2 & TLR-4 only in the first day.

Results. The values that were compared for the two groups (sepsis versus control): TLR2(%): 42.5 versus 5.69 (p=0.00683) and TLR4(%): 2.20 versus 0.67 (p=0.0372). In the first day the means of TNF and IL-6 were higher in study group vs control, but no statistically significant difference. On the 1st day, in the study group, it was found an inverse relationship between the amount of IL 6 and WBC with a Spearman correlation coefficient of p =-0.475. Il6 also tends to increase when TLR 2 decreases with p = -0.153IL 6 has an inverse proportion to TLR 2 with p = -0.153. TLR2 and TLR4 correlation is positive, both are increasing during clinical sepsis. Proportionality of the correlations and Spearman coefficients tendency are kept in a third day of life too.

Conclusions. As a main conclusion we would like to emphasize that IL 6 has an inverse proportion to TLR 2. Afterwards TLR2 and TLR4 are increasing during clinical sepsis and also might be promising markers of neonatal sepsis.

RESPIRATORY DISTRESS MANAGEMENT AND OUTCOME IN PREMATURE NEONATES BELOW 28 WEEKS OF GESTATION

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Introduction. The RDS treatment with Surfactant in preterm neonates is clearly established by the guidelines. It is recommended the INSURE technique which will have less long term complications.

Aim. In the current study was done an analysis of mortality and morbidity in extremely preterm neonates- below 28 weeks of gestation. They were treated for RDS with single or multiple dose of surfactant at different postnatal ages.

Material and methods. We done a retrospective study in Neonatology I , Cluj, County Emergency Hospital between January 2014-December 2015.

In study group were enrolled preterm neonates below 28 weeks of gestation inborn and outborn as well.

We analyzed the age at surfactant treatment, number of doses, length of mechanical ventilation after the surfactant, CPAP duration. Also we evaluated the incidence of different pathologies and mortality rate of the study group.

Results. In the study group were included 36 preterm neonates with an average gestational age of 26,13 and weight 868,86 g. From the study group 19 patient were inborn and 17 were outborn. The age at surfactant administration was 1.57 hour at inborns and 19.66 hours at outborns.

Mechanical ventilation was used after surfactant at 24 (67%) patients and 6 (16.6%) patients needed HFO. For 5 patients a second dose of surfactant was given. The INSURE technique was successfully applied in patients with gestational age of 27-28 weeks. At lower gestational age the INSURE technique wasn't applied due to the poor outcome. At 14 patients we had PDA and 7 received iv treatment for PDA closure. At one case surgical treatment was applied after the nonresponsive iv treatment of PDA.

Conclusion. The surfactant treatment was given significantly earlier for inborns than outborns. INSURE technique was applied successful for preterms of study group with gestational of 27-28 weeks.

ALCOHOLISM AND PSYCHIATRIC COMORBIDITIES – A CASE REPORT

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Introduction. Alcohol use disorder is an important public health issue, causing significant morbidity. Personality disorders, resulting from genetic, environmental and developmental factors, generate a persistent dysfunctional behavior affecting every aspect of an individual's life. They create a frame for all the other psychiatric conditions because of the maladaptive and rigid traits that produce functional impairment.

Material and methods. The authors present the case of a 53 years old man, who had a diagnosis of alcoholism. The admission was due to depressed and, sometimes, irritable mood, emptiness, hopelessness, worthlessness, guilt, tearfulness, loss of interest and pleasure, decreased appetite, fatigue, insomnia, diminished ability to think or concentrate and recurrent suicidal ideation with a specific plan, but without an attempt, that started a few months earlier, but persisted in spite of being abstinent for 3 weeks, orientating to a depressive episode. The Hamilton Depression Rating Scale showed moderate depression, with a score of 20. He was socially withdrawn because of extreme sensitivity to rejection and criticism. The SCID II interview showed a dependent personality disorder with avoidant elements combined with emotionally unstable personality disorder. Taking into account the above mentioned comorbidities, he received a TCA, a SSRI, a mood stabilizer and benzodiazepines. His symptoms improved and he was discharged with a diagnosis of mild depression.

Results. Since the affective symptoms first appeared while drinking, and persisted after the patient became abstinent, the depressive disorder was not due to alcohol use or withdrawal.

Conclusion. A dual diagnosis generally implies a worse response to treatment, but when a psychiatric disorder develops on top of a personality disorder diagnosis, the patient's outcome is even more severe.

THE METABOLIC AND INFLAMMATORY SYNDROMES IN CHILD AND ADOLESCENT PSYCHIATRY

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Introduction. The metabolic effects of antipsychotics in the treatment of psychiatric disorders are well known, although the etiology is not yet fully defined. In the same time, it is known that the changes that appear in adipocytes lead to a hypersecretion of immunomodulatory factors, which, in turn, leads to a chronic subacute inflammatory syndrome.

Objective. The purpose of this paper is to evidence the way in which the metabolic and inflammatory syndromes manifest in children and adolescents treated with antipsychotics.

Method. The presentation is a review of the most recent data in literature.

Discussion. The prevalence of the metabolic syndrome in the treatment with different antipsychotics is evidenced in numerous studies, being represented by abdominal obesity, hypertriglyceridemia, hyperglycemia and hypertension. The adipose tissue is known to be an immune organ which transmits inflammatory signals that can cause resistance to insulin. The effects of antipsychotic treatment can manifest early in children and adolescents, even in the first three months of treatment. Despite all of this, there are few studies that take into consideration the correlation between these two syndromes in child and adolescent psychiatry, for naïve patients.

Conclusions. The metabolic and inflammatory syndromes have an early onset in antipsychotic treatment, influencing numerous somatic disorders that can develop throughout one's life. This is why research of their mechanisms and early intervention are necessary.

THE ONE-YEAR MORTALITY PROGNOSIS IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION USING SERUM PARAOXONASE 1 ACTIVITIES

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Introduction. The aim of the study was to evaluate the prognostic value of serum paraoxonase 1 (PON 1) activities (paraoxonase, arylesterase and lactonase) for one-year mortality in patients with acute myocardial infarction (MI).

Material and methods. We included in the study 75 patients (mean age 64.4±12.5 years; 33.3% women, n=25 and 66.7% men, n=50), who were diagnosed with acute MI using the criteria in place. All patients underwent coronarography. We determined the PON1 activities (paraoxonase, arylesterase and lactonase) by spectrophotometric methods in heparinized plasma. We did a one year follow-up and recorded the mortality.

Results. There were 14 (18.7%) deaths in our cohort. The paraoxonase activity level was higher in survivors (26.6 (18.0; 57.3) U/ml) than in deceased patients (16.8 (11; 46.2) U/ml) (p=0.1). The lactonase activity value was higher in survivors (27.5±8.2 μM/L) than in deceased patients (20.6±6.4 μM/L) (p=0.004). The arylesterase activity level was higher in survivors (13.9±4.2 U/ml) than in deceased patients (10.4±2.5 U/ml) (p=0.004). High arylesterase levels levels were associated with better survival at one year after a MI (hazard ratio (HR), 0.8 (95% CI 0.68-0.94; p=0.008). High lactonase levels were associated with better survival at one year after a MI (HR, 0.91 (95% CI 0.85-0.98; p=0.01). The mortality was not predicted by the type of infarction, type of intervention, or medication taken by the patients.

Conclusions. This study showed that patients with elevated values of PON1 lactonase and arylesterase activities were associated with a slightly better one-year survival rate following an acute MI.

OUTCOME OF CATHETER ABLATION FOR VENTRICULAR PREMATURE CONTRACTIONS IN THE REHABILITATION HOSPITAL CLUJ-NAPOCA

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Introduction. Our cardiology department is the only one in Cluj-Napoca where catheter ablation of premature ventricular contractions (PVC) can be performed, using a three-dimensional mapping system. PVCs that are refractory to antiarrhythmic drugs can be ablated with a catheter inserted inside the ventricles or outlflow tracts.

Material and methods. Twenty-six patients with symptomatic PVCs were referred to our department for PVC ablation between November 2010 and November 2016. The procedure was realized using radiofrequency ablation guided by either three dimensional mapping system Carto 3 or NAVX. Three of the patients had dilated cardiomyopathy with mild reduction of the ejection fraction due to tachycardiomyopathy.

Results. Most of the PVCs originated in the outflow tracts: RVOT or LVOT. We had no patients with PVCs from the conduction system or papillary muscle. The success rate was 70% with disappearance of tachycardiomyopathy in all 3 patients at 1 month follow-up.

Conclusion. Medications can be used to suppress PVCs and are often employed as the first-line option. Medical therapy is, however, limited by lack of efficacy for many patients. Catheter ablation is an effective treatment for patients with PVCs.

FAMILIAL FACTORS INVOLVED IN ADOLESCENT SUBSTANCE USE DISORDERS

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Introduction. The objective of the current study is to identify the familial factors that are involved in the onset and maintenance of substance use disorders.

Methods. 60 adolescents who admitted that they did drugs were compared with the control group, equivalent in terms of numbers, age, sex ratio, and

without drug use. We collected the following data: age at the moment of the study, organization of family, history of divorce in the family, parent working abroad, age at the beginning of drug use, group of friends, type of drugs used, associated tobacco use, existence of mental illness in the family, type of mental illness, drug use within the family, duration and frequency of drug use, role of drug use. The Parenting Stress Index (developed by Richard Abidin) was applied to the family. Percentage calculations and significance calculations were used in the statistical analysis.

Results. The average age for initiating drug use was 12.58 years for boys and 12.82 years for girls. Substance use has been admitted as being practiced for one year (40% of the users) or two years (35% of the users).

The Parenting Stress Index allowed making the following observations regarding the study group: fulfillment of parental tasks was difficult due to the child's inability to adapt to the physical or social environment, lack of emotional closeness between parent and child, real or perceived inability of the parent to observe and understand the child's feelings and needs ($p<0.05$).

Conclusions. Identifying the familial factors of adolescent substance use is crucial for successful prevention and intervention programs.

PERICENTRIC INVERSION OF CHROMOSOME 9: AN ABNORMAL PHENOTYPE – CASE REPORT

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Introduction. Pericentric inversion of chromosome 9 is considered a balanced structural anomaly. More often cited as a relatively common part of the normal human karyotype, this chromosomal rearrangement could correlate with infertility, abortions and different abnormal clinical conditions.

Materials and methods. A 5-month-old formula-fed infant was admitted to the Emergency Hospital for Children Cluj Napoca for poor feeding and loose stools. Physical examination revealed an underweight boy (under 5th percentile), with plagiocephaly, dysmorphic and low-set ears, hypertelorism, aquiline nose and micrognathia. The abnormal phenotype also contained: long limbs, arachnodactyly, pilonidal sinus and a systolic ejection murmur in the pulmonic area. Moreover, he was unresponsive to auditory stimuli.

Results. Laboratory investigations showed an increased alkaline phosphatase, immunoglobulin G deficiency and undigested fibers in the stool test. The ENT examination described a sensorineural hearing loss. Moreover, a patent foramen ovale was present on cardiac ultrasound and renal ultrasound identified mild left hydronephrosis. Lactose intolerance genetic test resulted in a heterozygous state. Based on the dysmorphic appearance and the karyotyping of peripheral, the case was classified as a pericentric inversion of chromosome 9 (p11q13). After adjusting the nutrition to formula without lactose, the growth-chart was positive.

Conclusions. Despite being categorized as a clinically insignificant variant to a cytogenetic finding, further research is still needed for the few cases where certain pathologies were associated with pericentric inversion of chromosome 9. Additional investigations of the breakpoint region are necessary to quantify the correlation between heteromorphisms and abnormal aberrations.

THE PROFILE OF NEW ONSET SYSTOLIC HEART FAILURE IN CLINICAL REHABILITATION HOSPITAL CLUJ-NAPOCA

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Background. Heart failure remains a leading concern in public health with its increasing prevalence and financial burden, despite major advances in the field of medication, device and surgical therapy.

Aim. Our study assessed the main features of new diagnosed systolic heart failure in patients admitted along 2014 in Cardiology Department of Clinical Rehabilitation Hospital.

Methods. Our study took into account the patients admitted in Clinical Rehabilitation Hospital between January 2014 and December 2014. The clinical, ultrasound and laboratory data were retrieved by medical chart review. New diagnosed heart failure was considered if the admitted patients had a history of heart failure shorter than 3 months.

Results. The study group consisted of 52 patients, 83% males, mean (±SD) age 61.05±12.4 years. The main etiology was ischemic heart disease (48%) followed by toxic (25%) and valvular heart disease (23%). The latter were more prevalent among women (p=0.006). The majority of the patients (73%) complained left ventricular failure phenomena but peripheral congestion (13%) and palpitations (39%) were also described; 65% of the patients were included in III rd NYHA class. The standard 12-leads rest ECG was abnormal in all patients. Mean LVEF was 35 5% and 80% of the patients had LVEF<35%. Pulmonary arterial hypertension was registered in 50% of the patients. Regarding therapy, loop diuretics were the most common medication (96%) together with mineralocorticoid receptor antagonists (60%), ACEIs (62%) and beta-blockers (52%). The cardiac electronic device therapy was applied in 30.7% of the patients.

Conclusion. Our patients with new diagnosed systolic heart failure had ischemic heart disease as main etiology, presented at hospital due to left ventricular failure, had an impaired LVEF and were treated with both medication and device therapy.

SVC FLOW ASSESMENT IN PREMATURES UNDER 32 WEEKS OF GESTATION IN THE FIRST 24 HOURS. CAN WE USE IT AS A PROGNOSTIC MARKER?

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Background. Infants identified to have low SBF, as indicated by low superior vena cava flow (SVC) have higher risk of mortality and morbidity.

Aims. The study aim to evaluate the potential role of SVC flow in premature babies below or equal 32 weeks performed in the first day of life with early morbidity.

Material and methods. 29 preterm babies with a gestational age below 32 weeks were enrolled, as part of the NEO-CIRC clinical trials preparation. We noted: Apgar score, the necessity of resuscitation in the delivery room, BP, MBP, HR, CRT; laboratory findings such as: pH, EB, PaO2/FiO2, lactate, and transfontanellar ultrasound with IR and Echocardiography for SVC flow. SVC flow was determined after protocol used in Neo-Circ consortium, using a VIVID 5–GEultra sound machine using probe 8Hz for the head and 12 Hz for the heart. Informed consent was obtain from each patient. The statistical analysis was done with IBM SPSS version 23.

Results. Demographic parameters are: BW =1050±508.71 g; HC=26.71±2.71 cm, GA=28.24±2.9 weeks. Tranfontanellar ultrasound and echocardiography was performed at 13.98±9.37 h of life. SVC flow value=78.18±39.79 ml/kg/min. We found significant correlation of the SVC flow with base excess (BE) (p=0,041). We find a high value on HFO (120.89±19.71 ml/kg/min) then them on conventional ventilation (69.63±37.39 ml/kg/min) (p=0.037). Moderate corelation of the paO2/FiO2 with SVC flow (p=0.03) was found. Cerebral hemorrhage has correlation with the value of SVC flow. Cerebral IR and death were correlated with SVC flow.

Conclusions.

1. The value of SVC flow is correlated with the value of base excess.
2. SVC flow has significant variability depending on the babies type of respiratory support.
3. The value of SVC flow can be use like a prognostic marker for cerebral hemorrhage and death.

Acknowledgment. This work was supported by FP7; HEALTH-2011.4.2-1 Project Number 282533 Dobutamine for NEOnatal CIRCulatory failure defined by novel biomarkers.

VOICE-RELATED QUALITY OF LIFE AND NEXT GENERATION OF VOCAL ASSISTIVE TECHNOLOGIES

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Introduction. Identify the needs should be addressed by new vocal assistive technologies for aphonic patients with SWARA, a new system to communicate with others without the fear of being rejected or poorly-understood.

Materials and methods. A prospective study on two samples of patients with total laryngectomy and submitted to speech therapy. Voice Handicap Index (VHI) questionnaires and qualitative (focus-groups) and quantitative (online surveys) methods were used. The answer to these inquiries were addressed in three steps: 1) in depth interviews to identify the most stringent requirements; 2) several focus group to explore additional issues that should be targeted; 3) an online survey. Additional data coming from caregivers was collected through focus groups and survey.

Results. The VHI total revealed the esophageal and electrolarynx speakers had a moderate voice handicap. Results for focus-group and online survey focused on their needs and requirements regarding vocal assistive methods pointed out that the majority of the patients that were using a vocal assistive method indicated that they are at least to some extend satisfied with it. Interview and survey data indicated that these patients have many needs which are unmet by available rehabilitation methods. The patients reported that users are somewhat more interested in using a phone-based assistive method that integrates real time lip-reading, rather than the other option. However, both methods - text-to-speech voice synthesis and real time lip-reading- received average ratings that were close to the level indicating at least some level of interest.

Conclusions. These results pointed out the necessity to develop better technologies that could increase the quality of life of laryngectomized patients. Both interfaces proposed by the SWARA could cover at least some of the requirements.

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THE ASSOCIATION BETWEEN INTERLEUKIN-10 (IL-10) -592C/A, -819T/C, -1082G/A PROMOTER POLYMORPHISMS AND ENDOMETRIOSIS

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Introduction. Endometriosis has an incidence reaching up to 50% in infertile women. Cytokine-mediated immune responses seem to play an important role in endometriosis pathogenesis, but still the etiology and pathophysiology remain unclear. In the current study we tried to investigate whether there is a relationship between IL-10 genetic polymorphism, serum levels of IL-10 and the presence of advanced endometriosis

Material and methods. The presence of IL-10 592C/A, 819T/C, 1082G/A promoter polymorphisms and IL-10 serum levels were investigated in advanced endometriosis patients compared to healthy controls. Genomic DNA was extracted from peripheral blood leukocytes and further analyzed by PCR.

Results. IL-10 serum levels were significantly higher in endometriosis group compared to controls (1.48, 0.68, $p<0.001$). We observed a significant association between IL-10 592C/C and 819C/C genotypes, presence of C alleles and an increased risk of endometriosis. No difference was observed in IL-10 serum levels corresponding to different alleles or genotypes.

Conclusion. Our results suggest that IL-10 592A/C and 819T/C promoter polymorphisms confer susceptibility to endometriosis. No associations were found between the IL-10 1082A/G polymorphism and susceptibility to endometriosis.

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OUTCOMES OF MENISCAL REPAIR IN CONJUNCTION WITH ACL RECONSTRUCTION

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Introduction. Preservation of the menisci is crucial for long term knee health. However failure rate after meniscus repair is still an issue. The aim of this study was to evaluate the results after meniscus repair in conjunction with ACL reconstruction

Materials and methods. A retrospective study was conducted in our department that included patients with ACL reconstruction and meniscus repair performed between 2013 and 2015. Every patient was called for follow-up and, after signing informed consent, was evaluated by clinical examination including anterior drawer, Lachman and pivot shift testing, Lysholm and Cincinnati knee scores. Clinical success for meniscus repair was defined as absence of joint-line tenderness, locking, swelling, and a negative McMurray test (Barret criteria). Other aspects were recorded, such as: meniscus affected, type of repair used, age of the patient, BMI and graft type.

Results. A total of 32 patients were identified, all operated by the same team. Of the 32 patients, 22 responded the request and came for the follow-up visit. There were 6 females and 16 men with a mean age of 29.3 years ranging from 18 to 46 years. BMI averaged 25.2 kg/m2 ranging from 20.2 to 37.6 kg/m2. Average follow-up period was 19.5 months, from 6 to 35 months. 10 patients had all-inside exclusive repair, 4 patients had outside-in repairs only and 8 patients had a combination of all-inside and outside-in repairs. 20 patients had medial meniscus repair and 2 patients had lateral meniscus repair. All patients had negative McMurray sign but 6 patients reported joint line tenderness. 17 patients scored excellent on the Lysholm score, 2 were rated good and 3 fair. On the Cincinnati score 18 were rated excellent and 4 good. There was 1 infection in our group.

Conclusion. Meniscus repair has excellent results in conjunction with ACL reconstruction and therefore should be performed whenever possible in order to prevent or minimize the risk of late osteoarthritis

PARS PLANA VITRECTOMY IN THE MANAGEMENT OF PSEUDOPHAKIC RETINAL DETACHMENT

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Introduction. This study aims to outline the role of pars plana vitrectomy (PPV) in the repair of pseudophakic retinal detachment (PRD).

Material and methods. We conducted a retrospective study including all the consecutive PRDs operated by PPV during 2 years (2013 and 2014). We analyzed the following parameters: gender and age distribution, the interval between PRD and PPV, myopia, the macula (on /off), the location, number and size of the retinal breaks, the preoperative and postoperative visual acuities. In order to find out whether these factors inluenced the outcome, defined by the retinal reattachment, we applied the Fisher exact test ($p<0.05$ significant).

Results. During 2 years, we operated 53 PRDs, representing 39% of all the rhegmatogenous retinal detachments in our practice. The patients' age was between 25 and 87 years (mean 62 years) and the male gender was predominant: 38 cases (72%). The interval between cataract surgery and PRD varied between 2 days and 19 years (mean 27.70 months) and the one between the PRD and PPV, between 2 days and 4 months (mean 18.40 days). Myopia was present in 9 cases (17%). We identified more than one retinal break in 19 cases (36%). Most of the breaks were medium and small (47 cases: 89%) and located in the superior half of the retina (34 cases: 64%). The macula was off in 25 cases (47%) and the preoperative visual acuity was below 1/10 in 47 cases (89%). We reached anatomical success (retinal reattachment) in 43 cases (81%). The postoperative visual acuity was ≥ 1/10 in 38 cases (72%). None of the factors influenced significantly the retinal reattachment rate ($p>0.05$). In 5 cases with complete retinal reattachment, but lack of visual acuity improvement, surgery was carried out more than 14 days from PRD's occurrence.

Conclusion. None of the factors influenced significantly the postoperative retinal reattachment rate in our series. Timing was important for the functional recovery of the cases with reattached retina.

THE TREATMENT OF FEMORAL NECK FRACTURES USING BIPOLAR ENDOPROSTHESIS

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Introduction. Fractures of the femoral neck in elderly patients secondary to osteoporosis are still a topic of discussion regarding the choice of optimal method of treatment. Hip hemiarthroplasty with bipolar prosthesis has theoretically a lower risk of acetabular erosion compared with unipolar monoblock prosthesis and the dual mobility head offers the possibility of higher hip range of motion and faster functional recovery of the patient.

The purpose of this paper was to evaluate of the safety and efficiency of hip hemiarthroplasty using bipolar endoprosthesis in the treatment of femoral neck fractures.

Material and methods. Authors retrospectively reviewed 17 patients with femoral neck fractures classified stages III or IV (Garden), hospitalized between January 2011 - December 2014, which benefited from partial hip arthroplasty using bipolar prosthesis. The mean age of patients was 82.7 years (69-100). The parameters analyzed were the duration of the surgical intervention, duration of hospitalization, immediate or late complications, functional recovery of gait and physical recovery. Average follow-up period was 6 months postoperatively (3-12 months). All patients followed the same rehabilitation protocol.

Results. The mean duration of surgery was 106 minutes. Functional recovery of gait was good, walking perimeter averaging 36 meters at discharge. Average length of hospitalization was 10.8 days. Postoperative complications encountered were an episode of dislocation of the prosthesis and a hematoma (drained surgically).

Conclusions. Hip hemiarthroplasty using bipolar endoprosthesis is a safe option, without major complications and provides a faster recovery of patients suffering a fracture of the femoral neck.

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THE DIRECT ANTERIOR APPROACH IN TOTAL HIP ARTHROPLASTY. IS IT A TRUE MUSCLE SPARING APPROACH DURING THE STEEP LEARNING CURVE?

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Background. Total hip arthroplasty (THA) performed through an anterior, minimally invasive approach has been promoted for its limited soft tissue damage, which can lead to lower pain levels and a quicker short-term recovery.

