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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T240

PLASMA THIOL/DISULPHIDE HOMEOSTASIS IN ADULT PATIENTS WITH STABLE ANGINA DIAGNOSIS

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BACKGROUND
Our aim was to compare the thiol/disulphide levels of stable angina patients with a control group.
METHODS
A total of 116 individuals were participated in this study. Control group were consisted of 31 individuals and stabil angina patient group were consisted of 85 individuals. Thiol/disulphide homeostasis tests were conducted as described previously (1). Subsequently, plasma samples were obtained and used for determining the levels of thiol/disulphide (Roche Cobas c501 otoanalyser, serial number: 0952-04). After determining native and total thiols, disulphide level, disulphide/total thiol percent ratios, native thiol/total thiol percent ratios, and disulfide/native thiol percent ratios were calculated (1). This study was performed at Sakarya University Training and Research Hospital Clinical Biochemistry Laboratory and Ankara Ataturk Training and Research Biochemistry Laboratory between September and October 2016. Our study received ethical approval (Sakarya University Ethics Committee 16214662/050.01.04/28.9.2016/123).
RESULTS
After the independent samples t test analysis, there were no statistically significant differences between patient group and control group's native thiol and total thiol arithmetic mean values. In addition, after the Mann-Whitney U test analysis, there were statistically significant differences between patient group's respectively disulphide values (median=16,59), disulfide/native thiol percent ratio (median=4,56), disulphide/total thiol percent ratio (median=4,18), native thiol/total thiol percent ratio (median=91,64) and control group's respectively disulphide (median=9,17), disulfide/native thiol percent ratio (median=2,59), disulphide/total thiol percent ratio (median=2,46), native thiol/total thiol percent ratio (median=95,08) (respectively, U=582, p<0,001, U=580, p<0,001, U=579,5, p<0,001 ve U=579,5, p<0,001).
CONCLUSIONS
As a result, the disulphide values, disulfide/native thiol percent ratios and disulphide/total thiol percent ratios obtained from stable angina patients, were significantly higher than the control group's values but native thiol/total thiol percent ratio was determined to be the significantly lower.
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Inflammation, Vascular biology, Endothelium, Oxidative stress

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MATERNAL SERUM HIF-1A LEVELS IN PRETERM BIRTH

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Introduction:
When birth occurs between 20 and 37 weeks of pregnancy, it is called preterm birth. Preterm birth is an obstetrical problem which concerns perinatology and neonatology. Incidence of preterm birth among pregnancies is %10-11. Incidence of preterm birth has increased in recent 20 years. There are numerous causes of premature birth such as infection, hypoxia, toxicity. Nevertheless pathogenesis of preterm birth has not been enlightened completely. In our study we aimed to investigate possible diagnostic usage of HIF -1α (Hypoxia inducible factor 1 alpha), which is a transcriptional activator responsible for cell adaptation to hypoxia.
Material and Method:
In our study we included 54 patients who are in 24-37 weeks of pregnancy and diagnosed with threatened preterm labor in Istanbul University Cerrahpaşa School of Medicine, Department of Obstetrics and Gynecology.These patients were separated into two groups as term and preterm birth. Control group consisted of healthy 26 patients who are in 24.-37. weeks of normal control pregnancy and floowed up in the same clinic. HIF -1 α is measured by ELISA method in serum samples. Statistical analysis is carried out with SPSS software ($p<0.05$)
Results: In preterm group serum HIF -1 α level was significantly higher than term and control group. No statistically significant difference was found in serum HIF -1α level between term and control group.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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OLIGOCLONAL BAND VS FREE LIGHT DETECTION IN CSF IN SUSPECTED MULTIPLE SCLEROSIS PATIENTS