The primary aim of the study was to establish if the transition from a lateral approach (LA) to the direct anterior approach (DAA) for a low volume surgeon during the steep learning curve can be performed maintaining the muscle spearing quiddity of the DAA without increasing the complication rate.

Methods. In this controlled, prospective, randomized clinical study we enrolled 42 patients (21 direct anterior, 21 lateral) between February 2015 and June 2016 with similar demographics. All patients were prior diagnosed with end stage primary unilateral hip arthritis and received the same postoperative protocol. Serum markers determined were myoglobin, troponin, creatine kinase and lactate dehydrogenase. Complications were also recorded. Postoperative pain levels were assessed daily for the first week, and weekly for the first three months, using a Numerical Pain Distress Scale. Rescue medication consisted of 2 mg of morphine during the first 24 postoperative hours, with standardized analgesic protocol afterwards.

Results. Myoglobin levels were significantly lower in the DAA group (242.6±76.3 ng/mL vs. 311.8±91.87 ng/mL, p=0.012). Patients in the DAA group needed less rescue analgesia (3.42±3.29 mg morphine vs. 6.29±2.12 mg morphine, p=0.002) and had lower pain levels during the first week (2.8±1.7 vs. 4.2±1.7, p=0.012). During the last six weeks patients in the DAA group reported lower or no pain at all (0.25±0.41 vs. 1.15±1.15, p=0.0025). Complication rates and other serum marker levels did not differ between groups.

Conclusion. The DAA can be transitioned from the LA safely, without higher complication rates while maintaining its advantages in terms of soft tissue damage when performed by a low volume surgeon.

ADULT GRANULOSA CELL TUMOUR WITH A <10% COMPONENT OF FIBROTHECOMA OF THE OVARY: A RARE CASE REPORT

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Introduction. Granulosa cell tumors represent a rare type of ovarian cancer, which arises from sex–cord stromal cells. They account approximately 2-5% of all ovarian neoplasms and two distinct histological subtypes are described: adult type (95%) and juvenile type (5%). In comparison with epithelial ovarian cancers, GCTs have a favourable prognosis and are accompanied by features of hyperestrogenism. The optimal treatment is total abdominal histerectomy with bilateral salpingooophorectomy. In advanced stages, adjuvant chemotherapy must be associated to radical surgery. Follow up is recommended for all patients due to the high rate of recurrence (25% in the first 5 years).

Case presentation. A 67 years old woman presented with diffuse abdominal pain and constipation. At the general examination,the patient presented a very large tumour in the abdominal and pelvic levels, painless, relatively mobile and firm. Ultrasound and CT of the abdomen and pelvis revealed a large parenchymatous tumour, that occupies almost the whole inferior part of the abdomen, with regulated shape and heterogenous caption of the contrast substance and a large area of necrosis in the center of it. It compresses the liver and the retroperitoneal structures. The tumor has a tissular structure in left side of the pelvic area, without any area of necrosis, which raises a suspicion of a left ovarian origin. Biologically, only CA125 marker was elevated. As a result, the patient underwent surgery. The surgical attitude in this case was: resection of the tumour, total abdominal histerectomy with unilateral salpingooophorectomy, apendicectomy, colecistectomy and the surgical cure of the hernia. The final diagnostic was: the histological aspect pleads for an adult granulosa cell tumour with a <10% component of fibrothecoma of the left ovary with a weight of 12.9 kilos.

Conclusions. We conclude that AGCT, a rare pathology, can occur at any age and should be included in the differential diagnosis of patients with large abdominal tumours.

PARASITIC THYROID NODULE: A RARE CASE REPORT

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Introduction. Parasitic nodule is a very rare thyroid nodule located in the lateral neck, outside the thyroid, still in the same fascial plane, having similar histology as the normal thyroid gland. This nodule's blood supply can come from the surrounding tissues or from the thyroid gland, but having no relationship with the lymphatic circulation. Although very rare, parasitic thyroid nodules can easily lead to mistaken diagnosis, such as lymph node metastasis of thyroid carcinoma.

Case presentation. A 45-year-old woman with medical history of pituitary adenoma treated with cabergoline presented with discomfort in throat and neck with strangling sensations and fatigability. Her thyroid function was normal. Ultrasonography examination showed 4 small hypoechogenic nodules in the right thyroid lobe, the biggest measuring 7.5 mm in diameter; in the left thyroid lobe, apparently extracapsulary, a well-defined non-homogenic nodule measuring 4.15/5.5 cm with perinodular and intranodular vascularization. Computed tomography scan revealed a non-homogenous tumoral mass with microcalcifications to the lower part of left thyroid lobe and superior mediastinum. Fine needle aspiration from this tumoral mass was performed, cytologic findings indicating a possible follicular neoplasm (Bethesda IV). As a result, the patient underwent surgery. A total thyroidectomy and excision of extracapsulary nodule were performed. Despite the suspicion of thyroid neoplasia, cervical lymph node dissection wasn't performed due to the negative extemporaneous histopathological examination of the suspicious nodule. The final diagnosis revealed one parasitic nodule and multinodular goitre with accidentally discovered papillary microcarcinoma in the right lobe.

Conclusion. We conclude that parasitic thyroid nodules should always be included in the differential diagnosis of patients with neck tumors in order to avoid false diagnosis and performing inappropriate surgery.

ALL IS LOST?

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Introduction. Aortic complications after cardiac surgery remain a big challenge for the cardiac surgeon.

Case presentation. We present the case of a 67 year old male operated in our clinic with aortic valve replacement with a biological prosthesis. The short term postoperative evolution was uneventful. 11 days after being discharged he was admitted in another medical service for pre-sternal wound complications. Despite being microbiological sterile and despite proper wound care there was no tendency of healing. He was then admitted in our service. A routine heart ultrasound revealed a giant pseudo-aneurysm of the ascending aorta. Emergency surgery was undertaken. With the aid of cardio-pulmonary by-pass, a beating heart repair of the aortic wall tear was performed. The microbiological assay again revealed no identifiable germs. The evolution was again uneventful, with normal post-op angio-CT and ultrasound. 38 days after the second procedure, the patient in again admitted to our service with pre-sternal wound complications. An angio-CT is performed which reveals a second pseudo-aneurysm of the ascending aorta 3 cm proximally from the first one, this time with a larger aortic tear. A third emergency intervention in performed, this time in total hypothermic arrest with patch reconstruction of the ascending aorta. The evolution this time was more difficult the patient presenting transient neurological disorders. 5 weeks after surgery he is on his way to a full recovery.

Conclusions. In conclusion, in cardiac surgery, one should never give up, because nothing is ever lost!

FEMURO-FEMORAL BYPASS WITH AN INFRASCROTAL, PERINEAL APPROACH FOR ARTERIAL GRAFT INFECTION OF THE SCARPA REGION

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Introduction. Although major development in the last 2 decades in the field of endovascular techniques and conventional surgery including major breakthrough in graft technology, about 1.3 to 6% of patients with aortofemural bypass surgery may have an infection in the early and late postoperative period. In the event of an infection of the graft, the surgeon must immediately excise the infected leg of the prosthesis followed by immediate revascularization of the affected leg especially if the original indication of surgery was critical ischemia.

Case presentation. We described in this article the technique of revascularization in a patient with infection of the lower femoral anastomosis, in the Scarpa triangle, of an aortofemoral bypass vascular graft. This technique consists of a femuro-femoral bypass crossed with perineal scrotal under-tunneling away from the Scarpa infection that conventional cross pubic femuro-femoral bypass does not allow. We reported a case of a male patient age 66, hypertensive, past heavy smoker, with multiple interventions on a left Aortofemoral bypass which was performed in our surgical department in 2014 and in the last admission presents a periprosthetic collection on the distal anastomosis and on which we performed a femuro-femoral profunda bypass through the perineal subcutaneous space away from infection site, post interventional evolution was good, on discharge the patient was fully recovered, compensated circulatory blood flow in lower legs with the trans perineal bypass permeable. Femuro-femoral bypass with an infrascrotal perineal approach is exceptionally used, but can be a real therapeutic option for revascularization in patients with arterial graft periprosthetic infection limited to the Scarpa region.

Conclusion. The femoral-femoral bypass perineal sub-scotal is interesting revascularization technique and should be considered in the case of an infection in the Scarpa region.

PARTIAL ATRIOVENTRICULAR CANAL DEFECT WITH DOUBLE ORIFICE MITRAL VALVE - A CASE REPORT

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Introduction. Atrioventricular canal defects (CAVC) refers to a spectrum of cardiac abnormalities involving the atrial and ventricular septum, combined with anomalous features of the atrioventricular valves.

Case presentation. We report a case of a 15 month old patient, presenting with partial CAVC (ostium primum atrial septal defect combined with mitral valve cleft), double-orifice mitral valve and tricuspid valve insufficiency.

The patient was diagnosed at birth with partial CAVC and had trimestrial follow-ups. His mother does not describe signs and symptoms of heart failure, inadequate weight gain, poor feeding or frequent respiratory tract infections.

He presented for elective surgery and we performed mitral valve plasty with closure of the auxiliary orifice, atrial septal defect closure with bovine pericardial patch and DeVega tricuspid valvuloplasty.

His postoperative course was uneventful and 3rd day postoperative cardiac ultrasound revealed minor mitral and tricuspid regurgitation with no hemodynamic significance. The one month follow-up unveiled no relevant changes.

Conclusion. We conclude that both the timing and surgical techniques used in this patient proved to be successful.

AORTIC VALVE ENDOCARDITIS WITH SEVERE LOCAL COMPLICATIONS – A SURGICAL CHALLENGE

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Introduction. Infective endocarditis (IE) remains a cardiac pathology associated with high morbidity and mortality and, furthermore, a major challenge for the cardiac surgeon.

Case presentation. We present the case of a 42-year-old male patient, diagnosed with aortic valve infective endocarditis and high suspicion of periannular complications. The transesophageal echocardiography revealed a circular aortic root abscess. The patient was urgently referred for surgery due to the rapid deterioration of the hemodynamic status. The intraoperative inspection of the aortic valve revealed a vegetation on the right coronary commissure, and a giant abscess with a fistula opened into the right ventricle, a large communication bsetween the left and the right ventricle. We performed ventricular septal defect closure plus a valved conduit was used to replace the aortic root. The re-implantation of the coronary ostia into the tubular graft was technically not possible so a triple coronary bypass with saphenous vein was performed. The overall postoperative course of the patient was uneventful.

Conclusions. The complete and accurate preoperative diagnosis in infectious endocarditis and their optimal surgical corrections remain challenging.

FREE TISSUE TRANSFER IN LOWER LEG RECONSTRUCTION

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Introduction. Lower leg tissue defects still represent a challenge in reconstructive surgery, although the technical pallette is getting wider, varying from skin grafting to free tissue transfer. Especially in the lower third of the leg, free flaps continue to remain gold standard in defect coverage.

Therefore, the aim of this study is to evaluate microvascular free tissue transfer in extensive lower leg defects, in patients admitted to our service, depending on the ethiology, size, location of the defect, and associated comorbidities.

Matherial and methods. A 10-year retrospective study (2005-2015), in a selected group of patients undergone free tissue transfer in the lower leg, following decision of choice and postoperative evolution, taking in consideration patient comorbidities, with impact on the healing process, and eventual complications that needed reintervention.

Results. A number of 24 free flaps were performed in 23 patients, out of which 14 latissimus dorsi free flaps, 6 gracilis free muscle flaps, 2 serratus anterior free flaps with rib, 2 antero-lateral thigh free flaps.

Mean age was 37.69 (range from 10 to 75), with male predominancy, almost equal urban-rural provenience (12/11), etiological factors (18 acute cases, 5 chronic cases), comorbidities (1 acute case with diabetes), mean defect size (119.63 sqcm), with mostly uneventful postoperative evolution, although in a number of cases surgical reintervention was necessary.

Conclusions. Although perforator flaps are showing an uprising tendency in modern reconstructive surgery, they are not able to replace free flaps in cases of extensive distal lower leg defects, thus free flaps remain gold standard in these cases.

Recipient vessel status is indispensable in successful outcome of free tissue transfer.

Surgeon's experience reduces donor site morbidity, postoperative complications and improves functional and aesthetic outcome.

MAJOR WRIST TRAUMA IN VOLAR LACERATION

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Introduction. Lacerations in the distal volar forearm, also known as spaghetti wrist injuries, can be placed among the most severe disabling injuries, including various definitions. Studies on larger populations might come in aid of rehabilitation strategies.

The aim of this study is to analyze the local epidemiological data in order to compare the prognostic implications and facilitate the establishment of a rehabilitation pattern for major wrist trauma.

Material and methods. We performed a 10-year retrospective study including 34 patients who suffered laceration in the distal volar forearm with minimum 10 lesions and the absolute requirement of at least one nerve lesion, excluding distal forearm amputations, in order to perform a review of the epidemiological data.

Results. All of the lesions were caused by accidental trauma, the most frequent mechanism being glass laceration (53%) while others included laceration with an electric object (44%) and porcelain wounds (3%). Few cases included work injuries, while most of the accidents happened during household activities. Microneurorhaphy was performed in all cases, most frequently both median and ulnar nerves being injured. Associated vascular lesions were present in 32 cases.

Conclusions. Our experience with optimal undelayed nerve repairs, all in one reconstruction and early mobilization proved to have satisfactory results in recovering motor and sensitive function.

A CASE OF COLORECTAL CANCER IN PREGNANCY

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The authors present a case of a pregnant woman suffering from colorectal cancer in order to contribute to the knowledge regarding this situation and to optimize its management. Rectal cancer in pregnancy is a rare disease, challenging clinicians as there are no generally accepted guidelines regarding diagnosis or treatment. Early diagnosis remains to be the key. When the disease is particularly aggressive, the prognosis remains poor despite pregnancy cessation and radical therapy.

TRIPLE EPITHELIAL MALIGNANCY IN A SINGLE YOUNG MALE PATIENT - CLINICAL AND PROGNOSTIC ISSUES

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Introduction. We present a case report of a male patient who has been diagnosed by the age of 46 with three different malignancies: a rectal adenocarcinoma, a duodenal adenocarcinoma and a hydradenocarcinoma (eccrine sweat gland malignancy).

Case report. At age 41, the patient has been diagnosed with upper rectal adenocarcinoma. He underwent external neoadjuvant radiotherapy (Stockholm protocol), followed by anterior resection. The pathology exam showed a ypT4aN2bM0L1V0 rectal adenocarcinoma, stage IIIC according to TNM staging. The postoperative outcome was favorable. Subsequently, the patient received adjuvant chemotherapy (XELOX – 8 cycles) with favorable therapeutic outcome.

Four years and three months after, the patient has been diagnosed with a duodenal adenocarcinoma. He underwent a pancreato-duodenectomy (Whipple procedure) and a feeding jejunostomy. The pathology exam showed a pT3N0M0 duodenal adenocarcinoma, stage IIA according to TNM staging. The postoperative outcome was favorable. Subsequently, the patient started adjuvant chemotherapy (GEMOX). He received only one cycle, then refused continuation of chemotherapy regimen because of metabolic toxicity. Three months ago, the patient was admitted for a right axillary skin tumour. The lesion was 2 cm long, 1 cm wide and ulcerated. A wide excision of tumor was performed. The pathology exam showed a pT2N0M0 hydradenocarcinoma (eccrine sweat gland malignancy), stage II according to TNM staging.

Conclusion. The young age of the patient and the occurrence of multiple digestive malignancies (without having a history of familial adenomatous polyposis) raise the suspicion of a Lynch syndrome. Only targeted genetic testing can confirm this diagnostic. Despite his early-stage diagnosis, hydradenocarcinoma is associated with the poorest prognosis.

SINGLE INSTITUTION EXPERIENCE REGARDING DOUBLE-BARRELED WET COLOSTOMY VERSUS ILEAL CONDUIT FOR URINARY AND FECAL DIVERSION AFTER PELVIC EXENTERATIONS

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Introduction. The aim of this study was to compare the feasibility and postoperative outcomes between double-barreled wet colostomy (DBWC) and separate urinary and fecal diversion (SUD) after pelvic exenterations for locally advanced cancers.

Patients and method. Patients with pelvic exenterations were divided into two groups, depending on the technique applied for fecal and urinary reconstruction. The first group consisted of patients undergoing SUD and the second of patients with DBWC. We analyzed median length of stay, median operating times for fecal and urinary reconstruction, postoperative morbidity directly related to complications of urinary and fecal diversions and perioperative mortality. We also analyzed the metabolic changes after different urinary diversions.

Results. Between 1998-2015 we performed pelvic exenterations on 110 patients. In 81 patients a urinary diversion was necessary after anterior (AE) or total pelvic exenteration (TPE). 74 (91%) of the 81 patients had a simultaneous urinary and fecal diversion due to TPE. 60 (81%) patients had a DBWC and 14 (19%) a SUD. Anterior exenteration was performed in 7 (9%) patients, with 5 patients getting an ileal urinary conduit (Bricker) and 2 a colon conduit. Median length of stay was shorter in the DBWC group (12.8 vs. 20.1 days). Median operating times for the reconstructions were also shorter in the DBWC patients compared to the SUD ones (37 vs. 65 minutes). The morbidity was lower for the DBWC. There were no perioperative deaths. No significant differences were observed regarding acid-based balance, serum electrolytes and renal function between ileal/colon urinary conduit and DBWC groups.

Conclusions. DBWC is a safe, fast and simple alternative to traditional ileal conduit and terminal colostomy diversion after total pelvic exenteration.

THE IMPACT OF DIZZINESS ON LIFE QUALITY OF ELDERLY PATIENTS WITH VESTIBULAR DISORDERS AND THEIR CAREGIVERS

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Introduction. The aim of this study was to test the impact of dizziness in the quality of life of the patients and their family members, to propose a system of signalization for the relatives, in order to increase the quality of life of the patients' family members, avoiding psychosocial problems such as decreased social distance for the patient and the family caring for the patient.

Material and methods. Sixty chronic vestibular outpatients aged over 65 years who had been seen at the ENT Department of Cluj-Napoca University Hospital between January 2014 and December 2015 were included in the study. The patients answered two questionnaires: The Vestibular Activities of Daily Living Scale (VADL) [13] and the Handicap Inventory (DHI) [14].

Additionally, for each patient, a family member was asked to fill in a questionnaire consisting of 10 questions regarding their status concerning the patient health.

Results.

VADL

From all daily activities performed by the patients, the easiest ones were intimate activity (1.85) and easy household activities (1.89), while reaching the top (mean 3.95), walking on an unsteady surface (mean 3.92) were the most difficult ones (Fig. 2).

DHI

Emotionally, the most affecting feeling among our patients was frustration. Functionally, patients were mostly affected while reading (mean 2.2) and being at high altitude (mean 2.13). Physically, our patients were most affected by quick movements of the head (mean 2.53).

The responses of the caregivers for 28 out of 60 patients, who were living alone, revealed that the majority of them (89.2%) have considered very useful the purchasing of a signaling device.

Conclusion. Our system, using the GSM network will be a very useful tool for increasing the safety of the elderly suffering from chronic vestibular disorders. The cost for a month will not be higher than a regular visit to the doctor.

LAPAROSCOPY AS A PRETHERAPEUTIC APPROACH FOR PERITONEAL SURFACE MALIGNANCIES

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The role of Diagnostic Laparoscopy (DL) had to be reviewed after the introduction of the new therapeutic approach of Peritoneal Surface Malignancies (PSM). Our previous studies assessed the impact of DL to avoid the pure Explorative Laparotomies (EL), in the era of palliative treatment of PSM. Our objective was the precise selection of patients for the dedicated treatment of PSM with Cytoreductive Surgery and systemic Chemotherapy. Patients with PSM referred to CF Clinical Hospital Cluj-Napoca were included prospectively in the study between January 2012 and December 2015. Preoperative evaluation included mainly MDCT and DL in patients deemed amenable to dedicated treatment. The results of MDCT and DL were assessed by EL. DL was performed as a separate procedure from a planned radical treatment, if indicated. In the period, from 110 patients selected by MDCT, 87 patients completed radical treatment. 82 (75%) underwent pretherapeutic DL, successful in all patients. The laparoscopic evaluation excluded 18 patients (22%) to radical treatment because of extensive disease (small bowel involvement, hepatic metastases) and PSM absence. Of 28 patients who were not eligible for laparoscopic evaluation and were subjected to EL, 23 (82%) completed the radical treatment. There was a significant correlation between the SL and EL findings (correlation coefficients 0.9133). Related to the EL, the accuracy of the SL (100%) was significantly higher ($p<0.05$) than MDCT (79%), to indicate the eligibility of the patients for radical treatment. Laparoscopy was uneventful and associated with no deaths. The mean SL time was 39 minute (standard deviation 9; range 20-55) and hospitalization 2.3 days (standard deviation 0.4; range 2-3). Diagnostic laparoscopy represents a valuable tool in preoperative assessment of PSM, and acts as a Staging Laparoscopy. It improved patient selection for the radical treatment and it must be included in decision algorithms for synchronous PSM.

SYNTHETIC RECEPTORS FOR THE ELECTROCHEMICAL SENSING OF DOPAMINE

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Introduction. Synthetic receptors attracted increasing attention in recent years for sensor development due to the ease and cost-effectiveness of their fabrication, and the superior stability in harsh environments compared to their biological analogues. The present study aims at developing sensitive and selective electrochemical sensors applied for the detection of dopamine (DA) by using aptamers and molecularly imprinted polymers as selective synthetic recognition elements.

Materials and methods. Molecularly imprinted polymers were fabricated onto the electrodes by electropolymerization of p-aminothiophenol in the presence of DA as template molecule, to generate specific cavities for its recognition. Thiolated aptamers specific for DA were immobilized onto gold nanostructured electrode to capture DA from samples.

Results. CVs performed in the presence of [Fe(CN)6]3-/4- at the MIP sensor showed that cavities specific for DA were imprinted in the polymeric film. EIS measurements recorded for the characterization of the aptasensor proved its ability for DA binding. The formation of a nanostructured gold platform increased the catalytic surface and the amount of bound aptamers.

Conclusion. This work provides a foundation for developing simple, rapid and easy to use platforms for future analytical devices capable to detect various neuromediators in biological samples.

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GOLD/POLYPYRROLE NANOPARTICLES-BASED PLATFORM FOR ELECTROCHEMICAL DETECTION OF SEROTONIN

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Introduction. Serotonin is an important compound with clinical implications, therefore, its selective and sensitive quantification is of great importance. The elaboration of new electrochemical sensor based on screen printed electrode modified with a nanocomposite material obtained after electrochemical generation of polypyrrole/gold nanoparticles (Ppy/AuNPs) is presented herein, the sensor being applied for the selective determination of serotonin using square wave voltammetry (SWV).

Material and methods. The electrochemical measurements were performed with on graphite-based screen printed electrodes. Electrochemical impedance spectroscopy (EIS), cyclic voltammetry (CV), SWV, multipulse amperometry, atomic force microscopy (AFM) and scanning electron microscopy (SEM) measurements were performed in order to characterize and test the elaborated sensor.

Results. SEM and AFM experiments reveal the NPs formation, the morphology and topography of the nanostructured electrode surface after each step of elaboration. Both techniques underlined the uniform coverage of the electrode surface with nanoparticles. The polymerization protocol allowed the synthesis of PpyNPs instead of a continuous film with smaller active surface. The charge transfer resistance variation revealed from EIS confirmed the results. The SWV measurements showed a linear increase of the intensity of the peak corresponding to serotonin oxidation with the increasing of concentration and a very low detection limit.

Conclusion. A nanocomposite platform based on polypyrrole and gold nanoparticles was developed and used for the sensitive and selective detection and quantification of serotonin. The developed sensor was also tested with promising results for the determination of serotonin in spiked serum samples.

Acknowledgement. The authors are grateful for the financial support from the Romanian National Authority for Scientific Research UEFISCDI for project no. PN-II-RU-TE-2014-4-0460.

ELECTROCHEMICAL SENSOR FOR DOPAMINE BASED ON ELECTROPOLYMERIZED MOLECULARLY IMPRINTED POLY AMINOTHIOPHENOL AND GOLD NANOPARTICLES

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Introduction. The molecularly imprinting technique is a versatile strategy for the fabrication of selective molecular recognition sites in synthetic polymers, with a wide range of applications. This strategy implies the polymerization of functional monomers in the presence of template molecules, their removal leading to the formation of sites complementary in size, shape and chemical functionality with this molecule. Dopamine is a neurotransmitter and its deficiency results in Parkinson's disease. A novel molecularly imprinted electrochemical sensor (MIPs) based on gold nanoparticles (AuNPs) immobilized on glassy carbon and graphite based screen-printed electrodes has been elaborated.

Materials and methods. The protocol implies one-step polymerization of p-aminothiophenol in the presence of dopamine and HAuCl4, preceded by the electrochemical generation of AuNPs onto the glassy carbon electrode and the self-assembling of the monomer monolayer through the S-Au bond.

Results. After the complete characterization and optimization by electrochemical impedance spectroscopy, cyclic voltammetry, atomic force microscopy and scanning electron microscopy, the molecularly imprinted sensor was tested differential pulse voltammetry and presented good sensitivity, selectivity and reproducibility for dopamine detection.

Conclusion. A novel biomimetic sensor based on AuNPs decorated MIP for the dopamine detection was elaborated. This strategy is very simple and versatile and can be adapted for a wide range of target molecules, from small ones to peptides, proteins and even cells. The polymeric films were successfully obtained both in the presence and absence of the template molecule, higher sensitivity and selectivity being obtained for the polymer imprinted with dopamine.

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TETRAZINES IN AQUEOUS SOLUTION. ELECTROCHEMICAL AND FLUORESCENT STUDIES

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Introduction. Tetrazines are six-membered aromatic heterocycles with four nitrogen atoms symmetrically arranged in the ring with a strong electron-deficient character. They present exceptional photophysical and electrochemical properties making these fluorophores attractive candidates for sensing applications.

Material and methods. Four tetrazines substituted by linear 2,3-naphtalimide antennas and/or adamantane groups were analyzed in organic and aqueous media by using cyclic voltammetry and fluorescence.

Results. The solubilization of these hydrophobic compounds in aqueous solutions was successfully achieved by using β-cyclodextrin (β-CD) and gold nanoparticles modified with β-CD. The formation of inclusion complexes between the tetrazine ring and/or the organic groups and the β-CD cavity allowed the study of both fluorescence and redox properties of the synthesized tetrazines in water.

Conclusion. The behavior of these supramolecular assemblies in aqueous solutions investigated by electrochemical and fluorescence methods highlighted the tetrazines solubilization and the maintenance of their emission.

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GRAPHENE BASED BIOSENSORS FOR DOPAMINE DETERMINATION

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Introduction. Graphene and cyclodextrins have attracted considerable interest in recent years due to their characteristic properties, thus promoting their broad use in electrochemical sensing and biosensing applications.

Material and methods. The glassy carbon electrode was modified with reduced graphene oxide (RGO), β-CD and polyethylenimine (PEI) by using layer by layer method. A new monomer of pyrrole modified with β-CD was synthesized and used for non-destructive functionalization of RGO. Both nanocomposites were characterized by electrochemical, spectral and microscopic techniques.

Results. The best results for the electrochemical behavior of dopamine were obtained with the GCE modified with single layers of RGO, β-CD and PEI. This nanoplatform was used to immobilize tyrosinase. Another approach using non-covalent modification of RGO was obtained by employing a new synthesized pyrrole derivative with a β-CD moiety: β-CD is involved in a better solubilization of graphene in aqueous medium as an efficient aqueous dispersant and pyrrole is responsible for generating an electropolymerized coating, both aspects being important for the graphene electrodeposition.

Conclusion. The first biosensor was applied for the dopamine determination in pharmaceutical products, serum and urine samples with good recoveries, enhanced sensitivity and good selectivity. The pyrrole-β-CD functionalized graphene was used in combination with an amphiphilic pyrrole derivative and tyrosinase for catechol and dopamine determination.

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DESIGN OF IMMOBILIZATION PLATFORMS FOR SENSORS USED IN PHARMACEUTICAL ANALYSIS

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Introduction. One of the key step stages in the development of biosensors is represented by the design of the immobilization platform, which requires a high stability in time, ease of fabrication, strong capability of retaining the bioelement close to the surface and accessibility of the target to the electrode.

Materials and methods. The first approach deals with the chemical reduction of graphene oxide (GO) in the presence of β-cyclodextrin and ascorbic acid. The GO sheets were embedded in conductive polymeric films together with tyrosinase for the selective detection of dopamine.

The selective detection of acetaminophen was achieved by modifying a graphite based screen-printed electrode with GO after the functionalization. The modified GO was layer-by-layer deposited onto electrodes and the obtained platform was used for antibody immobilization.

The third approach combines the molecular imprinting with gold nanoparticles (AuNPs) for the determination of several analytes.

Results. The use of tyrosinase allows the selective detection of dopamine from real samples.

The immunological reaction between an antibody immobilized on GO and its antigen was used for the detection of acetaminophen from several drug formulations and the analytical parameters were calculated.

The combination of molecular imprinting technique with AuNPs has spawned to sensitive and selective sensors for antibiotics, antineoplastic drugs and neurotransmitters, detection limits in the range of fM, being achieved.

Conclusion. Different strategies of sensors design have been exemplified with focus on several medicines from complex matrices in order to conclude that electrochemistry and electrochemical sensors could be regarded as specific and sensitive analytical tools for pharmaceutical analysis.

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NEW POLY(METHYLENE BLUE) FILMS FROM DEEP EUTECTIC SOLVENTS. CHARACTERIZATION AND APPLICATION FOR PHARMACEUTICAL SAMPLE ANALYSIS

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Introduction. Ionic liquids are organic liquid salts at room temperature, non-volatile, thermally and chemically stable, which may dissolve many organic, inorganic, and metallo-organic compounds due to their high polarity. Deep eutectic solvents (DESs) are a new class of "green" designer solvents being a viable alternative to the conventional metal/ imidazolium solvents, being cheap, easy to prepare and biodegradable compared to the costlier, synthetically tedious and non-biodegradable conventional ionic liquids.

Materials and methods. Poly(methylene blue) (MB) films have been synthesized from ethaline (choline: ethylene glycol) on glassy carbon electrodes. The procedure was optimized, by varying the electrochemical parameters as well as the polymerization solution composition and the optimized films were electrochemically characterized by cyclic voltammetry (CV) and electrochemical impedance spectroscopy. Electrochemical quartz crystal microbalance was used to quantify the deposited film and the polymerization mechanism, their morphology being characterized by scanning electron microscopy.

Results. Applications of the newly developed PMB modified electrodes will be presented, with emphasis in ascorbate (AA) and acetaminophen (APAP) quantification in pharmaceutical formulations.

Conclusion. Polymer films of poly(MB) have been successfully prepared on GCE by polymerization in deep eutectic solvents and characterized by electrochemical, electrogravimetric and microscopic techniques, results showing superior electrochemical and analytical properties compared to those obtained from aqueous solution. LOD of 18.6 μM for APAP and 3.6 μM for AA were calculated based on the calibration data and the performance of the sensor was tested on real samples with good recoveries close to 100%.

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ELECTROCHEMICAL APTASENSOR FOR THE DETECTION OF AMPICILLIN

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Introduction. The erroneous use of antibiotics for humans and animals has resulted in increased levels of exposure to antibiotics, with an increased number of allergies and in the development and spread of antibiotic resistance, a major health problem for the modern world, with many death caused by antibiotic-resistant bacteria. For these reasons, there is a need for developing new analytical sensors, capable to detect selectively low concentrations of antibiotics from different matrices. Ampicillin a β-lactam antibiotic, is a widely used antibiotic, due to its large spectrum of action. Aptamers, single stranded-DNA and RNA short chains, capable to bind specifically different types of molecules, are a suitable option for assuring a good selectivity and sensitivity to electrochemical analyses of antibiotics. The purpose of this study was to develop an electrochemical aptasensor for the detection of ampicillin from environmental and pharmaceutical samples.

Material and method. Two strategies of immobilization of the ampicillin-selective aptamer have been employed: glassy carbon electrode modified with the aptamer containing an amino and gold electrode with the aptamer containing a thiol group.

Results. The two modification strategies were optimized in terms of quantity of immobilized aptamer, time procedure and reproducibility and they were compared in terms of selectivity and sensitivity toward the ampicillin detection. The electrodes were characterized after each step of modification by electrochemical impedance spectroscopy (EIS). The detection of ampicillin with the developed aptasensors is a label-free method, using the variation in the EIS signals to quantify the ampicillin concentration in the sample.

Conclusion. The developed aptasensor can be employed for the ampicillin detection.

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COMPOSITE NANOPLATFORMS FOR DOPAMINE DETECTION

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Introduction. Composite nanoplatforms with improved features became a mandatory request for the design of electrochemical sensors. The association between polymeric nanoparticles, carbon and other nanomaterials ensures a better electronic transfer and increases the sensitivity for the electrochemical detection of a wide range of analytes.

Dopamine is a catecholamine-based neurotransmitter, its sensitive detection being of great interest for the clinical management of neurologic disease.

Materials and methods. The polymeric nanoparticles were electrochemically deposited on a gold-based screen-printed electrode modified wit reduced graphene oxide. Gold nanoparticles were also electrochemically generated via cyclic voltammetry (CV). The analytical performances of the hybrid surfaces were evaluated by electrochemical methods.

Results. The properties of the elaborated platform were tested by using CV, EIS, EQCM and SWV tests. The elaborated sensor allowed the sensitive detection of dopamine from 100 μM solution in PBS.

Conclusion. The results proved the successful deposition of the reduced graphene-polypyrrole nanoparticles composite with good stability and conductivity. The deposition of the gold nanoparticles increased the sensitivity of the sensor towards the electrochemical oxidation of dopamine with promising results. The platform will be further used for the detection of other neuromediators.

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CRYSTALLIZATION OF BIOACTIVE SAPONINS VIA SURFACE-ACTIVITY AND MOLECULAR TRAPPING, USING A DE-FORMULATED EMULSION MODEL

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Introduction. Saponins are natural glycosides of plant secondary metabolite, with vast application in food, pharmaceuticals and vaccine (adjuvant) production. Mounting evidences suggest their immense therapeutic values as anticancer, antiviral, anti-inflammatory and anti-cholesterol. The molecular structural features reveal the presence of lipophilic group in form of triterpene or steroidal aglycone, linked to hydrophilic sugar chains. A property which impacts surface-activity and promotes molecular self-assembly in aqueous solution.

Materials and method. simplified model of de-formulated emulsion was employed to crystallize saponin from crude methanolic-root extract of Securidaca longipedunculata. The dried root-extract was completely dissolved in distilled water and mixed with ethyl-ether at ratio of 1:2 respectively. The resultant emulsion (o/w) was further agitated in ultrasonic bath for 30mins and afterwards allowed to undergo phase-separation. The solid layer formed was separated and purified in repeated cycles. Sample evaluated by UV-Vis spectrophotometer (Specord 250 plus), TLC and light microscope (Olympus, Japan).

Results. Solid crystals were observed by microscopy. TLC (RP-C18) gave five bioactive fractions characterized as triterpenic saponin. Purity studies reveal percentage values of 26.5% to 48% and 90%, from the first to the third cycle respectively.

Conclusion. Saponin molecules were: 1) selectively eliminated from the mixture; 3) trapped in the micellar-film; 3) and finally seeded crystals following emulsion instability. Due to creaming and response to gravitation, micelles were suddenly segregated from the soluble emulsion state into insoluble organic phase, with increased possibilities of freezing and nucleation. This phenomenon opens a new window for purification of bioactive substances, even though the mechanism is yet to be fully ascertained.

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COMPARATIVE STUDIES OF HYPERTHERMIA AND CELL UPTAKE PROPERTIES OF SMALL AND LARGE IRON OXIDE MAGNETIC NANOPARTICLES

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Introduction. Efficient use of magnetic hyperthermia in clinical cancer treatment requires biocompatible magnetic nanoparticles (MNPs), with improved heating capabilities.

Materials and methods. Small (~34 nm) and large (~270 nm) Fe3O4-MNPs were synthesized by means of a polyol method in polyethylene-glycol and ethylene-glycol, respectively. They were systematically investigated by means of X-ray diffraction, transmission electron microscopy, vibration sample magnetometry, dynamic light scattering and magnetic hyperthermia. Their cytotoxicity (standard MTT assays) and cellular uptake has been investigated on four different cells lines: human retinal pigment epithelial cells, human lung carcinoma cells, human melanoma cells and mouse melanoma cells.

Results. Specific Absorption Rate (SAR) dependence of both types of MNPs on the external alternating magnetic field amplitude (up to 65kA/m, 355 kHz) presented a sigmoidal shape. Small monocrystalline MNPs exhibit a remarkable saturation SAR value of ~1400 W/gMNP, while the large polycrystalline MNPs display only 400 W/gMNP, in water. SAR values were slightly reduced in cell culture media, decreasing one order of magnitude in highly viscous PEG1000. Toxicity assays performed on four cell lines revealed almost no toxicity for the small MNPs and a very small level of toxicity for the large MNPs, up to a concentration of 0.2 mg/ml. Cellular uptake experiments revealed that both MNPs penetrated the cells through endocytosis, in a time dependent manner and escaped the endosomes with a faster kinetics for the large MNPs. Biodegradation of the large MNPs inside cells was an all-or–nothing mechanism.

Conclusion. Small Fe3O4 MNPs are better candidates for future clinical magnetic hyperthermia therapy.

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SYNTHESIS OF IRON OXIDE NANOPARTICLES AT HIGH TEMPERATURE AND HIGH PRESSURE FOR MAGNETIC HYPERTHERMIA APPLICATIONS

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Introduction. We report a novel one-step synthesis method of water soluble iron oxide magnetic nanoparticles (IOMNPs) based on the thermal decomposition of magnetic precursors in biocompatible polymer - polyethylene glycol (PEG) - at high temperature and high pressure conditions.

Materials and methods. Different amounts of iron precursors [iron(III) chloride hexahydrate (FeCl3*6H2O), iron (II) chloride tetrahydrate (FeCl2*4H2O), iron(III) acetylacetonate (Fe(acac)3] and 1.2 g of NaAc have been mixed, dissolved, magnetically stirred in 40 ml of PEG200 for 30 minutes at 70°C, transferred in a stainless-steel container and heated at 300°C for either 1h or 2h. The synthesized IOMNPs have been analyzed by Transmission Electron Microscopy (TEM) and X-ray Diffraction (XRD), while the heating performance has been assessed with a magnetic hyperthermia system operating at 355 kHz and magnetic field strengths up to 65 kA/m.

Results. The XRD patterns clearly reveal that all synthesized IOMNPs are magnetite (Fe3O4). Spherical IOMNPs with a mean size of 15 nm are obtained by using 0.5 mmol of FeCl3*6H2O in the reaction. The IOMNPs display a polyhedral shape with mean size ranging from 30 to 50 nm when increasing the amount of FeCl3*6H2O to 1 mmol and 2 mmol, respectively. The use of Fe(acac)3 as magnetic precursor leads to the preferential formation of spherical IOMNPs with a mean diameter of 20 nm. The hyperthermia results showed that the polyhedral Fe3O4 delivered the highest amount of heat reaching 2500 W/gFe.

Conclusion. A facile method to synthesize Fe3O4 with high heating power has been achieved.

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NEW GREEN METHOD FOR SYNTHESIZING GOLD NANOPARTICLES FOR PHARMACEUTICAL APPLICATIONS

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Introduction. Gold nanoparticles (AuNPs) are a fascinating class of nanomaterials that can be used for a wide range of biomedical applications. The aim of this study was to investigate the possible use of Lamiaceae species as green producers for AuNP synthesis and to evaluate the antioxidant/antimicrobial/citotoxic effects of AuNPs.

Material and methods. The as-synthesized nanoparticles have been fully characterized by classical methods, whereas their plasmonic properties have been evaluated by means of SERS. The samples (vegetal extracts and AuNPs) were screened for antioxidant activities using the DPPH radical scavenging assay. The antimicrobial tests were performed using the disk diffusion assay. The assessment of antiproliferative effect was performed both on dermal fibroblasts and melanoma cells and the cell cytotoxicity assay was performed using the MTT test.

Results. The UV-Vis absorption spectra clearly indicated the successful synthesis of spherical gold colloids, with different diameters, for plant extracts. The TEM images obtained for AuNPs synthesized with vegetal extract confirm the successful synthesis of spherical NPs with a diameter ranging between 20-60 nm, and the DLS measurements confirm the results from TEM images, indicating a mean diameter of 42.22 nm. The nanoparticles obtained by employing plant extracts as reducing and capping agents, exhibit plasmonic properties only for Origani herba extract and at a very alkaline pH value. The AuNPs exhibited a good antioxidant effect (I%=70.61) and a remarkable inhibitory activity against S.aureus and C.albicans. Regarding the cytotoxicity of the synthesized AuNPs was found a low toxicity, on both dermal fibroblasts and melanoma cells.

Conclusion. This study opens up new possibilities of using some inexpensive, non-toxic and pharmaceutically important vegetal extracts as a reducing and stabilizing agents for the synthesis of AuNPs, which may have future diagnostic and therapeutic applications.

IMPACT OF PEGYLATION METHOD ON GOLD NANOPARTICLES PROTEIN CORONA

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Introduction. Nanoparticles (NPs) are known to form in a biological milieu a biomolecular corona that confers the particles a new identity. Covalent PEGylation of the NPs surface is considered to be the most successful methodology in order to minimize the protein adsorption. The use of different PEGs ligand (size, conformation or surface chemistry) can lead to a novel protein corona and therefore to a specific NP behavior. The aim of this study was the assessment of the impact of the PEGylation method on the gold nanoparticles protein corona.

Materials and methods. PEGylation of spherical gold nanoparticles (GNP) of several sizes was employed using different methods and PEGs with different molecular weights. The synthesized GNP were characterized using UV-Vis spectroscopy, differential centrifugal sedimentation (DCS) and dynamic light scattering (DLS) and were incubated with human plasma and serum for protein corona formation. The protein corona which was formed was analyzed by SDS-PAGE and LC-MS/MS.

Results. Depending on the size and surface chemistry of the NPs the protein composition and abundance of the corona varied. PEGylation method had a major impact on the protein corona influencing not only the composition and the abundance of the proteins but also the quantity of proteins/NP.

Conclusion. Controlling the size and surface coating of the nanoparticle allows the formation of a specific protein corona-NP complex which can potentially trigger specific interaction pathways between nanomaterials and biological fluids.

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SYNTHESIS AND ANTIPROLIFERATIVE EFFECT OF SOME NEW THIAZOLYL-CHALCONES AND THIAZOLYL-PYRAZOLINES

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Introduction. Cancer constitutes an enormous burden on society as it is on track to become the leading cause of death in developed countries, closing in on heart disease as the number one killer. Although cancer research has led to a number of new and effective solutions, the medicines used as treatments have clear limitations. In the design of new drugs, the combination of different structural moieties may lead to the finding of novel molecular scaffolds. The aim of our study was to synthesize new hybrid compounds, which include the thiazole ring and a chalcone or pyrazoline moiety, and to evaluate their cytotoxicity upon human pancreatic tumor cells (PANC) and human osteosarcoma cells (MG-63).

Material and methods. 10 new compounds (5 thiazolyl-chalcones and 5 thiazolyl-pyrazolines) were obtained. The structures of the new compounds were confirmed by 1H-NMR, 13C-NMR, MS spectral data and Elemental analyses. The cytotoxicity of the compounds was evaluated using the spectrophotometric MTT test after 24 h and 5 days. Furthermore, after 24 h, Live&Dead double fluorescence staining procedure was performed in order to determine the cell viability at LD50 concentrations.

Results. MTT assay showed the cytotoxic potential of each complex on PANC and MG-63 cell lines at various concentrations. After statistical analysis, LD50 of each compound was determined. The proliferation profile was in accordance with the viability results.

Conclusions: Based on these preliminary studies, some of the new compounds exhibited antiproliferative effects and can thus be considered for further investigations as novel therapeutic agents in the treatment of cancer.

LIPOPHILICITY EVALUATION OF SOME THIAZOLYL-1,3,4-OXADIAZOLE DERIVATIVES WITH ANTIFUNGAL ACTIVITY

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Introduction. It is well established that the pharmacokinetic, pharmacodynamic and toxicologic profiles of bioactive compounds are influenced by their lipophilicity. On this basis, we decided to investigate the lipophilic character of some thiazolyl-1,3,4-oxadiazoles, in order to establish some structure-retention and retention-antifungal activity relationships.

Material and methods. We subjected 21 thiazolyl-1,3,4-oxadiazoles for their antimycotic activity by the disk diffusion method, on two fungal strains: Candida albicans and Aspergillus fumigatus. The results were compared with those of the standard drugs. The lipophilic character of the investigated compounds was evaluated using the PCA method based on RP-TLC data and the results obtained were compared with their LogP values generated by the online application SwissADME.

Results. The results of this study indicated that the lipophilicity parameter has a significant effect on the antifungal activity of this class of compounds. The results showed that the presence of halogen atoms with a high atomic volume increased lipophilicity, which validates the applied method.

Conclusion. The higher antifungal activity in the 1,3,4-oxadiazole series could be associated with a higher lipophilicity.

SYNTHESIS AND CHARACTERIZATION OF NEW 2-ARYLTHIAZOLE BETA-AMINO ESTERS

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Introduction. Beta-amino acid alkyl esters are currently used in peptide chemistry, polymer materials and for the synthesis of other functionalized compounds with medicinal applications. Previous studies conducted by us and by others revealed the vast biological potential of the 2-phenylthiazole scaffold. In the continuation of these researches, the aim of this study was the synthesis and characterization of new beta-amino acids and beta-amino esters bearing 2-arylthiazole moieties.

Material and methods. A series of 2-arylthiazole beta-amino acids were obtained by applying a synthetically convenient modification of the Rodionov reaction, consisting in the condensation of 2-arylthiazole-4-carbaldehydes with malonic acid and ammonium acetate, in different solvents. The obtained amino acids were converted into alkyl carboxylates by treatment with different aliphatic alcohols in the presence of thionyl chloride. The synthesized compounds were purified and characterized by melting point and spectral analysis 1H NMR, 13C NMR and MS.

Results. The condensation of 2-arylthiazole-4-carbaldehydes with malonic acid and ammonium acetate occurred differently, depending on the reaction conditions (solvent, temperature). When acetic acid was used as solvent, the corresponding beta-amino acids were obtained with 52-68% yields. The esterification of 2-arylthiazole beta-amino acids using thionyl chloride as activating agent afforded the corresponding beta-amino esters with 88-92% yields. The separation conditions of enantiomers by RP-HPLC with chiral stationary phase were established.

Conclusions. New beta-amino acids and beta-amino esters containing 2-arylthiazole moieties were synthesized and characterized. The spectral analysis confirmed the structures of the synthesized compounds.

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SYNTHESIS AND PHYSICO-CHEMICAL CHARACTERIZATION OF SOME THIAZOLE CHALCONES AND FLAVONOIDS

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Introduction. Chalcones and their flavonoid derivatives show a particular interest due to their biological potential. The thiazolic core is present in the structure of natural and synthetic compounds with different pharmacological properties. Starting from these premises, our aim was the synthesis and the physico-chemical characterization of novel thiazole chalcones and their flavonoid derivatives in order to evaluate their biological potential.