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Background: Elevations in oligoclonally expanded immunoglobulin concentrations in the CSF may occur in MS and detection of oligoclonal bands are accepted to be one of the diagnostic criterion for this particular disease. Other diseases that can cause oligoclonal bands in CSF include infections of the nervous system, autoimmune diseases, brain tumors and lymphoproliferative diseases. A new approach is to detect kappa and lambda free light chains (FLCs) quantitatively in CSF and trying to rule out the patients who have normal values without performing oligoclonal band detection. In this study we have compared the CSF FLC concentrations and oligoclonal band patterns of patients who were evaluated and diagnosed to have MS (Type 2 and 3) or normal (Type 1), nervous system infection (Type 4), monoclonal protein disease (Type 5).
Methods: 115 patients in total were evaluated (43 Type 1, 39 type 2, 13 type 3, 6 type 4, 4 type 5 and 10 single band positive patients) according to their FLC concentrations vs oligoclonal band patterns in CSF. FLCs were turbidimetrically detected and cut-off values for Kappa FLC was 0.96 mg/L and 0.39 mg/L for Lambda FLC. Oligoclonal band detection was carried out by isoelectric focussing and immunoblotting method (IEF/IB).
Results: FLCs levels of all type 1 patients were below cut-off. Both FLCs were high in 60% of type 2, 100% of type 3 and 100% of type 4 patients where only Kappa FLC was high in 39 % of type 2 patients. In type 5 patients both FLCs were below the cut-off and finally in 6 of single band positive patients FLCs were normal and 4 patients had only high kappa FLC levels. In an other aspect in patients who had both FLCs below the cut-off, 80% were type 1, 11% had single band in oligoclonal band detection studies and 7 % were type 5 patients.
Conclusion: Misdiagnosis of MS may lead to unnecessary treatment and a physcological burden to patients hence several consensus statements and diagnostic criteria are implemented to combine both clinical and laboratory findings in order to diagnose MS correctly. However there are still ongoing studies on possible predictors of diagnosis, future relapses and prognosis. FLC measurements in CSF is one of the candidates of these markers which still need confident cut-off levels to rule out the right patients. Our preliminary results indicate especially CSF kappa FLC determination can help us detecting type 2,3 and 4 patients but not type 5 patients.

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A CASE FOR INCOPORATION OF MARKERS OF OXIDATIVE STRESS IN TRADITIONAL BIOCHEMICAL PANELS IN CLINICAL CHEMISTRY: A RISK ASSESSMENT STEP IN LABORATORY MEDICINE

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Background: Oxidative stress is recognized as a pivotal mechanism in either the aetiological or complicating events of most pathological states, yet not routinely assessed in clinical chemistry.Comment:During normal cellular metabolism, cellular defences can adequately cope with any free radicals generated and homeostasis is maintained between radical generation and dissipation. An imbalance will lead to oxidative stress. Once propagation of the generated reactive species has occurred, severe toxicity and damage to the cell may follow. Oxidative stress can produce major interrelated derangements of cellular metabolism, including DNA strand breaks, increases in intracellular free calcium concentration, damage to membrane ion transporters and proteins and peroxidation of lipids. The increase in intracellular free calcium can activate proteases and nucleases, protein kinases, thiol proteins and cell- surface receptors. A response like this will perturb normal cellular mechanisms. Traditional biochemical panels using liver function tests as example comprise, of bilirubin; total and conjugated, the transaminases, alkaline phosphatases ,gamma glut amyl transferase, the plasma proteins; total and key fractions, albumin and total globulin etc. Numerous studies have consistently confirmed the importance of oxidative stress in pathology and risk assessment. Inclusion of select key antioxidants; glutathione (GSH), glutathione peroxidase (GPX), copper- zinc superoxide dismutase (Cu-Zn SOD), catalase, plasma levels of ascorbate, vitamins, A and E, β- carotene, urate levels, oxidative stress markers; malondialdehyde (MDA) and 8- hydroxyl deoxyguanosine (8-OHdG) in traditional panels appears beneficial. Conclusion:The central role of oxidative stress in contemporary pathology appears to argue for the need to include antioxidant status in traditional clinical biochemical panels and may lead to better assessment of severity and prognosis of disease, more effective treatment and probably personalized medicine and new human risk assessment paradigm in disease investigation; consistent with proactive measures now advocated in contemporary clinical biochemistry or laboratory medicine.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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THE INFLUENCE OF SMOKING HABIT AND VITAMIN SUPPLEMENTATION IN PREGNANT WOMEN ON OXIDATIVE STRESS STATUS DURING PHYSIOLOGICAL PREGNANCY

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BACKGROUND: It is well known that tobacco smoke may invoke oxidative stress which plays an important role in many complications that may occur during pregnancy. In pregnant women, nicotine and carbon monoxide which are components of cigarette smoke may cause damage of both mother and fetus crossing the placental barrier. Also, inadequate nutrition and reduced intake of antioxidants during pregnancy may disrupt the prooxidant / antioxidant balance toward the formation of oxidative stress parameters. The aim of this study was to investigate the influence of maternal smoking habits and the vitamin supplementation intake during pregnancy on the parameters of oxidative stress status of uncomplicated pregnancy.
METHODS: Healthy, pregnant women (n=86) were divided into non-smoking and smoking groups, and in vitamin supplement and non supplement intake groups. Oxidative stress was measured through levels of thiobarbituric acid-reacting substances (TBARS), lipid hydroperoxide (LOOH), total oxidative status (TOS) and prooxidative-antioxidative balance (PAB). Antioxidative status was evaluated by measuring total antioxidant status (TAS), superoxide dismutase (SOD) and paraoxonase 1 (PON1) activity by appropriate assay.
RESULTS: TBARS concentration was significantly higher ($p<0.05$) and PON1 activity was significantly lower ($p<0.05$) in smokers group. There was no significant difference in the TOS, PAB, SOD and TAS value between examined smokers and non-smokers groups. We didn't find a significant difference in researched parameters between groups according to their vitamin supplement intake.
CONCLUSIONS: Smoking habit of mothers is associated with increased oxidative stress parameters during pregnancy and decreased antioxidative defense through PON1 activity. Vitamin supplementation intake has no effect on the examined parameters of oxidative stress status in healthy pregnant women.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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SERUM INTERLEUKIN-8 LEVEL AND OXIDATIVE STRESS IN PATIENTS WITH PRIMARY BILIARY CIRRHOSIS

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Background
Primary biliary cirrhosis (PBC) is a slowly progressing cholestatic, autoimmune liver disease, leading to fibrosis, cirrhosis and liver failure, characterized by the presence of specific serum antimitochondrial (AMA) and antinuclear antibodies (ANA). Oxidative stress plays an important role in the pathogenesis of chronic liver diseases. The aim of the present study was to determine whether the degree of lipid peroxidation, measured by the serum level of 8-isoprostane, a marker of oxidative stress in vivo, influences the progression of PBC. We evaluated also, the serum concentration of interleukin-8 (IL-8), which belong to pro-inflammatory cytokines and studied the correlation between level of IL-8, 8-isoprostane and specific autoantibodies.
Methods
Material - 72 PBC patients, 15 pathological controls – patients with other autoimmune liver diseases, 15 healthy blood donors. AMA and ANA were detected by commercials kits (IMTEC-Human, Euroimmun; Germany; Inova Diagnostics; USA), IL-8 level was detected by Elisa assay: PeliKine IL-8 (Sanquin, The Netherlands), 8-isoprostane concentration was measured by EIA Kit (Cayman Chemical, USA).
Results
Elevated levels of IL-8 were measured in 58% patients with PBC. These results were significantly higher than those for healthy control group: 91.1 ± 20.1 vs. 4.8 ± 0.6 pg/ml, $P = 0.0077$. In AMA-positive and ANA-positive PBC groups we found 70% of patients with higher concentration of IL-8. Serum 8-isoprostane concentration was also significantly elevated in PBC (238.9 [3.8–500.0] pg/mL) as compared to healthy controls (12.3 [1.6–22.1] pg/mL), $P < 0.001$. Values of serum 8-isoprostane were positively correlated with IL-8 higher concentration, total cholesterol, bilirubin concentration and severe liver fibrosis, as graded by liver biopsy (results >400pg/mL for 8-isoprostane in III/IV stage of liver fibrosis).
Conclusions
Through the pro-inflammatory effects, IL-8 may be an important factors in liver pathology in patients with PBC, especially in the development of the inflammatory process. We found a good correlation between concentration of IL-8, 8-isoprostane and specific autoantibodies. Oxidative stress caused by increased lipid peroxidation is involved in the pathogenesis of PBC. Interesting results indicate that serum 8-isoprostatne might be a candidate marker for prediction of the degree of liver fibrosis.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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EVALUATION OF BOTH SERUM AMYLOID A PROTEIN AND C – REACTIVE PROTEIN IN HOSPITALIZED PATIENTS WITH INFLUENZA

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Background: Infectious diseases take their clinical course as a result of inflammation caused by viral or bacterial infection. It leads to acute phase response from the immune system, mediated by a production of acute phase proteins. C-reactive protein (CRP) is routinely measured and its high serum levels are associated with bacterial diseases. Serum amyloid A (SAA) is a marker of inflammation, correlating with CRP in bacterial infections. In viral infections SAA is considered as a more sensitive marker.
Aim: The aim of the study is to investigate the correlation between SAA and CRP in the course of influenza disease and to analyze the role of SAA as a significant marker for viral infections.
Methods: The study group consists of 31 patients with influenza, hospitalized in the Department of Infectious Diseases, University Hospital "St. Marina'', Varna, Bulgaria during December 2014 – February 2016. The mean age of the patients is 17.2 years, 17 (54.84%) men and 14 (45.16%) women. The patents do not suffer chronic diseases. The diagnosis is proved by serological analysis for anti-influenza IG M in the serum sample. For measuring the serum levels of SAA and CRP immunoturbidimetric assays, adapted on Olympus AU 400 are used. We determined both markers on the first and on the 4th day of the treatment.
Results: Analysis of the first serum samples shows significantly higher concentrations of SAA -mean: 168.92 mg/l versus 48.08 mg/l for CRP. Extremely increased SAA is observed in the cases of complications such as acute bronchitis (1041.0 mg/l), acute sinusitis (390.4 mg/l) and acute otitis media (281.3 mg/l). In these cases, serum levels of CRP are 166.98, 72.51 and 8.22mg/l resp. The mean value of SAA from the second sample is 52.11 mg/l versus 16.71 mg/l. for CRP. For the second measuring normal serum levels are determined in 22 (71%) patients for SAA and in 21 (68%) patients for CRP.
Conclusions: According to our results, we consider SAA as more sensitive marker, compared to CRP in viral inflammation such as influenza. Its serum levels correlate with the severity of the disease and presented complications. It shows tendency for quicker normalization than CRP, marking the severity of the disease and for that could be used for an effective treatment monitoring.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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HYPERHOMOCYSTEINEMIA IN PATIENTS WITH DEEP VEIN THROMBOSIS