Matherials and methods. Thiazole chalcones were obtained by Claisen-Schmidt condensation reaction of 2-arylthiazole-4-carbaldehydes with acetophenones containing in ortho and/or para positions hydroxyl or methoxyl groups. Thiazole flavanones were synthesized by cyclization of the corresponding ortho substituted chalcones in the presence of concentrated sulfuric acid or sodium acetate or glacial acetic acid. Thiazolic flavones were synthesized by oxidative cyclization of chalcones with iodine.

Results. Ortho-methoxychalcones were formed with higher reaction rates and better yields than ortho-hydroxychalcones. The cyclization of chalcones to flavanones in the presence of concentrated sulfuric acid was the most efficient method. The cyclization of methoxychalcones occurred with lower reaction rate due to demethylation that precedes the cyclization.

Conclusions. New series of chalcones, flavones and flavanones were synthesized and physico-chemicaly characterized in order to assess their biological potential. In the case of chalcone synthesis, it has been observed a difference of reactivity depending on the nature of the acetophenone substituents. Among the methods used to obtain flavanones, the cyclization with sulfuric acid gives the best results. Spectral analysis 1H NMR, 13C NMR, IR and MS confirmed the structure of the synthesized compounds.

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APPLICATION OF THE PELLIZZARI REACTION IN THE SYNTHESIS OF NEW 1,2,4-TRIAZOLE DERIVATIVES WITH THIAZOLE AND PYRIDINE MOIETIES

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Introduction. The Pellizzari reaction consists in the condensation of a hydrazide with an amide or thioamide to form the 1,2,4-triazole ring. The 1,2,4-triazole, thiazole and pyridine cores are found in many drugs with various biological activities such as antibacterial, antifungal, antioxidant, antineoplasic, antiviral, anti-inflammatory and antiacid properties. Moreover, the thiazole and the pyridine moieties are found even in naturally occuring compounds like thiamine, bleomycins and pyridine alkaloids. Based on these considerations, the aim of this study was to obtain a new polyheterocyclic system with biological potential by assembling three pharmacophore groups: 1,3-thiazole, 1,2,4-triazole and pyridine rings.

Materials and methods. The condensation of hydrazides containing 2-arylthiazole or pyridine moieties with different amidic/thioamidic components was investigated in different solvents (methanol, pyridine), at reflux temperature. The optimized method was applied for the preparative synthesis of new 1,2,4-triazole derivatives. The reaction products were purified by column chromatography and characterized by melting point, retention factor and spectral analysis 1H NMR, 13C NMR and MS.

Results. Among the investigated reaction conditions, the condensation of hydrazides with thioamidic components in pyridine as solvent, at 135°C, proved to be the most efficient procedure for the obtention of 1,2,4-triazole derivatives.

Conclusions. New 1,2,4-triazole derivatives with thiazole and pyridine moieties were obtained via Pellizzari reaction. The most efficient method was the condensation of hydrazides with thioamides, in pyridine, at high temperature. Spectral analysis 1H NMR, 13C NMR and MS confirmed the structures of the obtained polyheterocyclic compounds.

SYNTHESIS AND PHYSICO-CHEMICAL CHARACTERIZATION OF SOME THIAZOLIC AURONES

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Introduction. Aurones, substituted derivatives of 2-benzylidenebenzofuran-3-(2H)-ones, are natural compounds from the flavonoids class. They have been studied for various biological activities including anticancer, antioxidant, antimalarial and antiviral.

Material and methods. Our aim was the synthesis of thiazolic aurones in order to evaluate their biological potential. Firstly, we investigated different reaction conditions to establish which are the most efficient for our compounds. The first applied method was the oxidative cyclization of thiazolic ortho-hydroxychalcones using as oxidizing agents mercury(II) acetate in pyridine, copper(II) acetate in dimethyl sulfoxide, hydrogen peroxide in basic catalysis and selenium dioxide. Another investigated method was the condensation of thiazolic aldehydes with benzofuran-3-ones in basic catalysis. The obtained aurones were purified and analyzed by spectral methods: 1H NMR, 13C NMR and MS.

Results. The oxidative cyclization of ortho-hydroxychalcones occurred differently depending on the used oxidizing agent. When mercury(II) acetate in pyridine and copper acetate(II) in dimethyl sulfoxide were used, the thiazolic aurones were obtained with 50-60% yields. The use of hydrogen peroxide or selenium dioxide led to other reaction products. The condensation of thiazolic aldehydes with benzofuran-3-ones afforded the target compounds with low yields.

Conclusion. New aurones with thiazole moiety were synthesized via oxidative cyclization of thiazolic ortho-hydroxychalcones and via condensation of thiazolic aldehydes with benzofuran-3-ones. The most efficient oxidizing agent was mercury(II) acetate in pyridine. The structures of the newly obtained compounds were confirmed by spectral analysis 1H NMR, 13C NMR and MS.

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SYNTHESIS AND CHARACTERIZATION OF SOME NEW THIAZOLO[3,2-B][1,2,4]TRIAZOLE AND IMIDAZO[2,1-B][1,3,4]THIADIAZOLE DERIVATIVES

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Introduction. Compounds having thiazolo[3,2-b][1,2,4]triazole and imidazo[2,1-b][1,3,4]thiadiazole in their structure have been reported to exhibit antibacterial, antifungal, anticancer, anti-inflammatory and analgesic activities. The aim of this study was the synthesis and characterization of new thiazolo[3,2-b][1,2,4]triazole and imidazo[2,1-b][1,3,4] thiadiazole derivatives by modifications on the support molecule and on the functional groups.

Material and methods. The condensation of 3-mercapto-5-substituted triazoles and 2-amino-5-substituted thiadiazoles with α-halogenocarbonyl compounds afforded the corresponding thiazolo[3,2-b][1,2,4]triazole and imidazo[2,1-b][1,3,4]thiadiazole derivatives. The synthesized compounds were purified and characterized by 1H NMR, 13C NMR, IR and mass spectrometry.

Results. A series of imidazo[2,1-b][1,3,4]thiadiazole and thiazolo[3,2-b][1,2,4]triazole derivatives with the corresponding thioethers were synthesized in good yields. Thiazolo[3,2-b][1,2,4]triazole derivatives were obtained in a single step when the condensation was performed at reflux in acid catalysis, or via acyclic thioether intermediates, when the synthesis was performed at room temperature. Imidazo[2,1-b][1,3,4]thiadiazole derivatives were synthesized directly, by performing the condensation at reflux, in acid catalysis. The spectral analysis confirmed the structures of the new polyheterocyclic compounds.

Conclusion. New thiazolo[3,2-b][1,2,4]triazole and imidazo[2,1-b][1,3,4]thiadiazole derivatives were synthesized and characterized by spectral methods. Their biological potential concerning anti-inflammatory and analgesic activities will be investigated in further studies.

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FORMULATION AND PHARMACEUTICAL DEVELOPMENT OF QUETIAPINE FUMARATE SUSTAINED RELEASE MATRIX TABLETS USING A QBD APPROACH

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Introduction. The aim of this study was to apply a QbD approach in order to develop once-a-day sustained release 200mg quetiapine tablets.

Material and methods. As extended release excipients two types of hydroxypropyl metilcellulose (HPMC) were used. Formulations were prepared via wet granulation of quetiapine and lactose, subsequent by compression with HPMC and extragranular filler (lactose and microcrystalline cellulose). In order to optimise the formulation a 5 level D-optimal experimental design was used, having type of extragranular filler, total ratio of HPMC and ratio of HPMC K100/K4M as independent inputs. The outputs were pharmaceutical characteristics of tablets and release of quetiapine.

Results. The studied factors had no influence on the tablets pharmaceutical characteristics (friability and hardness). In the first hours the total ratio of HPMC had the highest influence on the kinetic drug release, but after 4 hours the ratio of HPMC K100/K4M became the most important factor that influenced this parameter. Over the whole dissolution process, the use of lactose as extragranular filler increased the dissolution rate compared to cellulose. The dissolution kinetic of Seroquel XR™ 200mg was used as targeted dissolution profile in order to define the two optimal formulations, Design Space, Hypercube and robust setpoints. Three optimal formulations (two inside and one outside of the Design Space) were tested in order to validate the model. The predicted dissolution profile of validation samples was similar with targeted dissolution profile (F2 over 74).

Conclusion. The QbD approach allowed a quick finding of formulations with similar dissolution profiles as the innovative product.

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THE DEVELOPMENT OF ORAL LYOPHILISATES WITH IBUPROFEN VIA QBD APPROACH

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Introduction. The aim of this study was the development of orodispersable tablets with ibuprofen, obtained through lyophilisation process (oral lyophilisates). By applying the risk assessment, the formulation factors that may have influence on the product characteristics were evaluated.

Material and methods. Using a D-optimal experimental design with six factors and two levels, twenty-five experimental formulations were prepared. The studied formulation factors were the type and percentage of matrix forming agent, the type and percentage of bio-adhesive agent and the type and percentage of filler. The pharmaceutical characteristics of oral lyophilizes used to define quality target product profile (QTPP) were the disintegration time, the wetting time, mean dissolution time and texture features of the tablets as: the hardness, the rigidity and the fracture rate.

Results. According to the obtained results, the disintegration time is influenced by the type of the matrix forming agent, the type of bio-adhesive agent and the percentage of the filler agent. The wetting time is influenced by all the factors taken into consideration. Regarding the hardness and rigidity of the tablets is observed that the gelatine is increasing the hardness, while the methylcellulose and xanthan gum have the opposite influence. Quantitative factors as the percentage of the matrix forming agent and the bio-adhesive agent have an influence of the fracturability of the tablets.

Conclusion. According with the results, orodispersable tablets with ibuprofen for pediatric use with desired characteristics may be successfully obtained by lyophilisation.

THE QUALITY BY DESIGN (QBD) APPROACH IN THE PHARMACEUTICAL DEVELOPMENT. CASE STUDY ON HYDROPHILIC MATRIX TABLETS WITH INDAPAMIDE

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Introduction. The objective of the study was to apply the Quality by Design (QbD) concept within the pharmaceutical development of an extended release product in order to asses and highlight the influence of minor changes in the physico-chemical characteristics of the input raw material or process parameters on the final product quality. As a practical support hydrophilic matrix tablets with indapamide were used.

Materials and methods. 31 different lab scale batches of indapamide tablets were prepared and evaluated. Eight parameters were varied within the formulations: five parameters in respect to the raw material characteristics and three process parameters. The preparation of the indapamide formulations was done according to a D-optimal experimental design. The technological part involved the geometrical mixing and direct compression of the powders and finally the quality of each batch was tested according to pharmacopoeia and validated analytical methods.

Results. Results showed variability in the quality outcomes significantly within the in vitro release tests. The data processing within Modde 11 showed that the source of these changes is attributed mostly to the physico-chemical characteristics of the active substance and the compression force.

Conclusions. The inter-batch and inter-supplier variability of the raw material proved to impact the performance of the pharmaceutical systems, which highlights the importance of working within a Design Space and to establish a risk based control strategy of the raw material. The integration of the QbD concept within the Research and Development phase is set to give reliability and flexibility to the pharmaceutical manufacturing.

EVALUATION OF THE RELEASE CHARACTERISTIC OF INDAPAMIDE FROM PROLONGED RELEASE INERT MATRIX TABLETS

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Introduction. The aim of the presented study was the formulation of some inert matrix tablets in order to prolong the release over a 24 hours period of indapamide and to analyze the release kinetics of the model drug.

Material and methods. A Full Factorial experimental design with 2 variables and 3 levels was used in order to study the parameters that influence the indapamide release from inert matrix tablets. The studied variables were: the percent of the inert matrix former in the tablet and the tablet diameter. The tablets were prepared via direct compression using Kollidon SR as inert matrix former and characterized regarding the in vitro drug release and the release kinetics of indapamide.

All the prepared formulations contained 1,5 mg indapamide/tablet. The quantification of the released model drug was assessed by a HPLC method in UV at 240 nm and the release kinetics of indapamide from the studied tablets were evaluated using the Phoenix WinNonlin software.

Results. The studied formulation released over a 24 hours period the model drug. The statistical analysis of the experimental data showed that the formulation factor with the most important influence over the release characteristics of indapamide from the matrix tablets was the percent of Kollidon SR, followed by the diameter of the prepared tablet. The increase of the matrix former in the tablet and the increase of the tablet diameter determined the prolongation of indapamide release. The mathematical model that explained best the release kinetics of the indapamide was established using the Akaike criterion.

Conclusions. A convenient prolonged release profile for indapamide over a 24 hours period from the experimental tablets was obtained in the case of the tablets that contained 30% Kollidon SR with a diameter of 6 or 8 mm. The release kinetics of indapamide from the studied formulations can be explained using the Peppas, the Peppas with lag time or the Higuchi mathematical models.

DEVELOPMENT OF AN ORAL PROLONGED RELEASE PRODUCT WITH PALIPERIDONE

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Introduction. The study's aim was to evaluate the feasibility of prolonged release matrix tablets with paliperidone by associating inert and hydrophilic polymers as matrix forming agents.

Material and methods. 21 different formulations were prepared by direct compression according to a D-optimal experimental design. They contained different ratios of Kollidon SR 25-30-35-40% and three types of hydrophilic extended release agents, HPC LH-11, Methocel K4M and sodium carboxymethyl cellulose, which ranged between 0 and 10%. Dissolution tests were performed in 900 ml phosphate buffer pH 6.8, Apparatus 1. Ph. Eur., 100 rpm, and the drug release was evaluated after 0.5, 1, 2, 4, 6, 8, 12, 18 and 24 hours. The influence of formulation factors on paliperidone release profiles was assessed using Modde 11 software.

Results. The statistical results yielded a robust experimental domain, with high predictive power for all the developed models. Among the studied factors, the ratio of Kollidon SR was the most influential, its increase determined slow paliperidone release, to a minimum value of 51.12% of dissolved paliperidone after 24 hours. HPC presence had a positive influence on paliperidone dissolution. The hydration and release mechanism was quantified by fitting the results to various mathematical models. Peppas model was the most representative in describing the hydration and kinetics release of the developed matrices.

Conclusion. The association of an inert polymer with a hydrophilic one leads to matrix tablets that ensure the prolonged release of paliperidone, over 24 hours.

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DEVELOPMENT OF CO-ENCAPSULATED DOXORUBICIN AND CURCUMIN LONG CIRCULATING LIPOSOMES FOR INCREASED EFFICIENCY OF COLON CANCER THERAPY

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Introduction. This study was aimed at co-encapsulating curcumin (CURC) and doxorubicin (DOXO) in long circulating liposomes (LCL), to obtain a synergistic effect in terms of cytotoxicity against C26 murine colon adenocarcinoma cell line.

Material and methods. The liposomes were prepared by the film hydration method using 40mM phospholipids (dipalmitoyl-phosphocholine and polyethylenglycol-2000-distearoyl-phosphoethanolamine) and a 10:1 phospholipid:cholesterol molar ratio. CURC and DOXO were co-encapsulated in the vesicles, but also entrapped separately for feasibility of the preparation and comparison of the formulations purpose. The liposomes were characterized in terms of size, polydispersity index (PdI), Zeta potential, entrapment efficiency (EE) and in vitro cytotoxicity against C26 cells.

Results. The liposomes showed submicron size (160-200nm) and were relatively monodisperse as indicated by the low PdI (below 0.12). Zeta potential values were lower than -30mV, indicating a good stability of the liposomes. The encapsulation in CURC/DOXO-LCL was almost 100% for CURC and a quarter for DOXO, whereas in CURC-LCL and DOXO-LCL, EE was 88.31% and 29.88%, respectively. Regarding the in vitro cytotoxicity, the single drugs inhibited the proliferation of C26 cells at concentrations of 17-42μM (CURC) and 0.10-0.25μM (DOXO), respectively. At concentrations greater than 25μM for CURC and 0.15μM for DOXO, the drugs produced an inhibition of C26 cell proliferation greater than 50%. Within the aforementioned concentration ranges a combination of drugs was assessed, and the cytotoxic effect of DOXO was significantly enhanced by co-treatment with CURC. Also, the liposomes showed higher antiproliferative effect compared to CURC and DOXO, either single or combined.

Conclusion. CURC/DOXO-LCL may be an efficient means of drug delivery for chemotherapy.

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PHYSICAL CHARACTERISATION FOR THE DEVELOPMENT OF A STABLE FREEZE-DRIED MELOXICAM FORMULATION

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Introduction. Meloxicam is a non steroidal anti-inflammatory used in the form of tablets for the symptomatic treatment of inflammatory conditions in the elderly. The objective of this study is the characterization by physical methods of the formulations developed to obtain meloxicam oral lyophilizates.

Material and methods. In the first stage of the study, meloxicam-excipient compatibility studies were realized, using Differential Scanning Calorimetry DSC, X-ray Powder Diffraction XRPD and Infrared Spectroscopy FTIR methods. In the second stage, the glass transition temperature (Tg') of formulations containing meloxicam and excipients compatible with the drug chosen from the first stage, was determined using a DSC method. The same formulations were also subjected to an annealing program by DSC, in order to obtain a complete crystallization. In the third stage, the lyophilized formulations were analyzed by DSC and XRPD to determine the crystallinity and by thermogravimetric analysis for the residual water content in order to establish the duration of the secondary drying stage.

Results. Following studies in the preformulation stage, excipients compatible with the drug substance (gelatin, sodium alginate, mannitol, croscarmellose, polyvinylpyrrolidone K30, poloxamer 188, polyethylene glycol 4000) were chosen. The glass transition temperature (Tg') of the formulations meloxicam/excipients was also determined. The formulations were freeze-dried at a primary drying temperature two degrees lower than the glass transition temperature (Tg'). It has been determined the degree of crystallinity of the meloxicam oral lyophilizates and their residual water content.

Conclusion. Thus, it was elaborated an optimal lyophilization cycle for the achievement of meloxicam oral lyophilizates.

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THE PHARMACOKINETIC INTERACTION STUDY BETWEEN CARVEDILOL AND BUPROPION IN RATS

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Introduction. The effects of multiple-dose bupropion on the pharmacokinetics of single-dose carvedilol were investigated in order to evaluate this possible drug-drug interaction.

Material and methods. A preclinical study, in 12 white male Wistar rats, was conducted. Each rat was cannulated on the femoral vein, prior to being connected to BASi Culex ABC®. During the reference period, each rat received an intravenous and then an oral dose of 3.57 mg/kg body weight carvedilol, at two days distance. After 5 days of pretreatment with 21.42 mg/kg body weight bupropion (by oral route, twice a day – given in order to reach the steady state), during the sixth day, 3.57 mg/kg body weight carvedilol and 21.42 mg/kg body weight bupropion were co-administrated, orally (test period). After each administration of carvedilol, several samples of 200 μL blood were collected. The pharmacokinetic parameters of carvedilol were analyzed by noncompartmental method.

Results. The 5 days pretreatment with bupropion increased by 180% the exposure to carvedilol in rats, considering the modifications observed in area under the curve of carvedilol. Carvedilol was shown to have higher plasma concentrations, and prolonged duration of maximum concentration and half-life, after a pretreatment with bupropion.

Conclusion. The administration of multiple-dose bupropion influences the pharmacokinetics of carvedilol (single oral dose) in rats.

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THE INFLUENCE OF CYP2D6 ISOENZYME GENETIC POLYMORPHISM ON THE PHARMACOKINETIC PROFILE OF ATOMOXETINE

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Introduction. Atomoxetine is a non-stimulant drug, approved for the treatment of attention deficit hyperactivity disorder. Oxidation via genetically polymorphic cytochrome P450 (CYP)2D6 is considered to be the primary metabolic pathway for this compound, generating 4-hydroxyatomoxetine, its only active metabolite. Being a substrate of CYP2D6, atomoxetine metabolism is a source of intersubject variability. The objective of this study was to assess the metabolizer phenotype and to evaluate the interphenotype bioavailability and metabolism of atomoxetine.

Methods. An open-label, non-randomized clinical trial which included 43 healthy volunteers, was assessed. A single oral dose of 25 mg atomoxetine was administered to each subject. The pharmacokinetic parameters of atomoxetine and its active metabolite were calculated using a non-compartmental pharmacokinetic method. Subsequently, the phenotypic distribution was assessed based on the AUC (aria under the curve) metabolic ratio of atomoxetine/4-hydroxyatomoxetine and the statistical analysis. The differences between atomoxetine bioavailability and metabolism were evaluated for each phenotype by using the pharmacokinetic parameters of both compounds: parent drug and metabolite.

Results. Atomoxetine/4-hydroxyatomoxetine AUC metabolic ratios were not normally distributed. The unique distribution and the statistical results indicated the existence of a heterogeneous group. The 43 volunteers were classified as extensive metabolizers (EMs)=40 and poor metabolizers (PMs)=3. The exposure to atomoxetine was 5.7-fold greater for PMs compared to EMs.

Conclusion. The phenotypic analysis emphasized the existence of 2 different groups: PMs (3 volunteers) and EMs (40 volunteers). Furthermore, interphenotype differences regarding atomoxetine metabolism and bioavailability, were observed.

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THE INFLUENCE OF PEDOCLIMATIC CONDITIONS UPON OF *THYMUS MARSCHALLIANUS WILLD (LAMIACEAE)* CHEMOVARIABILITY

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Introduction. *Thymus marschallianus* Willd. sin. *T. pannonicus All., Hungarian thyme* is a Eurasian species of fam. *Lamiaceae*. In some areas, they are considered separate species with different morphological characters. Recent findings on some molecular markers on the genetic level showed no clear differentiation between these two taxa. This is in concordance with Flora Europaea, in which *T. pannonicus* and *T. marschallianus* are regarded as synonyms, leaving this taxonomic question still open.

Material and methods. The samples represented by the aerial parts of species were phytochemically analyzed, qualitative and quantitative through chromatographic (HPLC-MS) and spectrophotometric methods. This helped in characterizing of the polyphenols, flavonoids and phenylpropanoic acids profiles. The volatile fractions of the aerial parts were analyzed by a nondestructive method, the headspace extraction followed by GC-MS analysis. The antioxidant activity was determined in vitro by spectrophotometric methods (DPPH, EPR, FRAP).

Results. In all the samples, there were identified and cuantified, by HPLC-MS, the several polyphenolic components: luteolin-glucuronide, quercetin-glucoside, quercetin-arabinoside, apigenin-glucuronide, methyl-rosmarinate, rosmarinic acid, quercetin, luteolin, apigenin. The volatil fractions reveal the hydrocarbons and oxygenated derivates of monoterpenes and sesquiterpenes. The different data obtained by GC analysis for vegetal products analysed were correlated with different pedoclimatic conditions existing in culture or spontaneous medium. They were highlighted as prevalent α-pinene (10.67%), camphene (14.58%), β-cis-ocimene (19.74%), trans-citral (12.22%) for culture chemovariety and o-cymene (30.91%), γ-terpinene (37.8%) and thymol (3.87%) for spontaneous chemovariety. The highest antioxidant activity was showed by the variety from the culture (DPPH, EPR methods).

Conclusion. This research might be of interest in the taxonomy of this species.

PHYTOCHEMICAL ANALYSIS, ANTIOXIDANT AND ANTI-INFLAMMATORY PROPERTIES OF THREE AJUGA SP. EXTRACTS

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Introduction. Ajuga species are used in Romanian traditional medicine for their anti-inflammatory, hepatoprotective and wound healing effects. The aim of this study was to evaluate the phytoconstituents from Ajuga genevensis, A. reptans, and A. laxmannii aerial parts, as well as their antioxidant and anti-inflammatory effects.

Material and methods. The identification and quantification of polyphenols were done by HPLC/UV/MS and spectrophotometric methods (total phenolic content, total flavonoid content, total anthocyanin content), whilst the analysis of iridoids was assessed by HPLC/MS/MS. The antioxidant potential was determined using DPPH, TEAC, and EPR spectroscopy assays. In vivo anti-inflammatory effects were tested in acute rat experimental inflammation by measuring the acute phase bone marrow response, the phagocytic capacity and the serum nitro-oxidative stress status.