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Background: To determine the concentration of plasma homocysteine (Hcy) and the lipid risk factors: total cholesterol (TC), HDL-cholesterol (HDL-C), LDL-cholesterol (LDL-C) and triglycerides (TG) in patients with coronary artery disease (DVT) and healthy subjects, control group, as well as, to investigate the correlation between tHcy and lipid parameters in the set two groups of subjects.
Material and Methods: The investigation included 80 healthy subjects and 90 patients with DVT divided by gender. The concentration of Hcy was determined by the spectrophotometric cyclic enzymatic method, TC and TG and HDL-C were determined by standardized and routine enzymatic methods; LDL-C was calculated by the Friedewald's formula.Results: The concentration of Hcy were statistically significant higher in both sex with DVT compared to the control ($p<0.001$). The levels of lipids were statistically significant higher while HDL-C statistically significant lower in patients in comparison with control group ($p<0.05$). There were positive correlations between Hcy and TC, TG and LDL-C, and negative correlation between Hcy and HDL-C in group of men with DVT .Values for X^2test ($x^2=35.48$ and $p <0.001$) have showed a significant association between Hcy concentration and DVT. Increasing the concentration of tHcy for 1μmol/L, is leads to on increased risk for the occurrence of DVT for 18.6%. Conclusion: The concentration of plasma Hcy is independent risk factor for occurance and development of DVT.

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CHANGES IN SERUM CREATINE PHOSHOKINASE AND CHOLINESTERASE ACTIVITY IN ORCHARD WORKERS WITH CHRONIC OCCUPATIONAL PESTICIDE EXPOSURE

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Background: Organophosphates (OP) and carbamates, frequently used pesticides, can cause a variety of adverse health effects, ranging from simple irritation of the skin and eyes to more severe effects. Furthermore, OP increase reactive oxygen species level which results in oxidative stress that contributes to cell membrane lipid peroxidation, DNA damage and cell death. Pesticide poisoning is usually confirmed by measuring the decrease in erythrocyte holinesterase or serum cholinesterase (SChE) activity. But, also there is substantial evidence that serum creatine phoshokinase (CPK) activity is often found to be elevated in pesticide poisoning and correlated strongly with the severity of poisoning. The aim of the study was to evaluate the association between chronic occupational pesticide exposure and changes in serum CPK and ChE activity in orchard workers.

Methods: Physical examination signs and serum CPK and ChE levels were measured in 47 peach orchard workers, at the age from 19 to 60 years, with montly exposition to pesticides from 5 to 20 days and 1 to 25 working years exposition. All orchard workers keep to safety precautions, including wearing safety clothes, use of special mask and special gloves. Workers with history of any diseases or conditions that may alter results of laboratory investigations (CPK and ChE levels) were excluded from the study. Serum activities of CPK and ChE were measured using standard spectrophotometric methods.

Results: 68% of peach orchard workers reported some of symptoms such as: irritations of skin and eyes, headache, fatigue, muscle contractions, dry cough, sweating, abdominal pain. The decreased serum ChE activity was detected in 19% of orchard workers and increased CPK activity in 40% of workers. Very weak correlation (Pearson's correlation coefficient $r = -0.17$, $p < 0.05$) between serum ChE activity and CPK activity in orchard workers with chronic exposition to organophosphorus and carbamate pesticides. No correlation was found between the serum ChE and CPK levels and days of montly exposition, as well as years of exposition.

Conclusions: Orchard workers with increased serum CPK activity and decreased ChE activity should be monitoring as workers with greater risk for severe pesticide poisoning and send to further investigations. These findings suggest that cronic occupational exposure to pesticides of lower toxicity, elicit mild toxic effects, as well as biochemical changes of unknown long-term consequences.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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DOES PREMENSTRUAL SYNDROME AFFECT BIOCHEMICAL AND VASCULAR INDICES IN WOMEN OF REPRODUCTIVE AGE ?