Results. A. laxmannii aerial parts extract was the richest in total phenols and flavonoids, with high content in rutin. Caffeic and ferulic acids, quercitrin, luteolin and apigenin were identified by LC-MS in all samples. Harpagide, 8-O-acetylharpagide, harpagoside, aucubin and catalpol were identified and quantified in all extracts. The major iridoids constituents were 8-O-acetylharpagide and harpagide.The results of antioxidant assays showed a better effect for A. laxmannii extract and a positive correlation between antioxidant activity and polyphenolic content. Ajuga sp. extracts had anti-inflammatory effect by reducing total leukocytes, PMN, phagocytosis and nitro-oxidative stress. A. genevensis 25% and A. laxmannii 100% extracts had better anti-inflammatory and anti-nitro-oxidative stress effects, when compared to diclofenac.

Conclusion. The study revealed that Ajuga sp. extracts contain bioactive compounds with good antioxidant and anti-inflammatory properties.

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EFFICACY ASSESSMENT OF A TOPICAL PRODUCT FOR THE IMPROVEMENT OF SKIN CONDITION IN *STRIAE DISTENSAE*

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Introduction. In the present study, a topical oil-in-water cream containing two natural ingredients (Punica granatum seed oil and Croton lechleri extract) and other emollients was tested to evaluate its efficacy in the prevention and improvement of skin condition in *striae distensae* (SD) by assessing skin hydration, skin elasticity and thickness of the dermis.

Material and methods. Two groups were included in the study: ten volunteers with striae alba at the hips level and ten volunteers with no stretch-marks on the test area. Ultrasonography was used to evaluate skin structure (DUB®cutis Skinscanner system, Germany). Skin hydration values and elasticity measurements were recorded using MPA Systems ® (Courage + Khazaka electronic GmbH, Germany) equipped with Corneometer® CM 825 and Cutometer® dual MPA 580 probes. The instrumental measurements were performed before cream application and three weeks and six weeks after daily use of the cream.

Results. After six weeks of cream application, new echogenic areas in SD and also an improved acoustic homogeneity of the dermis could be observed in the ultrasonographic images. For the SD group the increasing of dermis thickness was 14.85%, the hydration increased with 30.32% and the elasticity increased with 9.75% from baseline. In the group with no SD the increasing of dermis thickness was 15.86%, while hydration and elasticity increased from baseline, with 38.40% and 5.86%, respectively. All volunteers noticed also an improved appearance of the skin.

Conclusion. The study of clinical efficacy of an emollient oil-in water cream containing Punica granatum seed oil and Croton lechleri resin extract revealed an increasing of the dermis thickness, hydration and elasticity values suggesting that it can be helpful in prevention or improving skin changes associated with striae.

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EVALUATION OF THE (ANTI)ESTROGENIC ACTIVITY OF BINARY MIXTURES THROUGH THE MCF-7 CELL PROLIFERATION ASSAY

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Introduction. Current evidence points to a role for endocrine disruptors in the increased incidence of breast cancer in women. The aim of the study was the evaluation of the estrogenic (E) and anti-estrogenic (AE) activity of selected binary mixtures.

Materials and methods. The tested compounds are widely used either as conservatives in personal care products (butyl paraben (BuPB) or as food antioxidants (butylated hydroxyanisole (BHA), butylated hydroxitoluene (BHT) and propyl gallate (PG)). The proliferation assay involved the incubation of cells in the presence of binary mixtures of test compounds, with (for AE effect) or without (for E effect) the simultaneous presence of 10pM estradiol (E2), followed by construction of concentration-response curves and calculation of EC50 or IC50. The capacity of two mathematical models (dose addition (DA) and response addition (RA)) to predict the effect of mixtures was evaluated also.

Results. The strongest E effect was observed in case of mixtures containing BP, while the less significant was noticed in case of PG+BHT. The proliferation induced by E2 was inhibited most significantly by mixtures containing PG. A moderate AE effect was noticed in case of BHA+BP and BHT+BP mixtures, while the weakest effect was observed in case of BHA+BHT.

The statistical analysis confirmed the potential of the DA model to accurately predict the AE effect of binary mixtures, based on the data from the individual testing of the compounds.

Conclusions. Since humans are usually exposed simultaneously to the selected compounds (and to other endocrine disruptors), the findings from the current study, pointing to a certain degree of additivity regarding their endocrine disruptive effect, raises concern about the risk of negative health outcomes, at least for a part of the population.

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EVALUATION OF BIOACTIVE PROTEINS CONCENTRATION IN HUMAN BREAST MILK. CORRELATIONS WITH STAGES OF LACTATION

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Introduction. Exclusive human milk feeding for the first 6 months of life, with continued breastfeeding for 1 to 2 years of life or longer, is recognized as the normative standard for infant feeding. Human milk has many unique properties that benefit the breast-fed infant. Several of these properties reside in the protein fraction of human milk, which includes the proteins with an immunological role, such as immunoglobulin A (sIgA), lysozyme (LZ) and lactoferrin (LF). The study aims to evaluate the protein content and concentration of sIgA, LZ, LF from milk and correlation with stage of lactation.

Material and methods. The study included 51 women from Cluj Napoca, Romania in different stages of lactation: 0-6 months (15), 6-12 months (14), 12-24 months (15) and over 24 months (7). Prelevation of breastmilk was done in parallel with the completion of questionnaires and food diaries. The dosage sIgA, LZ, LF from milk samples was made by ELISA methods with specific kits for each protein, using a Clariostar monochromator microplate reader. The protein content was determined using Bradford method.

Results. A high interindividual variability of protein content was observed in breastmilk, the concentrations determined confirming the informations existing in literature for the first months of lactation.

Conclusions. Interindividual variability is a way to adjusting the composition of breast milk to the needs of each infant. Unlike infant formula, which is standardized within a very narrow range of composition, human milk composition is dynamic, and varies within a feeding, diurnally, over lactation, and between mothers and populations.

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GC-MS SEPARATION OF FATTY ACIDS IN SERUM FROM ADRENOLEUKODYSTROPHY PATIENT

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Fatty acids are most commonly separated by gas-chromatography, after derivatization to their methyl esters (FAME). Certain fatty acids (long-chain fatty acids) have been identified to have higher profiles in patients with peroxisomal disorders (e.g. adrenoleukodystrophy) than in healthy volunteers. The aim of this study was to develop and optimize an efficient method for the separation of fatty acids in the serum of a patient diagnosed with adrenoleukodystrophy, with a focus on long and very long chain fatty acids, with the possibility of identification of certain fatty acids as biomarkers for the disease.

For this purpose, we have developed the separation method in three stages: derivatization, extraction and separation, which were all optimized. The fatty acids were derivatized with methanol in acidic, non-aqueous media (70°C, 3 hours), then the methyl esters were extracted twice in hexane and the solution was concentrated under a stream of nitrogen. The samples were analyzed using a GC-MS system, through a HP-5ms column (30 m, 0.25 mm, 0.25 μm), in a gradient temperature program. The mass detector was set in SIM mode.

Results showed a good separation in terms of resolution of the fatty acids methyl esters. Considering the higher retention of very long chain fatty acids methyl esters, the long analysis times were hard to optimize. The temperature gradient was focused on the resolution of all FAME, but especially it was focused on increasing the resolution of very long FAME, which would be quantified.

In conclusion, we have developed and optimized the gas-chromatographic separation of fatty acids obtained from the serum of a patient with adrenoleukodystrophy, after their derivatization to their methyl esters.

STANDARDS FOR GOOD PHARMACY PRACTICE – A COMPARATIVE ANALYSIS

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Introduction. The purpose of the paper is to research the standards for quality of pharmacy activity, included in official guidelines on good pharmacy practice. The objectives were to analyze the standards for quality recommended in the Joint FIP/WHO Guidelines, adopted in 2011, and of those established in the Minister of Health's Order no. 75/2010, respectively in the College of Pharmacists procedures, to compare them and to draw up proposals for improving Romanian regulations.

Material and methods. The two sets of documents were investigated using the interpretation and the comparative methods.

Results. The Joint FIP/WHO Guidelines establish the definition, requirements and the necessity of setting standards for good pharmacy practice. It is recommended that professional authority establishes minimum national standards, according to the local needs and profession aspirations, based on those set out in the guidelines, for the most important activities in pharmacy: procurement, storage, preparation, dispensing, medication therapy management, improving effectiveness of the health-care system and public health. The Romanian regulations establish standards for procurement, storage, preparation, dispensing, patient information and encouraging rational use of medicines. The most important differences between the two sets of documents refer to activities that define the role of the pharmacist in providing effective medication therapy management and his contribution to improving effectiveness of the national health system.

Conclusion. Romanian regulations can be optimized through the cooperation between the College of Pharmacists and the Ministry of Health for updating the good pharmacy practice and developing modern standards for quality of pharmacy activities.

POTENTIAL DRUG-DRUG INTERACTIONS IN PATIENTS ADMITTED TO THE CARDIOLOGY UNIT OF A ROMANIAN TEACHING HOSPITAL

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Introduction. Patients with cardiovascular disorders are at high risk for drug-drug interactions because of the increased number of drugs prescribed concomitantly. Drug-drug interactions (DDIs) are an important cause of drug-related-problems detected in hospitals and may have an important impact on morbidity, mortality and health-care costs.

Material and methods. The study was conducted in the Cardiology ward of the Cluj-Napoca County Hospital. We retrospectively screened medical charts of patients hospitalized between 2010 - 2012, primarily diagnosed with dilated cardiomyopathy (DCM). Potential DDIs were evaluated using Thomson Micromedex© 2.0 database and further references were searched in PubMed.

Results. Eighty-five DCM patients were included in the analysis and their charts from one single hospitalization were assessed. A number of 160 potential DDIs were identified, from which 23 (14.38%) were major potential DDIs, and involved 21 patients. Drug classes most commonly involved in pDDIs were antiplatelets (mostly aspirin), anticoagulants and statins. The majority of DDIs were of moderate severity.

Conclusion. DDIs are common in patients with DCM, but only a few appear to be of clinical significance. The present study detected pDDIs and documented actual DDIs. The results of the study underline the need for prescription checking for pDDIs especially in cardiovascular patients and intensive monitoring of patients with predisposing factors, in order to prevent adverse outcomes.

TRENDS IN ANTIBIOTIC CONSUMPTION, IN A ROMANIAN HOSPITAL OF INFECTIOUS DISEASES – A SIX YEAR ANALYSIS

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Introduction. The general tendency of increasing bacterial resistance to antibiotics and the high level of use of restricted molecules are a public health issue of concern in Romania. The aim of the study was to evaluate the antibiotic consumption indicatives at the Teaching Hospital of Infectious Diseases, Cluj-Napoca, during 2010-2015.

Material and methods. Information regarding the antibiotic use during a six year period (2010-2015) was extracted from the computerized pharmacy database and analyzed by calculating daily doses as defined by the WHO/ATC index (DDD) divided by the number of patient or occupied bed-days (DDD/100 bed-days).

Results. There was a decreasing trend in the prescribing of anti-infectives for systemic use (ATC code J), from 174.478 DDD/100 bed-days in 2010 to 147.881 DDD/100 bed-days in 2015. During the 6 year interval that was analyzed, a progressive increase in the use of parenteral antibiotics was observed (from 111.939 DDD/100 bed-days in 2010 to 120.185 DDD/100 bed-days in 2015) together with a progressive reduction of oral antibiotics (from 62.538 DDD/100 bed-days in 2010 to 27.695 DDD/100 bed-days in 2015). The prescribing of third-generation cephalosporins (ATC code J01DD) increased from 32.456 to 38.948 DDD/100 bed-days, as did the one of carbapenems (ATC code J01DH), from 3.061 to 8.854 DDD/100 bed-days. Decreasing trends of use were recorded for combinations of penicillins including beta-lactamase inhibitors (ATC code J01CR) (from 18.055 to 9.221 DDD/100 bed-days) and for quinolone antibacterials (ATC code J01M) (from 28.865 to 13.094 DDD/100 bed-days).

Conclusion. Analyses of trends in antibiotic use are needed. New policies on antibiotic use can be derived when such analyses are correlated with local information about bacterial resistance to antibiotics and pharmaco-economic data.

EVALUATION OF MEDICATION USE APPROPRIATENESS IN GERIATRIC PATIENTS ADMITTED TO AN INFECTIOUS DISEASES HOSPITAL – A RETROSPECTIVE STUDY

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Introduction. Hospitalized elderly are highly exposed to the risks of using potentially inappropriate medications (PIM) and to subsequent avoidable adverse drug reactions. The aim of the study was to identify the PIM dispensed to the elderly patients (over 65 years of age) admitted for an infectious diagnosis at the Teaching Hospital of Infectious Disease, Cluj-Napoca.

Material and methods. The computerized pharmacy database covering the drugs delivered to the hospitalized elderly (01/01/2014 to 17/12/2015) was analyzed for two categories of PIM: antibiotics potentially associated with geriatric precautions identified through the Summary of Product Characteristics (dose adjustments needed, adverse reactions increasing the risk for geriatric syndromes, increased risk for drug interactions) and use of other unsafe PIM, according to Beers and STOPP criteria of evaluation of the appropriateness of geriatric medication use.

Results. The therapies dispensed for 3105 elderly patients were analyzed; the average age was 74.75 years and 1724 (55.52%) were women. From 262 371 prescriptions of antibiotics with potential neurological, psychiatric or cardiovascular adverse reactions, 4984 (1.899%) were dispensed to elderly patients. From 262 083 prescriptions of antibiotics with increased risk for drug interactions, 4597 (1.754%) were dispensed to the elderly patients. 49.15% (754 of a total of 1534) of all dispensed benzodiazepines were recommended to the elderly patients.

Conclusion. The clinical significance of these observations was not investigated, but geriatric susceptibilities should be considered when choosing and monitoring the recommended therapy.

CENTRAL VENOUS CATHETERS DESIGNED TO PREVENT DEVICE RELATED INFECTIONS

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Introduction. The central venous catheters (CVCs) are indispensable for critically ill patients, but their use is associated with a higher rate of local or systemic infections.

Material and methods. The paper reviews the efficacy of the coated/impregnated catheters in preventing catheter-related infections and discusses the available knowledge regarding their technologies. Electronic databases were searched from 1990 to 2015.

Results. According to many prospective studies, the use of coated/impregnated catheters is associated with decreased risk catheter related infections compared to standard catheters. Different approaches concerning the catheter surface treatments were proposed in order to reduce the risk of nosocomial device related infections. Present strategies have focused on modifying the surfaces of the device by increasing the surface biocompatibility and decreasing the bacterial adherence and the bio-film production. The technologies used provide the CVCs with a modified surface without releasing drugs (through hydrophilic coating) or containing antibacterial agents (through their bactericide action). A variety of active compounds have been incorporated in the catheter surface to achieve antimicrobian protection: chlorhexidine, benzalkonium chloride, silver sulfadiazine, silver, nanoparticles, platinum, rifampin, minocycline. Antimicrobials had been incorporated into the bulk material of CVC or could have been applied to their surfaces as a coating, the methods applied differing (drug concentration, incubation time, temperature).

Conclusion. In order to minimize the risks of CVCs related infections, the novel biomaterials used must be antiadhesive to pathogenic agents, resistant to colonization and refractory to biofilm formation. The development of technology utilizing biomaterial surface modification and antimicrobial coatings (with different antimicrobial agents) represent the current strategy for prevention of catheter-associated infections.

PERSONALIZED ANTI-INFLAMMATORY NUTRITION FOR ALLERGIC, CARDIOVASCULAR AND CANCER PATIENTS

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Inflammatory responses based on allergic and pseudoallergic reactions to foods are common in atopic, CVD and cancer patients. As key mechanisms we emphasize the immediate and delayed allergic responses with food-specific IgE, IgG4 and WBCs. Pseudoallergic reactions based on enzyme deficiencies (lactase, β-aldolase, diamine oxidase etc.) and free radical generation with mediator release (histamine, prostaglandines, leukotrienes) are also involved in the complex pathogenesis. The assessment of the above mentioned inflammation triggers is crucial for the personalized choice of dietary elements in allergic, CVD and cancer patients. We use in this respect a computerized program taking the above mentioned data as input for a personalized anti-inflammatory diet plan (Food Allergy Control®). Supplementation with fat-soluble antioxidants (Vit. A, E, ALA, Q10) and omega-3 fatty acids potentiates the anti-inflammatory effects of the diet plan by quenching the emerging free radicals.

Besides, the molecular biology of the atherosclerotic process and increased blood pressure makes necessary the association of classic CVD medication with specific nutrients of proven clinical efficiency like L-arginine, coenzyme Q10, omega-3 fatty acids, magnesium, L-carnitine, resveratrol and others, leading to a significant reduction of beta-blockers, ACE inhibitors and diuretics in the therapy.

Similarly, metabolic hallmarks of cancer cells like heavy metal accumulation, exacerbated aerobic glycolysis (Warburg effect), extracellular/matrix acidosis and glutaminolysis with loss of muscular mass require an appropriate choice of key nutrients like carbohydrates, fats, proteins and physiological metals. Recent research is advocating a long-term support with low glycemic ketogenic foods, omega-3 fatty acids, high doses of vitamin C, polyphenols, phytosterols, selenium and mixtures of selected amino acids in the diet of cancer patients.

By contrast, accumulating evidence supports a strong restriction of glucose and high glycemic foods, tumorigenic amino acids like glutamine and asparagine as well as of iron-, zinc-, and nickel-rich foods/supplements. The personalized prescription of metabolic active dietary compounds in cancer patients is crucial in the prolongation of survival time and in the mitigation of the chemotherapy and radiation side effects.

EARLY LIFE NUTRITION AND THE PROGRAMMING OF ADULT HEALTH

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The first 1000 days of life represent a key period of plasticity important for the programming of development, metabolism and health later in life. During this phase of life, exogenous and endogenous factors (i.e. nutrition, xenobiotics, stress, hypoxia, infections, hormones etc.) can induce epigenetic changes leading to the development of diseases in adulthood (i.e. metabolic syndrome, neurodegeneration, cancer, type 2 diabetes). Epidemiological studies support the concept of the *developmental programming or "Developmental Origins of Health and Diseases"* (DOHaD): offspring from undernourished mothers showed in adulthood an increased risk for the development of obesity, type 2 diabetes and dyslipidemia. Furthermore obesity can occurs easily in adult women if their mothers were obese prior to pregnancy and/or had very high or very low gestational weight gain. On the other hand a high birth weight was linked with an elevated risk of several cancers in children (i.e. brain and testicular cancers) and adults (i.e. premenopausal breast cancer).

Due to its dynamicity, the epigenome changes across the lifespan, according to dietary methyl donors and/or activity of DNA and histone methyltransferases. DNA methylation, histone modifications and RNA-associated silencing are epimutations, which can control tissue-specific gene expression, and finally modify protein expression. Several functional foods contain methyl donors (i.e. folate, methionine, betaine and Vitamin B12), bioactive compounds (i.e. genistein and soy isoflavones, curcumin, resveratrol, vitamin A, epigallocatechin-3-gallate etc.), which can modulate epigenetically gene expression. Nutrition *in utero* has consequences for lifelong health, and maternal methyl-donor supplementation affects not only the mother, but is also inherited in the F2 generation through germline epigenetic modifications.

CAFFEINE – FROM A DAILY PLEASURE TO AN ENHANCING PERFORMANCE NUTRITIONAL SUPPLEMENT

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Objective. The objective was to identify the roles of caffeine as nutritional supplements for amateur and performance sports activities.

Methods. The information presented are based on relevant studies published in international sports nutrition journals over the past years, also from personal experience working with athletes from different sports areas.

Results. Caffeine is the most widely consumed drug in the world, and it is found in many foods, beverages and over-the-counter drugs. In sports, caffeine was banned until 2004, then it became to be used as a regular nutritional supplement, soon being recognized as an effective and safe one (taken in adequate dozes). Caffeine ingestion results in improved endurance performance including exercise at 70-75% VO2max for 15-120 minutes, time trial performance and running/cycling to exhaustion. Caffeine has been shown to increase the number of repetitions to failure in the bench press, leg press and leg exhaustion, with little impact seen on muscular strength as measured by 1 repetition maximum. Although amounts up to 6 mg/kg are most commonly used, intakes above 6 mg/kg do not always result in improved performance.

Conclusions. The usage of caffeine as nutritional supplement is both efficient and safe. This is the reason why it was classified as a class A supplement. Its effects manifest in endurance activities and strength and force sports, too.

THE BENEFITS OF INTEGRATING CITRUS ESSENCES IN DIET

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Introduction. Citrus essences are oils extracted by cold pressing from the peels of citrus fruits. Their traditional medical uses are now confirmed in numerous studies. Their pleasant taste would permit their integration in diet and thus benefit from their properties both as prevention and therapy.

Method. The process of eating involving both olfaction and taste, we searched the international databases for the therapeutic properties of citrus essences in oral administration and olfactotherapy.

Results. *Citrus paradisi* (Grapefruit) may be used for its metabolic properties, as it promotes lipolysis, thermogenesis and a decrease in food intake. *Citrus aurantium subsp. bergamia* (Bergamot) determines a decrease in cholesterol levels, in addition having also anxiolytic properties, reducing the corticosterone response to stress. It also possesses gastric mucosal healing properties as well as antioxidant and anti-inflammatory properties. *Citrus aurantium var. amara* may be a candidate for the treatment of intestinal dysbiosis. *Citrus limon* (Lemon) has gastroprotective properties and anxiolytic and antidepressant-like effects. *Citrus sinensis* (Orange) has an antioxidant effect and in combination with bergamot has a bactericide effect on several Enteroccocus species. *Limonene* is one of the dominant compounds of citrus essences and its properties sustain the activities of these oils. It determines a decrease in the size of white and brown adipocytes and prevents liver lipid accumulation. It reduces the levels of serum triglycerides, low-density lipoprotein cholesterol and fasting blood glucose levels and increases serum high-density lipoprotein cholesterol.

Conclusion. For their properties, citrus essences may have an important role in metabolic amelioration when included in diet on a usual basis and their anxiolytic properties give an additional benefit regarding the metabolic imbalaces determined by the adrenal stress hormones.

GENETICS IN THE PATHOPHYSIOLOGY OF HUMAN OBESITY: MONOGENIC, POLYGENIC AND SYNDROMIC FORMS OF OBESITY

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Obesity is a complex neuroendocrine disorder characterized by excess adiposity associated with higher risk for morbidity and mortality. Fat accumulation occurs as a result of an imbalance between energy intake (food) and energy expenditure (biological functions and physical activity). Both environmental and genetic factors play important roles in the onset of obesity. Environmental factors leading to higher caloric intake and lower levels of physical activity have undoubtedly contributed to the current obesity epidemic. Nevertheless, genetic contribution has also been established by studies that consistently reported a heritability of 40-70%. Thus, an interaction between genetic predisposition and environmental factors must be critical for the regulation of the adipose tissue, as reflected by the "thrifty genotype" hypothesis.

Current understanding of the pathophysiology of obesity involves both genetics and functional genomics, acting at multiple levels of energy intake and regulation i.e. brain, pancreas, liver, stomach, intestines and the adipose tissue itself. The study of various clinical situations, including bariatric surgery and pharmacotherapy, has brought light in many areas of these fine intersections between homeostatic systems, especially appetite regulation.

The majority of the obesity cases are polygenic, with environmental factors playing an important role in gene expression. A minority of the cases are monogenic. 11 single gene mutations are responsible for monogenic forms, most involving the leptin-melanocortin signaling pathway. Newer data support even a monogenic-polygenic continuum. To date, obesity due to genetic leptin deficiency is the only form of monogenic obesity successfully treated with pharmacotherapy (leptin). About 30 Mendelian disorders which include obesity as a prominent feature, along with mental retardation and other organ-specific abnormalities, are the syndromic forms of obesity (i.e.Bardet-Biedl, Prader-Willi).