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BACKGROUND
We evaluated monthly fluctuations of biochemical and vascular indices in women with and without premenstrual syndrome (PMS) in order to assess the potential effect of PMS on inflammation process and arterial stiffness.
METHODS
Sixty-four healthy premenopausal women aged between 18-45 years with normal ovulatory cycles were studied. Women under oral contraceptives or lipid lowering agents were excluded. Women were classified either in the PMS or in the non-PMS (control) group according to the University of San Diego California (USDC) criteria. Biochemical tests and vascular examinations were performed in two distinct phases (late follicular and late luteal) within the same menstrual cycle. Serum biochemical indices of endothelial inflammation namely C-reactive protein (CRP), intercellular adhesion molecule 1 (ICAM-1) and haptoglobin (Hp) were tested. Arterial stiffness was evaluated by pulse wave velocity (PWV). Flow-mediated vasodilation (FMD) assessed endothelial function.
RESULTS
Thirty-one women were classified in the PMS and thirty-three in the control group. Baseline (late follicular phase) values of biochemical parameters did not differ significantly between the control and the PMS group (CPR: p=0.143, ICAM-1: p=0.745, Hp: p=0.971). Similarly, vascular function indices were not significantly different between the two groups (PWV: p=0.482, FMD: p=0.631) and no differences were observed in blood pressure values. Further statistical analysis revealed no statistical significance in differences (d) of biochemical and vascular indices in both phases of menstrual cycle (baseline and follow up) between the two groups (dCRP: p=0.122, dICAM: p=0.133, dHp: p=0.917, dPWV: p=0.443, dFMD: p=0.887).
CONCLUSIONS
The results of this prospective observational study demonstrate that PMS did not affect serum markers of endothelial inflammation or indices of vascular function in our population. Nevertheless, larger-scale studies are needed to clarify whether PMS is potentially implicated in the endothelial inflammatory process or in the development of arterial stiffness in women of reproductive age.

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THE LEVEL OF ANTIOXIDANT PARAMETERS IN PATIENTS WITH CHRONIC PERIODONTITIS

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Background: Chronic periodontitis (CP) is the most prevalent oral inflammatory disease. A significant dysbalanse between oxidative stress and antioxidant parameter levels was documented in patients with chronic periodontitis comapred to healthy subjects.The aim of this study was to determine the activity of antioxidant enzymes: superoxid dismutase (SOD), glutathione peroxidase (GPx), and total antioxidant status (TAS) in saliva of patients with CP compared to healthy subjects.
Methods:A total of 21 patients with chronic periodontitis, in the period of exacerbation, and 16 aged-matched healthy subjects were inroled in the study. Unstimulated whole saliva was collected from each subject in the Salyvette (Sarstedt, Germany) between 9.00-10.00 a.m. After collection, saliva was centrifuged for 10 minutes at 4000 rpm and frozen at -80ºC until analysis. The activity of antioxidant enzymes was determined using commercial test kits Ransod, Ransel and Total Antioxidant Status (Randox Laboratories Ltd, United Kingdom).
Results:Statistical processing data revealed significantly higher values of GPx and TAS ($p<0.01$) in saliva of patients with CP compared to healthy control subjects.
Conclusion:Based on the obtained results it may be concluded that chronic inflammation present in CP patients, may have a significant impact on the values of antioxidant enzymes.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T251

AN ENHANCED CHEMILUMINESCENCE ANTIOXIDANT CAPACITY ASSAY IN SEPSIS

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Background: Maintaining a balance between oxidative stress and antioxidant scavenger mechanisms is based primarily on enzymatic and non-enzymatic antioxidant pathways. However, in various systemic diseases free radical production is not counterbalanced by the body's defense mechanisms. In the present study, a chemiluminescence non-enzymatic total antioxidant capacity (TAC) assay has been optimized, validated and used for characterization of TAC values seen in septic patients.
Methods: The TAC assay was based on an enhanced chemiluminescence (ECL) technique applying horseradish peroxidase, H2O2, luminol and 4-iodophenol as enhancer at pH 8.5. TAC was expressed as Trolox equivalent in μmol/L. The microplate method was validated to plant extracts and human serum as well. We analyzed 26 serum samples of a control group (ophthalmologic patients age-matched without systemic inflammatory diseases) and 81 serum samples obtained from patients with established diagnosis of sepsis or severe sepsis in a follow-up manner (up to 5 days). The septic patients were treated at our multidisciplinary university Intensive Care Unit (ICU). Septic patients were further subdivided into survivor and non-survivor groups based on 7-day mortality at the ICU.
Results: The limit of detection of our ECL assay was less than 12 μmol/L Trolox with an assay duration time of 10 min. The interassay precision (n=72) measured in biological samples at three different concentrations was less than 8% expressed as CV%. Recovery of the method within the calibrated range varied between 90-95%. Mean TAC ± SEM of the septic group was significantly higher than that of the control group (444.71±19.81 vs 366.88±15.74, $p<0.01$). Also, we found significantly higher TAC data in the non-survivor group compared to survivors' values (546.77±49.29 vs 415.55±19.97, $p<0.01$). There was no significant TAC difference between survivors and non-survivors during the follow-up period. TAC values positively strongly correlated with serum uric acid and creatinine levels, and a slight positive correlation was found between TAC and hsCRP ($r=0.73$, 0.52 and 0.25, respectively) by Pearson's test.
Conclusions: The increased TAC values in the septic group might mean a response of the body to increased oxidative stress. The differing TAC values in the non-survivor vs survivor patients suggests that total antioxidant capacity measurements could give valuable complementary data on the severity of the septic process.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T252