NUTRIGENOMICS APPLICATION IN FOOD INDUSTRY

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Nowadays, the enhanced interest of consumer on diet link to health, lead to increased demand for information about food in general, and functional foods in particular. Factors driving EU consumer interest in these foods include the rapid advance in science and technology, increased health costs, changes in food safety regulations influencing label and food claims, aging population and increasing interest in attaining wellness through diet. Functional food is a food that beyond the normal benefits for health could also reduce the risk of a disease. There are several methods to produce functional food, including reduction of food components or the complete elimination of it, addition of components as supplements such as probiotics, polyunsaturated fatty acids and antioxidants, replacing a component, and/or increasing food stability. It is important to have a deep knowledge about the safety of these added bioactive compounds and the real benefits of their addition. Nutrigenomics reflects gene-diet interactions and it is one of the new fields in the omics (genomics/epigenomics, transcriptomics, proteomics and metabolomics). Nutrigenomics could be able to explore the wider spectrum of the effects of these added biocompounds and, therefore, help in the design of functional foods based on individual health/genome profiles with the aim of reducing the risk of specific diseases. Also, with this new field, scientists can develop specific and personalized nutrient rich diets as a key tool to help or treat certain health problems. We present and discuss design issues involved in future nutrigenomics interfaces and services based on connecting heterogenous data from food flow processing (ingredients to final food product/ farm to fork) to food consumption and body interaction of nutrients with DNA, microbiome etc. We answer to a question: How to link data from farm to fork to phenotype?

AN OVERVIEW OF NUTRITIONAL THERAPIES IN INBORN ERRORS OF METABOLISM - DIFFERENT DISORDERS, DIFFERENT APPROACHES; LESSONS FROM PHENYLKETONURIA

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Inborn errors of metabolism (IEM) are monogenic disorders in which the liver, brain, heart, muscle and kidney are the organs often most affected; in these diseases, enzyme defects interfere with the normal metabolism of exogenous (dietary) or endogenous protein, carbohydrate, or fat. The brain, heart, and muscle have high energy demands and are therefore susceptible to disorders of fatty acid, ketone, or glucose metabolism.

The various approaches involve substrate restriction, replacement of deficient products, removal of toxic metabolites, etc. Often, the cornerstone of treatment is dietary. Substrate restriction includes not only a diet low in the substrate indicated by the disorder (as in Phenylketonuria - PKU), but also strict calorie support during illness. To understand the problems in nutritional treatment, it is helpful to consider different types of disorders. Throughout the presentation, are discussed the nutritional approaches of PKU as a paradigm of IEM treatment. In the disease Maple syrup urine disease, treatment with a low-protein diet, supplemented by a branched-chain-free amino acid mixture is successful, but intercurrent episodes are unsafe. Treatment for PKU is a restricted diet, but there is no tendency for acute illness if the phenylalanine levels are too high. Disorders of the urea cycle are dietary challenges because while a very low-protein diet is required, no specific amino acid needs to be avoided; there is a fine line between adequate protein intake and chronic catabolism. Fatty acid oxidation disorders affect energy production; for long-chain fatty acid disorders, long chain fats must be avoided and medium-chain fats must be substituted, strictly avoiding catabolism. Glycogen storage disorders require attention in providing carbohydrate. Many IEM patients do not need specific dietary therapy (ex: those with storage – like lysosomal storage disorders or neurodegenerative disorders), although all children benefit from an optimal diet.

FOLATE DEFICIENCY MANAGEMENT

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The MTHFR gene is implicated in making an enzyme called methylentetrahydrofolate reductase. This enzyme plays a role in the aminoacids metabolism (the methylation of homocysteine to methionine), it participates in the chemical reactions involving the metabolism of the B9 vitamins, it is important for the DNA repairing process. There are two types of mutations: MTHFR C677T and MTHFR A1298C. The genetic change of the MTHFR gene, depending of the type of change, is related to several health conditions such as: birth defects, miscarriage, the bad use of the dietary folates and the synthetic form - folic acid. The polymorphisms in the MTHFR gene may be a possible risk factor for a variety of other common conditions such as heart disease, stroke, high blood pressure, preeclampsia, glaucoma, psychiatric disorders and some types of cancers, vascular disease. It is still unclear what is the role that changes in the MTHFR gene play in these conditions. There are also a large number of epigenetic factors likely to determine the risk of developing the above mentioned health conditions. Diet, bariatric interventions may play this role; although the mutation is not inherently dangerous, genes react differently to the foods we eat and to the lifestyle we have. Symptoms related with the MTHFR gene are: depression, gastrointestinal issues, folate deficiency, high levels of homocysteine, autoimmune diseases. The MTHFR change is cited to be largely spread in the general population, according to a local genetic laboratory and also the folate deficiency is very frequent detected among the obese patients which undergo a bariatric intervention. When epigenetic (a very restrictive diet following a bariatric procedure) meets an MTHFR gene change in a patient with folate deficiency, the risk for the above mentioned health conditions to appear is very high. It becomes an even bigger problem when the recommendation for treatment is the daily dose of folic acid. The present work presents such a case of an obese patient undergoing a bariatric procedure and the evolution after the treatment with the right form of folic acid (metafolin).

CLEANING MEASURES IN THE PRODUCTION, MARKETING AND PREPARATION OF FOOD IN CLUJ COUNTY DURING THE XVI-XVIITH CENTURIES

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In the historical period studied, during the sixteenth and seventeenth centuries, Cluj authorities (city magistrate and guild leaders), adopted a series of measures directly related with cleanliness in public places. The measures, ranked as „laws” for the city, were passed into City law book and Guild statutes, respectively. These rules included methods to keep cleanliness in places where food was handled: slaughterhouses, warehouses, markets. Other measures were related to the health of the animals slaughtered. In cookbooks and some medical compendia written in Transylvania during the studied period, there were also presented measures about cleanliness in kitchens and through food preparation process. All of these rules, although regulated five centuries ago, can be considered the first food hygiene measures in Cluj.

EATING DISORDERS – WHERE ARE WE HEADING TO?

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Eating disorders are a heterogeneous group of mental disorders, seldom mentioned in the clinical practice, but their incidence has begun to rise once clear, worldwide accepted diagnostic criteria emerged. The real prevalence of this group of disorders is not known, being underestimated. Anorexia Nervosa and Bulimia Nervosa are perhaps the most well-known eating disorders. It is estimated that approximately 1% of women suffer from anorexia nervosa, and that approximately 4-10% of women suffer from bulimia nervosa. It is important to note that not only women are affected by these disorders. The etiology is multi-factorial, with genetic, biological, and environmental factors being involved. An increase of the incidence has been observed in the developed countries, probably as a reaction to "the culture of beauty", with its "beauty standards" that are largely promoted. There is a chronic evolution, with numerous relapses even in patients who are under treatment. The personal, social and psychological implications should not be neglected. There are numerous medical complications to these disorders; almost all organs could be affected and their function impaired. The treatment requires a multidisciplinary team, including a psychiatrist, a psychologist, a nurse, a social worker, a dietitian, and professionals from all other medical specialities, depending on what organ or system has been affected. The treatment can be conducted in an outpatient facility, but the most difficult cases require admission to the hospital. Despite all progresses made in the medical science, eating disorders still remain a serious health problem, affecting mainly young adults and adolescents, with serious complications on multiple organs.

UTILIZATION OF FOOD WASTES AS SOURCES OF FUNCTIONAL INGREDIENTS

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Millions of tons of plant-derived wastes are generated annually by the food industry, their efficient management and valorization representing one of the main objectives of EU actions against food waste and towards sustainable development. Until few decades ago, food wastes, if not discarded into environment, were mainly used as animal feed. Nowadays, this attitude towards wastes changed, especially due to the growing interest in protecting the environment but also due to the increasing awareness of the benefits deriving from their exploitation. The by-products resulted from the processing of raw vegetables contain sometimes appreciable amounts of bioactive compounds such as: proteins, dietary fibres, polysaccharides, fatty acids, flavor compounds, phytochemicals (e.g. polyphenols) that can be extracted, purified, concentrated and re-used as functional ingredients in food industry or other related sectors (e.g. pharmaceuticals, cosmetics and health-care products). Using the recovered bioactive molecules as functional ingredients represents a sustainable alternative of food wastes exploitation as inexpensive source of valuable compounds, while developing innovative food and non-food products with health promoting benefits. Thus, for example, brewers' spent grain flour can be added to bread to increase the nutritional value and in particular the fiber content of the final product. Also, the polyphenolic extract obtained from the above mentioned by-product can be incorporated into bread (or other bakery products) in microencapsulated form resulting bread with increased antioxidants content.

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OPPORTUNITIES FOR EUROPEAN FOOD, NUTRITION AND DIETETICS PROFESSIONALS: VISION ABOUT ISEKI_FOOD ASSOCIATION

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Knowledge, skills and competences of the current and future European food, nutrition and dietetics professionals face two main challenges: forecasting needs for a rapidly changing sector (due to technological innovations and to the change from a product-centered to a customer centered market) and size of European food companies. The ISEKI_Food Association (IFA) is an independent European non-profit organization, with the aim of promoting synergies between research, education and industry in the food sector, assuring the best possible competences for all working in this area; and thus contributing to serving the consumer with safe and good food. The IFA mission is to support lifelong learning in the food sector, encompassing both academia and industry; teachers and trainers to improve efficacy of teaching; students to gain knowledge more easily; industry staff / food professionals to make use of research results; researchers to facilitate collaboration. As a world organization, IFA collaborates in international collaborative projects aimed at improving education and training of current and future food professionals. This work shows some of the most significant results of these projects and the contribution of IFA.

A MULTIDISCIPLINARY APPROACH IN A CASE OF ENDOMETRIAL ADENOCARCINOMA

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This work casts light on the importance of multidisciplinary approach in oncological treatment process. A 62-year-old patient was diagnosed with endometrial adenocarcinoma on June 19, 2015. The CT scan showed uterus with modified structure, endometrial cavity enlargement, pelvic ascites and multiple tissue images in the peritoneal fat, iodophyle, with a 13 mm diameter, in the right iliac fossa. CA 125 tumor marker values were 286 units/ml (reference range: 0-35 units/ml). The protocol established by oncologists consisted of 6 chemotherapy sessions, surgery and 20 radiotherapy sessions, while the dietitian provided a personalized diet protocol: breakfast and dinner made of fluids (vegetables and fruits juices, smoothies, vegetable soups) and a solid meal for lunch (70% vegetables). Before, during and after chemotherapy, a strict 72-h diet was established and consisted exclusively of fluid meals and enema therapy. The patient also underwent psychotherapy. Subsequent to 3 chemotherapy sessions, the results showed, on August 25, 2015, lesions in right iliac fossa in remission and the absence of pelvic fluid effusion. No changes in the structure of the uterus. CA 125 marker: 30 units/ml. Subsequent to 6 chemotherapy sessions, on October 27, 2015, the results showed no signs of relapse. The uterus: small in size, age specific, with no hypovascular areas in the endometrium that may suggest local remission. CA 125 marker: 19.8 units/ml. Due to great response following chemotherapy, the oncology team decided to remove surgery and radiotherapy from the protocol. The last CT, undergone in February 2016, indicated no changes in the evolution of the endometrial adenocarcinoma compared to previous tests. The results of the multidisciplinary approach underline the importance of considering oncological-nutritional diet in improving oncological treatment.

PRACTICAL NUTRITION

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Nutrition is a trending topic worldwide nowadays, regarding the health benefits of proper nutrition on several conditions. Dietetics is emerging in our country and most of the medical doctors (except the University ones) don't know yet exactly what dietitians do and why their activity is so important to the medical domain. As theoretical matters have been already overly exposed, practical cases are needed to be shown. When we talk about nutrition, many people think of obesity. Obesity is one of our conditions, together with all its co-morbidities, but as we are a whole, every medical branch is related to a certain extent to nutrition: psychiatry, dermatology, allergology-immunology, oncology and many others. While we are used to think of metabolic conditions when talking about nutrition, we should not forget that 2/3 of our immunity is in our gut, and gut bacteria is influenced by the food intake. We should not forget that our small intestine is like a "second brain" and communicates with our brain through the vagus nerve. That is why many of the patients with diseases that are not directly linked to nutrition show a significant improvement when changing diet habits. On the following, I will bring to you three cases of: morbid obesity, dermatitis and autoimmune disease (ankylosing spondylitis).

THE ACTIVITY AS A DIETITIAN IN A PRIVATE RECOVERY HOSPITAL

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Nutrition plays a very important role throughout the recovery process of patients, in cardiovascular, neurological, psychiatric, and palliative care, as well as in physical medicine and balneology. For this reason, the daily menu is carefully selected for the patients, respecting the nutrients for a healthy diet, but, at the same time, taking into account the preferences and tastes of patients. During hospitalization, patients receive nutritional counseling and participate in various discussions with the dietitian. The objective of the individual nutritional counseling is patient's education regarding healthy eating, setting out key mistakes in the diet, learning healthy eating habits and acquiring over time a more healthy lifestyle. During the discussions with the patients, they are asked about their food preferences, their eating habits at home, how they find the food we offer them at the hospital and to what extent does this food meet their tastes. The daily menu is divided into 5 meals: 3 meals (breakfast, lunch and dinner) and 2 snacks (consisting of fresh fruits and / or raw oleaginous fruits). The dishes are cooked by healthy cooking methods, like roasting in the oven, steaming, grilling, boiling, etc. The diet is varied, offering patients foods from all the food groups (cereals, vegetables, fruits, meat, fish, eggs, milk and dairy products, legumes, healthy fats). Through all these efforts, it is expected that the food offered to patients during their hospitalization, will bring an important contribution in their recovery process and will improve their health. Also, it is expected that after discharge, patients will go home with a minimum stock of knowledge, in terms of balanced diet and healthy lifestyle.

NUTRITION WORKSHOPS: PROMOTING A HEALTHY LIFESTYLE TO PREVENT OBESITY

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Prevalence of overweight and obesity in Romania is growing, both among adults and children. Although there are many strategies to combat this pathology and more and more specialists, globally, no significant decrease of obesity prevalence had been registered.

Obesity is a chronic disease that can be prevented. In this regard, we have proposed and developed nutrition educative activities as „nutrition workshops" for four target groups: adults, children, adolescents, and parents. Each workshop contained activities suitable to the group. In this study, workshops for children and adolescents are presented with details. For preschool and school children, the proper approach is „learning through play". Using appropriate language, games on food and nutrition were created, such as: „Food lights" „Healthy Plate" or „Superheroes on food". For adolescents group, the approach was more complex, due to their capacity to perceive the message and make connections. Concerning diet, a practical approach was applied, based on information about nutrients and their role. In parallel, it was conducted a psychological approach on eating behavior, this activity being coordinated by a psychologist, including workshops such as: „What is self-esteem?", „How am I and how they see me" etc.

Workshops on nutrition, especially for the new generations, through nutritional education for children and their parents, could be a good method to prevent and decrease obesity incidence.

THE IMPORTANCE OF FOOD EDUCATION FOR ATHLETES

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Sports nutrition is a constantly evolving field with hundreds of research papers published annually. For this reason, keeping up to date with the literature is often difficult, but also a necessity for dietitians and nutritionists. Appropriate nutrition complements, training and recovery can induce metabolic adaptations to training. Adequate energy should derive from a variety of foods that provide carbohydrates, proteins, fat and micronutrients. Maintenance of the energy balance in individuals with increased requirements, due to physical activity, is important.

Because of the lack of information regarding the level of nutrition knowledge in athletes in our country, we considered necessary making a research on this subject.

The aim of the present study was to investigate the level of general nutrition knowledge in athletes from the sports club "Universitatea Cluj" from Cluj-Napoca, Romania. 90 athletes completed the questionnaire which contained 11 questions of general nutrition knowledge, 40 males and 50 females with ages between 13 and 32 years, coming from different areas of sport: basketball (n=10), handball (n=32), volleyball (n=16), rugby (n=14) and judo (n=18). The questionnaires were examined by dietitians.

The findings revealed that nutritional knowledge was inadequate in this group of athletes, there were confusions between basic information and in some cases a total lack of knowledge was observed.

SIMULTANEOUS ANALYSIS OF 13 MYCOTOXINS IN BREAD COMMERCIALIZED IN CLUJ-NAPOCA, ROMANIA

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Mycotoxin contamination in different grains and food based on grains is of major importance due to its remarkable implications for food safety. Romanian population register a high wheat and wheat products consumption (133.09 kg/capita/year) (FAOSTAT 2015). Bread is the most important wheat-based product that contributes to wheat products consumption in Romania. As other perishable foodstuffs, bread is susceptible to fungal and mycotoxins contamination, especially due to its high water activity.

A multi-mycotoxin analysis method based on liquid chromatography coupled to triple quadrupole mass spectrometry and electrospray source working in a positive mode was validated and applied for the determination of mycotoxins in bread: enniatins (ENA, ENA1, ENB, ENB1), beauvericin (BEA), alternariol (AOH), alternariolmethylether (AME), tentoxin (TEN), aflatoxins (B1, B2, G1, G2), and ochratoxin (OTA).

The method was validated by analysis of blank wheat samples fortified at three different concentration levels (LQ, 2LQ and 10LQ) between 2 and 500 µg•kg−1. Coefficients of correlation were in the range 0.995-0.999. Limits of quantification (LQs) ranged between 2 µg•kg−1 (ENB and ENB1) to 15 µg•kg−1 (AME). Average recoveries ranged from 50 to 131% and relative standard deviations for intraday and interday precision were lower than 17%. Matrix effect revealed signal enhancement or signal suppression, depending on each mycotoxin. The method was applied to analyze 38 bread samples commercialized in Cluj-Napoca, Romania, purchased during October 2016. Analytical results showed that ENB was the most detected mycotoxin in the samples evaluated.

Further monitoring studies are necessary including more bread samples, in order to calculate the estimated daily intake for Romanian population through bread consumption for each mycotoxin detected.

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EVALUATION OF ENERGY AND DIETARY INTAKE FROM FOOD OF LACTATING MOTHERS IN A ROMANIAN SAMPLE

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Dietary habits and intake during lactation period represent one of the most important factors for successful milk production and mother's health and well-being. Also, maternal diet has a great impact on breast milk composition and therefore on infant nutrition. The main objective of the present study was to evaluate the energy and nutrient intake from food of lactating mothers during a self-selected diet.

Data was collected from a cohort of lactating women in Cluj-Napoca, Romania, recruited online through social network advertisement. Every woman had to complete a 7-day prospective food diary and a general characteristic questionnaire, both designed by the research team. The intake was analyzed using EDIM Soft and the results were compared to Dietary Reference Intakes (DRIs) for lactating women developed by the Food and Nutrition Board, Institute of Medicine, U.S. National Academy of Science (IOM).

The mean energy intake was 1826 kcal / day, value which is significantly lower compared with the level of energy intake recommended by IOM for lactating women ($p<0.01$). The distribution of macronutrients in our study sample was misbalanced, exceeding recommended fat intake with approximately 20 grams/day. Also, the total mean intake for vitamins and minerals was lower than recommendations in the majority of selected nutrients.

Based on our findings, lactating mothers did not meet dietary recommendations regarding energy and nutrients intake and macronutrient distribution, except for protein. With such inadequate food intake, mothers might be at risk of depleting their energy and nutrient stores and therefore affect breast milk composition and have negative health outcomes for the baby and themselves.

DEMENTIA AND NUTRITION

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Introduction. Annually there are about 8 million newly diagnosed cases of dementia, an enigmatic and unpredictable brain disease that damages memory, visual perception, reasoning, communication skills and the ability to focus. For lack of an efficient treatment and with the aging of the population, the number of patients will reach 135 million by 2050, statistics that forces us to set prevention as an urgent priority. Nutrition is still an almost neglected area of focus in relation to this global health priority.

Materials and methods. Meta-analysis of scientific information published in specialized periodicals. Medline and the Cochrane databases were searched up to September 2016 for additional, recently published studies. We provide an overview on the complex interrelationships among diet, nutrition, cognitive decline, and dementia by a systematic search in PubMed and Scopus.

Results. Many researchers are now converging on the idea that it is a degenerative disease that develops largely due to the long-term consequence of faulty nutrition and exposure to anti-nutrients, plus certain negative lifestyle factors, much like cardiovascular disease, and that any long-term solution must involve fundamental changes to a person's diet. It is widely accepted that an unhealthy diet over an entire life span is a major cause of many chronic diseases of Western civilization. Avoiding foods that induce memory loss and eating more of the foods that boost memory (e.g. omega-3 fats, antioxidants, vitamin E, vitamin C and flavonoids rich foods) improves your chances of enjoying all-around health.

Conclusions. Research has shown that a poor diet impacts memory and increases a person's chances of developing dementia. So, dementia prevention is an urgent priority, both to reduce incidence and slow the progression of the condition.

SPROUTS AS AN ANTIOXIDANT FOOD RESOURCE

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There is not an appointed definition for sprouts. During sprouting the amount of the antinutritive materials (trypsin inhibitor, phytic acid, tannin) decreases, whereas there are detected compounds with phytochemical properties and health-maintaining effects that are considered to prevent illnesses caused by free radicals. Polyphenols, due to their perfect antioxidant structure, disrupt chain oxidation reactions in cellular components, so they may be considered a clue of combating diseases caused by oxidative stress. Other impressive advantages of sprouting grains are the increased nutrient absorption of B12, Fe, Mg, Zn; breaking down gluten, aid in weight management, helping reducing allergens found in grains and finally boosting immune system.

The caryopsis of wheat and achenes of sunflower were harvested in the village Rădeni, district Străşeni, in 2015. Total phenolic content was determined spectrophometrically, using Folin-Ciocalteu reagent and Galic Acid as standard. From the results it was revealed that sprouts exhibited greater antioxidant capacity than seed extracts in terms of gallic and ascorbic acids equivalents. The sprouts and seeds of Helianthus annuus showed 428.21±2.54b and 128.81±1.68b mg GAE/g dried weight respectively. Similarly the sprouts and seeds of Triticum aestivum showed 766.26±2.32a and 653.21±1.15a mg GAE/g values respectively, sprouts and seeds of Zea mays showed 347±2.03c and 169±0.63b mg GAE/g dried weight. Experimentally it was revealed that sprouts exhibited higher total antioxidant capacity compared to seed extracts. Sprouted grains extract could be used in food as an additive, i.e. as a source of natural antioxidants in order to replace the synthetic ones. Thus, sprouted breadstuff, due to easy availability, can serve as good substrates, offering significantly low-cost, nutritional dietary supplements and bioactive compounds, and have a tremendous potential in food and pharmaceutical industry.

SPECTROPHOTOMETRIC DETERMINATION OF NITRATE AND NITRITE IN GROUNDWATER SOURCES OF CLUJ COUNTY

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Introduction. A general tendency of declining water quality has been reported globally. Poor water quality is a public health issue of concern following expansion of industrial and agriculture activities. Nitrates and nitrites in drinking water pose serious effects on human health: methemoglobinemia especially in infants and many studies correlated the dietary nitrate intake with carcinogenetic effects of nitrosamines. The aim of the study was to implement a spectrophotometric determination of nitrate and nitrite from well water samples collected from 3 regions of Cluj County. The data obtained was compared with the legislative limits imposed by the European Union and by Romania in specific laws.

Material and methods. 35 well water samples were collected from 3 areas of Cluj county during 2016. A spectrophotometric method was implemented for the determination of nitrate and nitrite. Nitrate was determined at 220 nm wavelength and the nitrite participated first in Griess reaction to form azo-derivatives that were determined at 520 nm wavelength.

Results. The average nitrate determination for each region was calculated. Above limit levels of nitrate and nitrite was determined in % of samples analyzed.

Conclusion. It was concluded that nitrate and nitrite contents in well water sources for drinking water supply in Cluj county was higher than standard level in some areas. It was also discovered that the general knowledge of people about the effects of drinking water with a high concentrations of nitrate and nitrite was very low.

THE NEED FOR HIGH PROTEIN DIET AND AMINO ACID SUPPLEMENTS IN OLDER ADULTS

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The natural aging process is associated with steady and progressive loss of muscle mass, strength, and physical endurance. These are major contributors to increased morbidity, mortality, and reduced quality of life in older adults. Age-related sarcopenia can compromise physical function and increase the risk of disability. There are no available pharmaceutical treatments for sarcopenia. The recent studies show that a well-balanced nutrition, especially adequate protein intake, and regular exercise can improve muscle function. The aim of this study was the evaluation of proteins in the diet of mature adult volunteers in the city of Cluj-Napoca. Both the quality and quantity of proteins in the diet were assessed. The results were compared with recent data in scientific literature. The current recommended dietary allowance for protein (0.8 g/kg body weight/day) might not be sufficient for maintaining muscle health in older individuals. Consumption of 1.0 to 1.3 g/kg/day dietary protein combined with twice a week resistance exercise reduces age-related muscle mass loss. For individuals older than 65 years, in any health stage, a target of 1.2–1.4 g protein/kg body weight/day is suggested. 15–20% of the total energy intake has to come from the protein foods group. Diets enhanced with whey protein, rich in proteinogenic amino acids, resulted in positive outcome amongst older adults with sarcopenia, and lowered the risk for age-related diseases. Also, amino acid supplements may be used to improve physical or mental performance and sleep. Higher protein diets do not compromise the renal function and may help the calcium homeostasis by increasing intestinal calcium absorption. Based on the latest studies it must be concluded that older adults have in general insufficient protein consumption. An adequate augmentation of protein foods in the diet, combined with amino acids supplements if needed, can be beneficial for the health of older adults.

NUTRITIONAL AND BEHAVIORAL PECULIARITIES OF THE POPULATION IN THE GENESIS OF DIGESTIVE DISEASES

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Digestive diseases, the third leading cause of death in Romania (4.9% of total deaths in 2010), are responsible for the annual loss of about 77 from 100 000 people in 2009-2010, registering a increasing value from 2005. The high contribution of these diseases in general pathology, disabling potential of some of them, their interactions with environmental factors and food, require their diagnostic in preliminary stages, to avoid, prevent or treat possible complications. The aim of this study was to evaluate the nutritional and health status for people with digestive disorders from Cluj county, highlighting behavioral risk factors and preventive measures. Two study groups were established, each one including 255 human subjects: Group 1 patients from Cluj county with known digestive diseases, and the second group, subjects from the same county that have not been diagnosed previously with digestive disease. In our study, the most important digestive disorders diagnosed in the group of subjects from Gastroenterology Hospital of Cluj-Napoca were identified and classified. Relations between morbidity by digestive disorders and behavioral risk factors were evaluated. Furthermore, preventive measures on the development of diseases of the gastrointestinal tract were elaborated.

INVESTIGATING THE EFFECT OF *FETEASCĂ NEAGRĂ* GRAPE MARC EXTRACTS IN AN EXPERIMENTAL INFLAMMATION

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In the solid biodegradable wastes from the wineries are found namely stems, skins, and seeds, named grape marc. Due to bioactive compound content, grape marc has shown beneficial effect on health. We tested the effect of fresh and fermented frozen grape marc from Feteasсă Neagră grape variety in acute experimental inflammation, focused on the nitro-oxidative stress.

For phytochemical analysis, there were used the extracts from dry and frozen grape marc. The experiment was performed on Wistar-Bratislava albino rats. The anti-inflammatory activity of the extracts was tested in acute inflammation induced with turpentine oil. The results were compared a negative control group, a positive inflammation group, and a diclofenac treated group. The effects were evaluated by measuring the Malondialdehyde, Nitric oxide (NO), Total antioxidant reactivity, Total antioxidant capacity (TAC), Nitrites, total Thiols and Oxidative Stress Index (OSI)

Comparing between dry and frozen grape marc, the higher values for the phytochemicals analysis was for the frozen grape marc. Compared to the inflammation group and the Diclofenac group, the extracts reduced OSI for all dilutions. Reduction of oxidative stress was due to decrease of total oxidative status (TOS) and NO, without major changes of TAC. Compared to Diclofenac, the decrease of TOS was insignificant. All the extracts had better antioxidant effect than Diclofenac.

THE EFFECTS OF PERSONALIZED NUTRITIONAL INTERVENTION IN A PATIENT WITH OBESITY CLASS II

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Introduction. Obesity is considered to be a modern century disease, becoming a worldwide scale pandemy within the last years. A personalized nutritional intervention, composed of a thorough evaluation, the change of nutritional habits and nutritional monitoring are some of the main action courses to manage obesity. The aim of the present study was to evaluate the effect of a personalized nutritional intervention on the evolution of anthropometric parameters and body composition in a patient suffering from obesity class II.

Materials and methods. As management of this obesity case, a nutritional intervention was established, with a combination of diet, exercise, and behavioral modification. To evaluate the changes in patient's daily diet and lifestyle, the patient was asked to keep a food diary each week.

Anthropometrics and body composition measurements were performed within every monitoring session, at the end of the nutritional intervention and also at a span of six months after the end of the intervention.

For the evaluation of body composition, the patient was weighted with a device that uses the Bioelectrical Impedance Analysis (BIA) method. It was determined the body fat percentage, muscular tissue percentage, body mass index (BMI), visceral fat level, and hydration percentage.

Results. Following the personalized nutritional intervention, the patient showed a decrease in body mass (-30 kg, from 94.5 kg to 64.5 kg), BMI (-10.4 kg/m2, from 34.7 kg/m2 to 24.3 kg/m2), body fat percentage (-15%, from 43.9% to 28.9%), visceral fat level (-7, from 13 to 6), waist circumference (-26 cm, from 98 cm to 72 cm) and an increase in the hydration level (+10.1%, from 40.9% to 51%).

Conclusions. The present work demonstrated that a meticulous weight reduction plan, based on personalized nutrition and life style recommendations, can be efficient in the management of obesity.

CORRELATION BETWEEN BONE AND CARBOHYDRATES METABOLISM DEPENDING ON THE NUTRITIONAL STATUS IN DIABETIC PATIENTS

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Background. Diabetes mellitus and low-trauma fractures are major causes of morbidity and mortality worldwide. The objective was to evaluate the relationship between nutritional status, dairy calcium intake, serum levels of vitamin D, glycemic control and the onset of osteoporosis and/or bone fractures predisposition in T1DM and T2DM patients.

Methods. The sample consisted of 1151 patients (350 men and 799 women) divided into three groups: 400 patients with T1DM of which 19 with osteoporosis (age 42.39±13.66 yo; BMI 23.88±3.28), 401 patients with T2DM of which 64 with osteoporosis (age 62.01±13.21 yo; BMI 30.25±8.83), 350 non-diabetic patients with osteoporosis (NDP) (age 64.59±10.45 yo; BMI 25.64±4.17). In all subjects, nutritional status, anthropometric, metabolic and glycemic control parameters, BMD (as T-score) at the lumbar spine (LS-BMD), femural neck (FN-BMD) and total femur (Ftot-BMD) were measured. Prevalence of bone fracture between the different group were determined.

Results. Low vitamin D levels were found in both T1DM (16.38±2.74ng/mL) and T2DM (15.04±9.35ng/mL) as well as low daily calcium intake (634.84±159.97mg/day and 649.43±189.86mg/day, respectively). About 89% of T1DM and 37.5% of T2DM had T-score≥-2.5; T1DM had also a FN-BMD (T-score: -2.373±0.68 vs -1.91±0.72; p=0.016) and Ftot-BMD (T-score: -2.368±0.79 vs -1.60±0.96; p=0.003) significantly lower than T2DM and a LS-BMD significantly lower compared to NDP (T-score: -2.26±0.79 vs -2.91±0.86). Instead, T2DM had a LS-BMD, FN-BMD and Ftot-BMD significantly higher than those of NDP (p=0.0001, p=0.004, p=0.007). We didn't found a positive correlation between BMD and HBA1c.

1% of TIDM, 3.2% of T2DM and 14.8% of NDP had vertebral fractures; 22.7%, 9.2% and 14% had non-vertebral fractures. T2DM had 38% reduction in risk of non-vertebral fractures (OR 0.62, 95% CI=0.39-0.98) compared with controls; instead, T1DM had an increased risk of non-vertebral fractures (OR 1.81, 95% CI 1.24-2.66).

Conclusions. We confirm that T1D group had an increased risk of fractures. Calcium intake and vitamin D resulted insufficient in all groups. HBA1c did not affect BMD or risk of fractures in all groups.

IDENTIFICATION OF MAIN DIETARY SOURCES OF POLYPHENOLS AND ASSESSMENT OF CONSUMPTION FREQUENCY OF POLYPHENOL-RICH FOODS AND BEVERAGES IN A TYPICAL SAMPLE OF ROMANIAN ADULT POPULATION

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An improved understanding of the contribution of polyphenols to health and disease risks requires the assessment of dietary habits in nutritional studies involving population samples. The objective of this study was to identify the main dietary sources of plant polyphenols that constitute food habits in Romania. We conducted a survey to collect dietary intake data provided by adult Romanian participants. Respondents completed a short food frequency questionnaire devised by the authors in order to assess the main sources of polyphenols and the consumption frequencies for some polyphenol-rich foods or food categories over a one-year time period. Survey participants were comprised of 160 adult respondents from Romania. Respondents provided demographic information regarding gender, age, height, body weight, level of education, place of residence (urban, rural), generally health status. Participants also specified if they had chronic digestive diseases and/or type II diabetes mellitus. The Phenol-Explorer 3.6 database on polyphenol content in foods was used to compare polyphenol content between foods and to estimate polyphenol intake in the population sample. Polyphenol intakes were estimated for both genders in individual age categories. Our food frequency questionnaire was validated against a 24-hour recall diet record administered in 30 subjects. Plant food categories such as cereals, beverages, vegetables and fruits were found to be significant sources of polyphenols, of which white bread, coffee, potatoes, various vegetables and indigenous, non-exotic fruit were the main contributors. Among Romanian adults, polyphenol-rich food consumption patterns vary according to age-category, place of residence (urban vs. rural), gender, education level, health status, body mass index. For fruit and vegetables, the average number of daily servings reported by respondents is lower than recommended. In conclusion, referred food sources for polyphenol uptake are directly linked to distinct cultural and dietary habits that characterize certain age groups in the Romanian population. The most abundant polyphenols in the respondent's diet are not necessarily those that have the best bioavailability profile. Beneficial effects of dietary polyphenols are confirmed by our findings. Results show that young Romanians should increase their intake of fruit and vegetables in order to improve their diet quality scores.

ANTIMICROBIAL SUSCEPTIBILITY OF ENTEROCOCCUS FAECALIS TO INTRACANAL MEDICATIONS

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Introduction. Enterococcus faecalis is a frequently identified bacterium in persistent infections of the endodontic system. As a consequence of its mechanisms of action it can survive in extreme environments and can resist to different disinfectant substances. The aim of this study is to compare the in vitro sensitivity of E. faecalis to clorhexidine 2% and calcium hydroxide, two products commonly used in endodontics.

Material and methods. For the bioassay a E. faecalis bacterial strain was used (Microbiologics, USA). The bacteria was cultured on Columbia agar (Biomerieux, France). Two endodontic products were tested, chlorhexidine 2% (Cerkamed) and calcium hydroxide (Spofa Dental). The antimicrobial activity was carried out by using the disc diffusion method. Sterile 6 mm discs were processed, in triplicates, to contain 20 µl of chlorhexidine and 20 µl calcium hydroxide. The impregnated discs were placed on the inoculated agar and incubated for 48 h at 37°C in gas bags, GenBag CO2, (Biomerieux, France). The antimicrobial activity of each product was determined by measuring in millimeters the inhibition zones around discs.

Results. The inhibition zones showed a good antimicrobial activity of chlorhexidine 2% against E. faecalis, with an average inhibition diameter of 14.15 mm, compared to the activity of calcium hydroxide, which was very low, with an average inhibition diameter of 0.04 mm. Unpaired t-test analysis of the two groups showed $p<0.05$, with a statistically significant difference between groups.

Conclusion. E. faecalis exhibits an important in vitro sensitivity to chlorhexidine 2%. Chlorhexidine 2% is an effective antimicrobial agent in the root canal therapy and can be used in cases of primary and secondary endodontic infections. The sensitivity expressed by E. faecalis to calcium hydroxide was very low, concluding that calcium hydroxide should not be used as an antimicrobial agent, but for its other biological and chemical properties.

PREVALENCE OF PERIODONTAL DISEASE IN DIFFERENT STAGES OF LIVER PATHOLOGY

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Introduction. The aim of this study was to evaluate the association between periodontitis and different stages of liver disease.

Material and methods. In this observational study, were included 100 patients, divided in two groups, group A - consisting of 65 patients diagnosed with liver cirrhosis and group B consisting of 35 non-cirrhosis patients. Patients from both groups underwent a complete dental and periodontal examination, between November-December 2015. The clinical investigation consisted of the registration of the teeth, decays, dental restorations, periodontal status, Oral Hygiene Index (OHI), Gingival Bleeding Index (GBI), Decayed-Missing-Filled Index (DMF). Additional information regarding age, sex, tooth brushing behavior, alcohol intake and smoking, were also included. Data entry and statistical analysis were done using SPSS software ($p<0.05$).

Results. The results show a higher number of missing (62.24% vs 61.50%) and restored teeth (2.66% vs 1.15%) and a lower number of decayed teeth (35% vs 37%) in group A compared to group B. OHI ($p<0.259$) and GBI ($p<0.077$) were higher in group B. The prevalence of periodontitis ($p<0.313$) was 42% in group A and 18% in group B. According to the data from the literature, predisposing factors causing periodontal disease associated with liver pathology, were found also in this study

Conclusions. Our results showed that periodontitis might be associated with different stages of liver disease.

INVESTIGATION OF THE MORPHOLOGY AND STRUCTURE OF E-GLASS FIBER-REINFORCED COMPOSITES FOR CRANIO-FACIAL CUSTOM-MADE IMPLANTS

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Introduction. In spite of the huge progress made in reconstructive surgery in recent decades, restoring cranio-facial bone structures, pathologically affected, keeps being an endless challenge. This study aims to analyze the morphology and the structure of four experimental E-glass fiber reinforced composites (MCE) that will serve the fabrication of custom-made implants for craniofacial bone reconstruction.

Material and methods. The organic matrix was prepared using resin mixtures of UDMA 60 wt%, Bis-GMA 10 wt%, TEGDMA 30 wt%. For MCE 1 the degree of reinforcement was of 65% woven fiber glass; for MCE 2 the degree of reinforcement was of 60% woven fiber glass; for MCE 3 the degree of reinforcement was of 65% unidirectional fiber glass. The analysis of the experimental composite materials was made through AFM (XE 70 atomic force microscope, Park Systems) and SEM (scanning electron microscope JEOL – JSM 5600 LV, equipped with an EDX spectrometer, Oxford Instruments Soft Inca 200).

Results. The morphological analysis of the external surface of experimental composite materials has shown that the reinforcing material was well incorporated in the polymer matrix and no monofilaments of fiber glass could be observed on the material surface. Structure analysis of the experimental composites revealed the optimal interfacial adhesion. Woven E glass fibers were more favorable than unidirectional fibers for manufacturing cranio-facial implants. The flexural strength of the experimental composite materials was directly influenced by the degree of charge.

Conclusion. Taking into account the obtained results, the perspective of continuing the studies appears for improving the mechanical properties so as to be as close as possible to the ones of the human bone.

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THE SYSTEMIC EXPRESSION OF THE PERIODONTAL INFLAMMATORY PROCESSES

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Introduction. Periodontitis involves a chronic disorder of the tooth-supporting complex, being the leading cause of edentulous status in the adult population. The systemic implications of this disease became a topic of large interest considering the influence on the human quality of life.

The aim of this study was to assess the systemic inflammatory response in periodontal disease related to clinical and histological aspects of the periodontium in an experimental model of periodontitis in rats.

Materials and methods. The periodontal disease was experimentally induced in rats using an original model proposed by the authors. The clinical changes of the periodontal tissue were daily assessed, and blood samples were obtained from each animal, at baseline and on completion of the experiment. The plasma level of the inflammatory cytokines and hematological parameters were determined. The samples obtained after the animals were sacrificed were histologically evaluated.

Results. The clinical appearance of the tissues after the induction of periodontal pathology is similar to periodontitis signs that occur in humans. Histopathological analysis showed a characteristic microscopic aspect of the periodontitis with an intense inflammatory cell infiltration, osteoclasts, and bone resorption activity. The values of interleukin-6, as a marker of systemic inflammation significantly increased during the progression of periodontitis in rats.

Conclusion. The results of this experimental study proved that the clinical and microanatomical changes in the rat's periodontium were correlated with a pronounced systemic inflammatory response.

ROOT CANAL SHAPING USING ROTARY SYSTEMS AND THE INCIDENCE OF ROOT CRACK FORMATION

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Introduction. The need of progress in the endodontic field concerning efficiency and velocity conducts to the use of Nickel-Titanium single-file rotary systems.

The aim of the study was to evaluate and compare the effects of root canal shaping using single–file rotary systems in reciprocal and continuous motion.

Material and methods. Forty-five mandibular incisors were included in the study, after evaluating radiographs and their external root surface using a dental microscope. The teeth were divided into 3 equal groups and the root canals were instrumented with OneShape ® (Micro-Mega, Besancon, France)- continuous rotation, and Reciproc ® (VDW, Münich, Germany)-reciprocating movement. Resin blocks and fluid silicone were used to simulate the periodontal ligament. Each root was horizontally sectioned at 3,6,9 millimeters from the apical foramen, using a low-speed saw, under water cooling. The incidence of complete and incomplete root cracks was observed using a dental microscope (OPMI pico®, Carl Zeiss, Oberkochen, Germany).

Results. The number of incomplete cracks found at 3/6/9 millimeters from the apical foramen was 30/17/5. The maximum number of cracks per root section corresponded with a root canal shaped using a continuous motion rotary file. The statistical difference between the two rotary systems for the incomplete dentinal cracks at 3/6/9 millimeters was p=0.31/p=0.40/p=0.50.

Conclusion. The study revealed the incidence of both incomplete and complete root cracks after using the two single-file rotary systems. There is no statistic difference regarding the number of caused cracks between the two systems.

THE BLEACHING EFFECTS OF LASER ON AN EXPERIMENTAL GEL

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Introduction. Laser bleaching is a popular method used in dental esthetics. To accelerate the bleaching process, the gel can be light-activated by various light sources such as KTP, diode, Er:YAG, Nd:YAG and also LED lamps. The aim of this in vitro study was to evaluate the effects of laser during tooth bleaching on bovine enamel surface, to evaluate the color changes, the surface morphology and mineral composition.

Material and methods. Sixty bovine teeth were selected and divided into two groups: Group I (control) received a bleaching treatment with the experimental gel with no laser activation, group II received a bleaching treatment with the experimental gel activated with laser. The bovine teeth were stored for 10 days after the bleaching treatment in artificial saliva. In order to determine the color change we used a Spectrophotometric analysis. Data were statistically analyzed using StatsDirect v.2.7.2 software, OpenEpi v.3.03 online software and the Excel application (from Microsoft Office 2010 suite) using the Anova, Sharipo Wilk and Kruskal–Wallis tests (a=0.05).

Results. The statistical analysis showed significant differences between T1 (the initial measurement of the color) and T2 (the measurement of color after bleaching) for the second group. The morphology of the enamel surface changed according to the bleaching process and the mineral composition of the enamel was not influenced by the laser activated bleaching treatment.

Conclusion. Laser activated bleaching is a reliable method, that improves the outcomes of classic bleaching without altering the mineral composition of enamel.

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INTERNAL AND MARGINAL ACCURACY OF ZIRCONIA RESTORATIONS MADE WITH TWO CAD/CAM SYSTEMS

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Introduction. Nowadays there are a lot of dental CAD/CAM systems and their number is increasing, but there is a lack of information regarding which system produce the best marginal fit. The purpose of this study was to evaluate the internal and marginal fit of two different CAD/CAM systems (CERCON, DeguDent and CEREC, Sirona).

Material and methods. Twenty epoxy resin premolar dies (ExaktoForm, Bredent) were fabricated and twenty zirconia crowns. Ten zirconia crowns were fabricated using CERCON, DeguDent CAD/CAM system and ten using CEREC, Sirona CAD/CAM system. The internal and marginal fit of the crowns was analyzed using Bersoft Image Measurement 8.47.

Results. Internal and marginal gap values between the crowns fabricated with CERCON CAD/CAM system and CEREC CAD/CAM systems were not significantly different (p=0.2).

Conclusion. The CEREC system demonstrated larger internal and marginal gaps than CERCON crowns. However, no significant differences in marginal and internal fit were found between CERCON and CEREC CAD/CAM zirconia crowns.

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HUMAN PERIODONTIUM-DERIVED MESENCHYMAL STEM CELLS VIABILITY AND DIFFERENTIATION POTENTIAL EVALUATION AFTER NICOTINE EXPOSURE: AN IN VITRO STUDY

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Objectives. The purpose of this study was to assess the nicotine cytotoxicity on periodontium derived mesenchymal stem cells regarding cell viability and the mechanisms underlying this effect, as well as the way in which nicotine affects the osteogenic differentiation.

Materials and methods. Mesenchymal stem cells (MSC) were isolated from human periodontal tissues and treated with 9 successive nicotine dilutions and incubated for 24 h and 48 h. The cytotoxic effects of nicotine were assessed using the MTT assay. The optical density (OD) was measured at a wavelength of 570 nm. In order to determine the number and morphology of MSC, histological analysis was also performed. MSC in cultures were visualized using a Zeiss Axiovert D1 inverted phase microscope, equipped with a PlasDIC condenser and a 20X objective. Following nicotine exposure, all four types of MSC (derived from periodontal ligament, circular ligament, alveolar bone and gingival tissue) were cultured in osteogenic medium, following the osteogenic differentiation protocol, in order to determine the differentiation potential. Each day, for ten days, they were treated with three different nicotine doses and colored in the end with Alizarin red to highlight calcium deposits, representing markers for mineralization. Data were analyzed with the one-way ANOVA, followed by Tukey's Multiple Comparison Test (p-value<0.05).

Results. High nicotine doses (N1-N3) induced a significant cell death in all four cell lines after 24h and 48h. However, there were differences in the effect of intermediate (N4- N7) and low doses (N8, N9) of nicotine at the two-time points. Lower doses of nicotine, especially N6 and N8 lead to a higher mineralization and to calcification nodules.

Conclusions. Nicotine exerted dose- and time-dependent cytotoxic effects on mesenchymal stem cells derived from the human periodontium. The periodontal stem cells exhibited different responses to nicotine according to their origin.

ALTERNATIVE STRUCTURAL METHODS USED TO INVESTIGATE HUMAN DENTIN AND ENAMEL

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Introduction. A detailed knowledge of the teeth structure is mandatory to understand and explain the defects and the dental pathology, but especially to take correct decision regarding dental prophylaxis and treatment. The present work is an alternative study to the traditional investigation methods used in dentistry, a study based on the use of modern, sensitive physical methods to investigate human enamel and dentin.

Material and methods. For the present study several teeth collected from patients of different ages were used for structural and dietary investigation. The samples were investigated by Raman spectroscopy for the molecular structure analysis of dentin and enamel, atomic force microscopy (AFM) to view the dental topography at micrometric size and mass spectrometry for isotopic ratios as a fingerprint of patients' personal diet.