RELATIONSHIP BETWEEN T-LYMPHOCYTES IN BRONCHOALVEOLAR LAVAGE FLUID (BALF) AND PULMONARY FUNCTION TESTS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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BACKGROUND: The inflammation of the lung in COPD is characterized by increased numbers of macrophages, neutrophils and T-cells. Few studies have investigated the role T-lymphocytes in the phatogenesis of COPD. Decline in lung function in these patients has been correlated to a decline in the ratio of CD4+/CD8+ T-cells.
METHODS: To investigate this hypothesis, BAL fluid T-lymphocyte were measured by flow cytometry using specific monoclonal antibodies in 16 healthy controls, 51 COPD patients: 30 with GOLD II (50%≤FEV1<80%) and 21 with GOLD III (30%≤FEV1<50%). We also tried to measure the relationship between T-lymphocyte and physiologic indexes of pulmonary function tests.
RESULTS: There were no statistically significant differences between GOLD II (P) and controls (C) concerning BALF CD4+ (42,57±17,90) (P), (43,75±16,68) (C) as well as BALF CD8+ (32,79±14,71) (P), (38,69±15,24) (C) at $p<0,05$. Statistically significant differences were found between GOLD III (P) and controls (C) concerning BALF CD4+ (25,14±13,58) (P), (43,75±16,68) (C) at $p<0,0025$. But, there were no statistically significant differences betwen GOLD III (P) and controls (C) concerning BALF CD8+ (36,00±16,48) (P), (38,69±15,24) (C) at $p<0,05$. There were no statistically significant differences found betwen GOLD II (1,68±1,24), GOLD III (0,94±0,80) and controls (1,46±1,10) concerning BALF ratio CD4+/CD8+ at $p<0,05$. When all COPD patients were considered together, the ratio CD4+/CD8+ showed a positive correlation with the values of FEV1% (r=0,33) and FEV1/FVC (r=0,33). Furthermore, the ratio CD4+/CD8+ didn't correlate with DLCO%.
CONCLUSION: These findings suggest that BALF T-lymphocyte abnormalities might be involved in the pathogenesis of airflow limitation in a patients with COPD.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T253

SERUM CONCENTRATIONS OF VASCULAR ENDOTHELIAL GROWTH FACTOR IN SYSTEMIC LUPUS ERYTHEMATOSUS – ASSOCIATION WITH AUTOANTIBODY PROFILE AND CARDIOVASCULAR INVOLVEMENT

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Background and objectives: Angiogenesis plays a significant role in the pathogenesis of systemic lupus erythematosus (SLE). Vascular endothelial growth factor (VEGF) is a potent stimulator of angio- and vasculogenesis. The study was designed to evaluate the association between VEGF concentrations and laboratory parameters, classical atherosclerosis risk factors and vascular disorders in SLE patients.

Materials and methods: The study was performed in 83 patients with SLE and 20 matched controls.
The concentrations of VEGF were determined with ELISA test (R&D Systems). There were taken into account more than 100 variables including inflammatory and immunologic markers as well as classical risk factors for atherosclerosis and organ manifestations. Vascular involvement was assessed using B-mode ultrasound, bilateral transcranial Doppler, MRI scans of the brain and 3D contrast-enhanced MR angiography.
Statistical analysis was performed with chi2 Yates, chi2 Pearson, rank Spearman correlations tests, logistic regression analysis and multivariate stepwise analysis.

Results: High VEGF levels were significantly associated with the elongation of activated partial thromboplastin time (OR= 22,8; 95% CI: 2,3-230,6) and the presence of anti-phospholipid antibodies (aPLs) (OR= 10,7; 95% CI: 2,1-53,4). Myocardial relaxation disorders were significantly more frequent in patients with high concentration of VEGF (OR= 8,0; 95%CI: 1,6-39,5). The low concentrations of VEGF significantly decreased the risk of the existence of selected autoantibodies: aPLs (OR= 0,18; 95% CI: 0,0-0,72), anti-double stranded DNA (OR=0,31; 95% CI: 0,11-0,91) and anti-endothelial (OR= 0,30; 95%CI: 0,11-0,85). Furthermore, they were associated with reduction of the risk of atherosclerotic lesions in lower limb arteries (OR= 0,24; 95% CI: 0,0-0,99) and vasculitis development (OR= 0,17; 95% CI= 0,03-0,91).