Results. The obtained Raman spectra and their interpretation are in good correlation with the literature and may give medical information by comparing affected dental structures with healthy ones. AFM technique gave us the possibility to study in details the dentin and enamel surface to collect information about dental hardness or dental structural changes. δ13C values obtained for the studied samples can be classified in C4 category specific for young people and children diet (sweets, cereals, juices, pastry).

Conclusion. The methods used in this attempt furnished important information about dentin and enamel structure and dietary habits and each of the three proposed methods can be extended at a larger level in the study of the teeth structure.

COLOR COORDINATES OF NON-VITAL VS. VITAL TEETH

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Objective. To record the chromatic parameters of non-vital and corresponding vital teeth in a group of patients, in order to establish the differences in chromatic space between the two groups of teeth and to do a comparison with the color space covered by the commercial shade-guides.

Materials and methods. In a group of 209 patients, aged 17 to 70, the middle third of the facial surface of three hundred and forty six devitalized teeth was measured using a clinical spectrophotometer (Vita Easyshade Advance); lightness (L*), chromatic parameters (a*,b*), chroma (C*), hue (H*) and the closest shade in Classical and 3D Master Shade guides were recorded. For each patient, the same data were also recorded for a vital reference tooth.

Results. The interval of color coordinates, for the non-vital teeth varied as follows: L*: 52.83–92.93, C: 8.23–58.90, H: 51.20 – 101.53, a*:-2,53 – 24.80, b*: 8,10 – 53,43. For the reference vital teeth the interval of color parameters were: L*: 60.90 – 97.16, C: 8.43 – 39.23, H: 75.30 – 101.13, a*: -2.63 – 9.60, b*: 8.36 – 39.23.

The first three most frequent values in Vita Classical mode for non-vital teeth were A4/B3, A3.5, A3 and for vital teeth were B3, A3, A1, whereas in 3D Master, values for non-vital teeth were 2M3, 3M3, 4M3 and for vital teeth were 2M3, 2M2, 1M2.

Conclusion. Differences have been found between the area covered by the color coordinates of non-vital teeth and vital teeth used as reference. According to the recorded data, non-vital teeth were darker (decreased lightness), more saturated (increased chroma), and with a reduced extension of the hue interval, in comparison with the vital reference teeth. Moreover, there was an increased tendency towards positive values in a* and b* axis, which means redder and yellower non-vital teeth in comparison with the vital ones.

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ISSUES RELATED TO THE PERCEPTION AND EXPECTATIONS OF THE PATIENTS WEARING COMPLETE DENTURES

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Introduction. Recent progress in science and technology have led to the development of a variety of materials and dental treatments. Despite this progress, complete dentures remain a very requested treatment for edentulous patients for economic reasons (mainly), and also because of their reservations in undergoing more complex treatments because of their age or underlying health conditions.

Materials and method. In the present study we aim to evaluate various issues related to the use of dentures through a questionnaire. These issues include: perception of the edentulous status, the importance of the denture for the patient, the comfort obtained through the use of dentures, and the difficulty in performing certain functions (e.g. speaking, eating, esthetics).

Results. The data gathered, correlated with the patients' age, gender, education, environment (urban/rural) were subjected to statistical processing and will be presented in the form of graphs and diagrams.

Conclusions. These assessments will help us gain a better understanding of the particularities of this segment of patients and their expectations about treatment, in order to improve communication and collaboration, to ultimately increase their satisfaction with the treatment.

THE USE OF SLM IN DENTAL IMPLANTS – PROTOCOLS FOR STERILIZATION

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Introduction. The use of dental implants is a safe and popular treatment option amongst edentulous patients. The survival rates of these implants is high, it can be considered satisfying, but improvements can be made. Therefore, we focused our attention on controlled porosity implants produced by SLM (Selective Laser Melting). Before going any further with our work in this field, a preliminary study regarding the sterilizing of such implants must be conducted. Studies on sterilization protocols for porous dental implants cannot be found yet.

Materials and method. Two groups of dental implants were produced using SLM, from pure titanium. 10 were produced using a 150W laser beam which resulted in a porosity of 1%, and the others using a 75W laser beam, resulting in a porosity of 23%. The internal structure of the implants was not defined for this study. The difference in porosity resulted only from the difference in the power of the laser beam. All the implants were sterilized, then divided in the two groups which spent 24 hours in a prepared culture media with developing bacteria. The first 10 (5 with 1% porosity and 5 with 23% porosity) were then sterilized using dry heat and the other 10 were sterilized using steam. All the implants were then placed again in sterile culture media and bacterial growth was then observed.

Results and conclusion. The culture media will be observed and conclusions will be drawn regarding the efficiency of these two types of sterilization. If they are able to kill all bacteria, then this type of implant can be used in further studies as planned. Otherwise, new sterilization protocols must be developed.

MASTICATORY EFFICIENCY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Introduction. Type 2 Diabetes mellitus (T2DM) is a systemic condition that creates a series of modifications in the oral cavity. Diminished salivary secretion and dental pathology are the most frequent oral problems of the diabetic patient. Thereby patients suffering from T2DM have masticatory problems, their diet is based on soft foods that are rich in carbohydrates and fats, inducing hyperglicemia.

Material and method. Two groups were selected, the first one was formed of patients with T2DM and the second one made out of patients without the systemic disease. Each patient chewed a piece of sugar-free gum for 1 minute. The gum was weight before being chewed and at 48 hours after mastication. The difference in weight represents the sweetener that was dissolved during mastication. As the amount of sweetener dissolved increases the masticatory efficiency grows.

Results. The initial weight of the piece of gum was 1.45 g. After mastication the average weight was 0,84g (57.93 % from initial value) for the study group whereas the mean weight for the control group was 0.72 g (49.65% from the initial value).

Conclusion. Patients with T2DM have pathological oral manifestations of the disease that determine an impairment in masticatory functions. Tooth loss and reduced salivary secretion can cause problems in daily alimentation, fact that leads to a continuous state of hyperglicemia.

Masticatory efficiency in patients with T2DM is diminished in comparison with that of patients without the systemic disease.

IMAGING EXAMS FOR DIAGNOSING TEMPOROMANDIBULAR JOINT DISORDERS

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Introduction. Temporomandibular disorders (TMD) is defined as a collective term that embraces a number of clinical problems that involve the masticatory muscles, the temporomandibular joint (TMJ), and the associated structures. The aim of the study is to establish the indications of imaging tests for the diagnosis of TMJ pathological changes.

Material and methods. Several techniques are available to image the TMJ: panoramic radiographs, transcranial radiographs, computed tomography (CT), cone beam computed tomography(CBCT), magnetic resonance imaging (MRI), high resolution ultrasonography.

Results. Panoramic radiographs and transcranial radiographs show only bone changes of TMJ (asymmetries, tumors, fractures, degenerative disease in late stages), but they are limited due to the overlap of zygomatic arch and base of the skull. CBCT is very useful for detecting the morphological TMJ changes, but is not able to visualize the soft tissue (articular disc, retrodiscal tissue, ligaments). MRI is considered to be the reference standard in visualizing the soft tissue of TMJ. Ultrasonography is a noninvasive, dynamic, inexpensive imaging technique in assessing the TMJ status.

Conclusion. There is no clear evidence when TMD patients should be examined with different imaging techniques. The different exams have specific indications in diagnosing TMJ disorders and should be performed only after an accurate clinical examination.

THE INFLUENCE OF FIRST PERMANANENT MOLAR LOSS ON DENTAL ARCH MORPHOLOGY – A RADIOLOGICAL EVALUATION

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Introduction. The first permanent molars (upper and lower) are often the object of premature extractions due to cavities or their irreparable complications. Unfortunately, the consequences involve not only adjacent tooth movement, but also occlusion changes that frequently lead to painful and irreparable TMJ pathology.

Aim. The purpose of this study was to evaluate the changes that occur in the dental arches due to premature first permanent molars loss, from a radiological point of view.

Material and methods. A longitudinal study was conducted between 2015-2016, among fifty patients in the age group of 12-15 years who reported for premature teeth loss and management of space problems within the dental arch, in the Department of Orthodontics. Panoramic X-Rays were taken before the extractions and at an interval of 6 and 12 months after the extractions.

Results. The study revealed that space loss due to mesial version of the second permanent molars was maximum in the first six months after the extractions in the lower arch. For the upper arch the space loss due to mesial version of the second permanent molars was more evident after the first six months. When determining the vertical movement of the antagonists, our findings were that upper molars tend to egress faster (the egression begins in the first six months in the case of lower first permanent molar loss) than lower molars (the egression tends to be more evident after the first six months in the case of upper first permanent molar loss).

Conclusion. Premature loss of first permanent molars, especially after second molar eruption, determines unwanted movements of adjacent and opposite teeth, and severe orthodontic anomalies in time. The prevention of teeth loss or the interception and treatment of cavities would prevent future dento-facial anomalies and TMJ pathology.

THE CBCT VOLUMETRIC CHANGES OF THE AIR SPACE OF MAXILLARY SINUS AND NASAL CAVITIES IN ORTHOGNATHIC SURGERY

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Introduction. The treatment of skeletal abnormalities of class II and III by using Le Fort I osteotomy, changes the volume of the air space from the maxillary sinuses and the nasal fossa. Cone Beam Computer Tomography as imagistic examination offers a high accuracy for details in measurement of the air volume. The aim of this study is to demonstrate the relationship between the treatment plan applied and the direction in which the volume of air is modified, trough 3D virtual models segmented individually.

Materials and methods. 19 patients were examined by CBCT in Ti (preoperative) and Tp (after surgery) at least at 6 months after surgery. Individualized segmentation of the sinuses and nasal cavities was performed with a software dedicated for segmentation and volumetric calculation. The software marked automatically the volume in the area of interest for a proper thresholding of the air. The 3D model generated by the computer provided us the volume of the. The Student test was used to demonstrate the statistical correlation between the therapeutic method applied and the variation of the volume. Also, Pearson correlation was applied in order to check the Intra-rate agreement.

Results. There were statistical significant changes of the volume of maxillary sinus and nasal fossa volume after Le Fort I osteotomy ($p<0.001$). The intra-rate agreement was 0.98. The total volume of the air space decreased by 5.1±4.8 cm^3 (10%±9%) in all cases. In Class II skeletal abnormalities the volume of maxillary sinus decreased by 4.9±2.1 cm^3 and nasal cavities also decreased by 3.3±3.7 cm^3. In class III abnormalities it was noted an increasing of the nasal cavities with 2.8±2.9 cm^3 and a decreasing of maxillary sinus with 5.7±4.6 cm^3.

Conclusion. The total volume of air space and also the volume of maxillary sinuses decreases regardless of the technique used and the volume of nasal cavities is not modified based on the therapeutic plan applied.

COLOR DISTRIBUTION OF CAD CAM BLOCKS

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Introduction. Digital dentistry using chairside or lab-based CAD/CAM systems (Computer aided designed – Computer aided manufacturing) is a rapidly growing area of restorative dentistry. There is a variety of different materials available as CAD/CAM blocks and selecting the right one for the restorations has become a challenging task. Color is nowadays one of the most important factors in this selection, beside the type of material and the block's dimensions.

The aim of the study was to evaluate the color distribution of CAD CAM blocks, currently available on the market.

Material and methods. An in vitro study was done using 35 types of CAD CAM blocks: feldspar ceramics, lithium disilicate ceramics, zirconia, hybrid ceramics and composite resin blocks. The color distribution corresponding to the mostly used shade guides (Vita Classical and Vita 3D Master) was evaluated for each particular block. The data has been analyzed using SPSS program.

Results. The blocks with the highest color range were: Vita Mark II and CEREC Blocs C for feldspar ceramic, Lava Ultimate for hybrid ceramic, e.max CAD for lithium disilicate ceramic, Artbloc Temp for composite resin and Cerec Zirconia for zirconia blocks.

Conclusion. In the limits of this study, the tested materials cover only partially the wide range of color space corresponding to traditional shade guides. However, the companies provide different pigments, to help in individualizing the restoration made from these materials.

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THE ROLE OF VARIOUS PROTOTYPE TOOTHPASTES IN REMINERALIZATION

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Objectives. This study evaluated the remineralization capacity of different prototype toothpastes with hydroxyapatite on the human enamel.

Methods. The specimens were taken from the vestibular and oral part of the human tooth. Two blocks of enamel were randomly chosen as positive and negative controls. Positive control has not undergone any treatment (PC) while the negative control (NC) was demineralized with 37% H3PO4 (Gel etch Kerrdental, USA) for 60 seconds. The other 48 samples were etched like the (NC) and then randomly divided into six groups according to the type of prototype toothpaste. All specimens were then brushed using different prototype TPs for 7 days with a special applicator (Benda, Centrix, Shelton, SUA) that made circular movements 3 times a day for 90 seconds. After every brush, the samples were rinsed with bi-distilled water and then completely immersed in containers with artificial saliva. At the end of the 7 days, each sample was analyzed using AFM and SEM.

Conclusions. Our results are promising in finding the best concentration and combination of bioavailable substances that will be able to find a new formula in prevention and early treatment of caries.

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DIFFERENT APPROACHES IN LAYERING COMPOSITE MATERIALS TO ACHIEVE MAXIMUM AESTHETICS FOR INDIRECT PROSTHETIC RECONSTRUCTIONS: INLAYS, ONLAYS, OVERLAYS AND ADHESIVE BRIDGES

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Introduction. The challenge for each dentist is to create perfectly invisible restorations. The indirect approach to aesthetic reconstruction is a solution that can be applied.

Materials and methods. There were used two types of composite materials, modified to improve both optical and mechanical qualities. First material: G-aenial – GC contains improved filling prepolymerised, shaped silica glass and silica nanoparticles, in order to improve the material's optical qualities: reflectance, fluorescence and transmitted light. Second material: Essentia – GC contains a micro-hybrid composition with addition of inorganic fillers for dentin and a mix between ultra fine glass filler and filler polymerized for the enamel. In both material cases the clinical color matching was made by using small amounts of material positioned in specific dental areas and photo-polymerized.

Reconstructions were adhesive bonded to the teeth involved when in advance the mating surface was sandblasted.

Conclusions. The Essentia duo-Layer Concept (one dentin & one enamel) is more simple than G-aenial Multi-Layer Concept. In this way the Essentia reconstruction can emulate the natural tooth structure. The different composition between Essentia-dentin and Essentia-enamel makes the change of specific light direction in reconstruction to be the same as in natural tissue. G-aenial reconstruction must be layered with a clear thin layer between dentin and enamel to achieve the same effect. Choosing the shade with the Essentia concept is faster than with Vita Classic System Shade that we find in G-aenial materials.

THE ANTIBACTERIAL ACTIVITY OF A NEW EXPERIMENTAL BIOCERAMIC BASED ROOT CANAL FILLING MATERIAL

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The purpose of the current study was to assess the antibacterial activity of the experimental bioceramic based material using the adapted diffusion qualitative method for wells and rings.

Material and methods. Test microorganisms used in this study were: Escherichia coli ATCC 25922 and Staphylococcus aureus ATCC 25923 from the Collection of Microbiology Laboratory, Faculty of Biology and Geology, UBB, Cluj.

The methods used to assess the antibacterial effect were qualitative diffusion by applying the wells and rings.

The results were evaluated by measuring the zone of inhibition in mm which appeared around the washer or to the well of the tested material.

Results. Gram-negative bacteria, E. coli, developed sensitivity only for the experimental sample material having a 15 mm diameter zone of inhibition.

In the Petri boxes in which the test material was applied to the wells, the diameter of inhibition zone for E. coli bacteria, was slightly higher (16 mm) than for the variants where the material was applied to medium.

In Gram-positive bacteria, S. aureus, samples it was noticed the presence of increasing sensitivity to experimental material sample having a diameter of inhibition zone of 14 mm (material applied to the surface of the culture medium).

In experimental embodiments in which the test material was applied to the wells in the culture medium, the diameter of zone of inhibition in bacteria S. aureus, showed significantly higher values for the experimental sample material. The diameter of zone of inhibition in this assay was 18 mm.

Conclusions. Samples of the experimental material have shown inhibition of bacterial growth both in experimental variants inoculated with Gram-negative bacteria as E. coli and the Gram positive bacterium inoculated with S. aureus (samples applied to the medium and to the wells), which confirmed the antibacterial features of the new bioceramic based root filling material.

STABILITY AND RELAPSE ASSESSMENT IN SARPE

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Introduction. This study presents our experience with surgically assisted rapid palatal expansion in patients with severe dento-maxillary deformities, cleft lip and palate and also isolated maxillary hypoplasia.

Material and methods. The surgical protocol consisted in Le Fort I osteotomy and para-median sagittal palatal osteotomies with both vestibular and palatal access. For the disjunction we have used tooth-borne expanders.

Results. To assess the results we have created a protocol of cone-beam CT evaluation: pre-operative evaluation, post-operative evaluation, at the moment of finished activation of the expander and 6 months post removing the expander. We have compared the measurements using Romexis viewer software.

Conclusion. This study gave us an exact value of the relapse, on which base we have improved our expansion protocol, leading to achieving optimal results.

PREDICTIVE GENES IN HEAD AND NECK SQUAMOUS CELL CARCINOMA

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Introduction. Head and neck squamous cell carcinoma (HNSCC) is a condition with a significant rate of morbidity and mortality in our country. In many cases, it is diagnosed in advanced stages (T3N2b, T3N2c, T4), so that sometimes surgery alone is not a solution and even oncological treatments can be used only as palliative treatment. From this point of view, the diagnosis of this type of cancer in early stages can be a major benefit for the patient.

Abnormal methylation of certain cancer related genes can predict an early diagnosis in HNSCC.

Material and methods. In this study, we describe the alteration of epigenetic mechanisms, discovered in HNSCC, especially in association with HPV infection and smoking history. We studied the genetic alterations underlying head and neck cancer, in a group of 60 patients, diagnosed with head and neck squamous cell carcinoma, analyzing the tumor tissue and comparing it with the normal sequence of DNA from normal tissue from the same patients.

Results. The results support the implementation of the genomic pathway–based analysis for early diagnosis and therapy in HNSCC.

Conclusion. If DNA damage response fails, the efficiency of treatments addressing the DNA damage could be enhanced.

INTERDISCIPLINARY OSTEOPATHIC – ORTHODONTIC TREATMENT OF PATIENTS WITH POSTURE ALTERATIONS: CASE PRESENTATION

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Introduction. The interrelation between the bones and joints in the body has been observed in medicine for long. Postural alterations have been known to induce a multitude of modifications in the body. Headaches, vision, balance and hearing problems, muscle and joint aches, limitations of joint range of movement, flat feet, light to severe body asymmetries are only a few of them. Being located on the very top of the musculo-skeletal system, the maxillo-facial complex is exposed to numerous modifications, due to postural problems; all the alterations are interconnected and one-sided medical approach that address only one of the issues, can do more harm than good. That is why, when an orthodontic patient is examined, postural evaluation should also be included, for an integrated diagnostic.

The aim of this presentation is to illustrate the interdisciplinary treatment, in a case of malocclusion, facial asymmetry and postural alteration.

Material and methods. A patient that addressed the orthodontist for occlusal disturbances was also posturally examined and further referred to an osteopath for complete postural diagnosis. A combined orthodontic – postural diagnosis was defined and an osteopathic – orthodontic treatment plan was drawn. The patient first followed a series of ten osteopathic and physical therapy appointments and then was provided with an occlusal splint to readjust the position of the mandible in centric relation. When the mandibular position was stabile in centric relation, braces were placed to start the occlusal adjustment.

Results. The patient was pain free after the first few osteopathic appointments, body posture started to improve, temporomandibular function improved.

Conclusion. Postural evaluation is absolutely necessary in all orthodontic patients, in order to assure long term stability and lack of pain symptoms.

INCREASING THE DIFFICULTY OF ORTHODONTIC TREATMENT BY THE OF LOSS OF LEEWAY SPACE – A CASE REPORT

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Introduction. Neglecting the treatment of the lateral support zone in temporary and mixed dentition determines the premature loss of temporary teeth (III, IV, V) and the mesialization of the permanent first molar. The consequence is lack of space for the replacement tooth that erupts later in time. Besides other orthodontic issues that the patient may have, we found us in need to obtain space for the teeth that have no place on the arch. In this presentation we illustrate such a case, the numerous appliances and the extensive treatment needed, due to a non-extractional approach; the low face typology and the deep bite demanded such a treatment for best aesthetic results.

Material and methods. The case presentation includes the most relevant initial images, the situation during his evolution, pictures with each appliance, explanations and details for relevant treatment moments.

Results. With a good cooperation and motivation of the patient and his parents, we succeeded to accomplish the non-extractional treatment and to create space and fit in the dental arch all permanent teeth, for optimal functional results.

Conclusions. Failure to observe regular visits to the dentist by the patients with mixed dentition may have serious consequences for the teeth health, with difficulties in mastication and other functions but also can aggravate and promote dento-maxilar anomalies. In these cases, the easiest way is to extract permanent teeth and to accept the mesial position for the molars. More difficult is to try to recuperate the lost space, but in this approach treatment time is longer; consequently a very good compliance from the patient's part is needed; moreover, the patient's age at the beginning of treatment is very important in such cases.

TEMPORARY ANCHORAGE DEVICES IN CONTEMPORARY ORTHODONTICS - A LITERATURE REVIEW

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Introduction. The need for orthodontic treatment modalities that provide maximum anchorage control without requiring patients' compliance, has led to the development of miniscrew implant-assisted orthodontics. Nowadays temporary anchorage devices are widely used in orthodontic treatment.

The aim of this study was to highlight the indications and contraindications for treatment with miniscrew implants, clinical use and risks associated with miniscrew implant failure.

Material and methods. Two independent reviewers (R.S. and M.S.) conducted a literature search until August 2016 in five electronic databases (PubMed, Cochrane, Scopus, Web of Science, Embase). Search terms used were "miniscrew implant", "temporary anchorage device", "orthodontic miniscrew".

We included 57 studies in total. The inclusion criteria comprised observational clinical studies conducted on patients who received miniscrew implants for orthodontic anchorage, clinical trials, case reports and other reviews, all written in English.

Results. Miniscrew implants offer many advantages as easy placement and removal, immediate loading, they provide no anchorage loss and can be used in a wide array of anatomical sites. Significantly higher success rates were revealed for miniscrew implants inserted in the maxilla, on young patients over 20 years of age and for longer implants, with a larger diameter.

Conclusion. Orthodontic miniscrew implants have a low failure rate, thus indicating usefulness in clinical practice. Obtaining a successful implant placement is extremely important. One has to take into account risk factors, bone quality and quantity, jaw of insertion, age, diameter and length of the miniscrew implant.

TEMPORARY TEETH - WHO IS IN CHARGE OF THEM? ESTHETIC REHABILITATION OF ANTERIOR PRIMARY TEETH IN PEDIATRIC DENTISTRY

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Early childhood caries is a serious public health problem in disadvantaged communities where malnutrition habits are common. An acceptable treatment approach for early childhood caries in the past may not necessarily be the best treatment option for our young patients today.

Maintenance of primary dentition in a healthy condition is important for the well-being of the child as far as proper masticatory, esthetics, phonetics, space maintenance, and prevention of aberrant habits are concerned. The esthetic restoration of severely mutilated anterior primary teeth has been for long a challenge to a pediatric dentist, not only because of the available materials and techniques, but also from the point of view of pediatric patients, who are usually among the youngest and least manageable group.

Inadequate esthetic options in addition to the severity of the condition have prompted extraction in most of the cases; anterior primary teeth, when grossly decayed, lack a coronal structure, leading to decreased support and adhesion for different approaches.

A "short post technique" which requires root canal treatment and a short composite post using resin based composites, cements and bonding 3Mespe and preformed crowns Frasaco and glassfibre-reinforced composite posts is presented .

This study presents two clinical case reports where composite resin, reinforced with glassfibre-reinforced composite post used as intra-canal post to restore mutilated primary anterior teeth.

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