Conclusions: High VEGF levels are significantly associated with the presence of aPLs and may increase the prothrombotic risk in SLE patients. Lower concentrations of VEGF seem to be protective as they are significantly related to the decreased risk of immunologic disorders, atherosclerosis as well as vasculitis development in SLE patients.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T254

CAN PRESEPSIN AND PROCALCITONIN BE USEFUL MARKERS OF INTRA-ABDOMINAL INFECTIONS AND SEPSIS IN THE EMERGENCY SURGERY PATIENTS?

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Background: In the abdominal surgery patients with an intra-abdominal infection (IAI), sepsis can be developed in pre- or peri-operative period. The abdominal sepsis (AS) is a leading cause of morbidity and mortality of these patients. The AS diagnosis is sometimes difficult because the surgical procedure causes different degree of systemic inflammatory response by itself and patients with different comorbidities are at higher risk of organ dysfunction. The key role in the treatment of sepsis is early recognition, rapid diagnosis, appropriate therapy and infection source control. The aim of this study is to investigate the diagnostic significance of presepsin (PSP) and procalcitonin (PCT) in the early sepsis recognition.
Method: The PSP and PCT were measured in the emergency surgical patients with diagnosis of acute abdomen within 12 hours postoperative. The patients were differentiated in two groups: the presence (IAI) and the absence (non-IAI) of intra-abdominal infection. The IAI patients are subgroup to: complicated (c-IAI) and uncomplicated (u-IAI) intra-abdominal infection. Sepsis was diagnosed according to the 3rd sepsis definition. Data are compared by Student`s t-test and Mann-Whitney test ($p<0.05$ significant).
Results: Among 26 patients there were 16 IAI (62%) and 10 non-IAI (38%) patients. In the IAI group there were 11 c-IAI (69%) and 5 u-IAI (31%) patients. Sepsis was diagnosed in 8 IAI patients (50%). Plasma levels of PSP and PCT were significantly higher in IAI group: PSP (x=1260±802 ng/L;95%CI 832-1687 vs. x=516±472 ng/L;95%CI 178-854; $p<0.05$) and PCT median (4,09 ng/L;IQR 0,86-12,36 vs. 0,475 ng/L;IQR 0,124-0,715; $p<0.05$).There was significantly higher PSP in septic patients (x=1830±578 ng/L;95%CI 1295-2364 vs. x=817±671 ng/L;95%CI 301-1332; p0.05). There was no significant difference of PCT median in the septic patients (4,41 ng/L;IQRI 2,47-55,1 vs. 1,26 ng/L;IQR 0,19-10,89 ; $p=0.114$). There were no significant difference in plasma levels of PSP and PCT in subgroup of IAI patients, $p=0.65$ and $p=0.11$, respectively.
Conclusion: This study shows that presepsin and procalcitonin may be useful markers in the early detection of intra-abdominal infections. The plasma level of presepsin could be useful in the early recognition of a surgical sepsis.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T255

TOTAL THIOL LEVELS OF COLORECTAL CANCER PATIENTS

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Background: Thiols constitute the major portion of the total body antioxidants and they play a significant role in defense against reactive oxygen species. Total thiol level is becoming increasingly used as an index of oxidative stress. Oxidative stress has been shown to play an important role in carcinogenesis. We aimed to determine serum total thiol levels in two patients with colorectal cancer.
Methods: Blood samples collected from two patients who have undergone total colectomy surgery. One is 51 year old male whose diagnose is transverse colon cancer, and the other is 72 year old woman whose diagnose is rectal cancer. Serum total thiol levels of this two patient were measured using a fully automated analyzer (Beckman Coulter, AU5800, Japan) with colorimetric method developed by Erel et al.
Results: Serum total thiol levels found 196.761 umol/L and 375.686 umol/L in rectal cancer patient and transverse colon cancer patient, respectively.
Conclusions: In a recent study has shown decreased level of total thiols in patients with colorectal cancer and has found diagnostic sensitivity and specificity of total thiol levels which were 97.5% and 92.3%, respectively. Widely focussed studies are required on the use of total thiol parameter on colorectal cancer.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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CORRELATION BETWEEN THE LEVELS OF PROCALCITONIN AND C-REACTIVE PROTEIN IN CHILDREN : A RETROSPECTIVE ANALYSIS.

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Procalcitonin is being increasingly used to diagnose and grade acute systemic bacterial infection at an early stage of disease onset. The present study was aimed at investigating the relationship between procalcitonin and C-reactive protein (CRP), the most frequently used parameter of inflammation for a long time, during childhood.

Data regarding 8355 patients aged 0-17 years who were admitted to the pediatric emergency service between 2014 and 2016 and whose procalcitonin, CRP and blood count parameters simultaneously were required were retrospectively analyzed. Procalcitonin levels were analyzed with the Advia Centaur XPT device using the chemiluminescence method.

The patients' mean procalcitonin and CRP levels were 0.22 ± 0.29 ng / ml and 17.70 ± 32.29 mg / L, respectively. In the study, a positive correlation was determined between procalcitonin and CRP levels ($r = 0.416$, $p < 0.0001$). Of the CBC parameters, while WBC, neutrophil, RDW and PDW had a positive correlation with procalcitonin, lymphocytes and PCT had a statistically significant negative correlation with procalcitonin.

It was concluded that in children admitted to the emergency department and suspected to have infection, the blood count and CRP levels should be determined first, and if the case cannot be explained with these parameters, then the procalcitonin levels should be calculated, because this would be more advantageous in terms of costs . Thus, in emergency departments, it would be appropriate to have the procalcitonin testing as second choice.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T257

FREQUENCY OF THE G20210A TRANSITION IN THE PROTHROMBIN GENE IN PATIENTS WITH PERIPHERAL ARTERY DISEASE – STUDY IN EAST ALGERIAN POPULATION

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Background
Poort and al (1996), Have identified a new abnormality of clotting associated with a thrombotic tendency: G20210A transition in the 3'untranslated region of the prothrombin gene.The role of this mutation in arterial disease is controversial with conflicting results. Available evidence suggests that the G20210A mutation is not a major risk factor for arterial thrombosis. However, it may interact with other environmental and genetic risk factors in promoting arterial thrombosis.
The aim of our study was to estimate the prevalence of this mutation in peripheral artery disease's patients and to establish a possible association between peripheral artery disease (PAD) and G 20210A prothrombin gene mutation.
Methods
Genomic DNA from 83 cases and 73 healthy controls was isolated from EDTA blood samples using salting out procedure. Presence of prothrombin G20210A mutation was checked by real-time PCR.
All patients and controls gave their informed consent.

Results
The frequency of prothrombin G20210A mutation showed 2.4% in PAD subject, 97.6% were carriers of the GG wild genotype.
In the control group, the frequency of the mutation was found in 1.4% of cases. The other 72 control subjects were carriers of GG genotype with a prevalence of 98.6%.
No homozygous mutated genotype AA was found both in patients and controls.
The frequency of the mutated allele A is only about 1.20% in cases and 0.68% in controls.
Conclusion
In our study, no association between PAD and prothrombin G20210A mutation was detected.Our results agree with some studies but not with others

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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IS THERE A CORRELATION BETWEEN C677T MTHFR POLYMORPHISM AND THE INCIDENCE OF PERIPHERAL ARTERY DISEASE IN EAST ALGERIAN POPULATION ?

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Introduction
MTHFR, is a key enzyme in catalyzing 5,10- methylenetetrahydrofolate into 5-methyltetrahydrofolate,A missense mutation of MTHFR that converts alanine to valine (C to T substitution at nucleotide 677) encodes a thermolabile enzyme with lower specific activity. The MTHFR C677T polymorphism as a risk factor in peripheral artery disease (PAD) has been suggested, but direct evidence from genetic association remain inconclusive.
The aim of this study is to analyze the prevalence of the MTHFR C677T gene polymorphism and to examine the possible association between PAD and MTHFR gene mutation in PAD patients and to compare them to controls.

Methods: 59 patients with PAD were included in the study. They were 44 males and 15 females with a mean age of 57.96 years.48 patients (81.35%) were diabetic and 22 (37.3%) were hypertensive.
MTHFR C677T gene polymorphism was analyzed by PCR-RFLP. 85 healthy subjects (36 males and 49 females with mean age of 46 years) served as healthy controls.

Results: The C677T mutation of MTHFR was not found to be different in patients with PAD and controls. 31 patients with PAD (52.54%) and 44 healthy subjects (51.76%) had the wild-type genotype CC, 9 patients (15.25%) and 15 healthy controls (17.65%) had muted TT genotype, and 19 patients (32.20%) and 26 healthy controls (30.59%) had CT heterozygote genotype .

Conclusions: In the PAD population, MTHFR C677T gene polymorphism occurred in a pattern similar to that seen in controls. No significant association was detected between the T/T genotype and PAD.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T259

SOLUBLE FMS-LIKE TYROSINE KINASE-1 (SFLT-1) TO PLACENTAL GROWTH FACTOR (PIGF) RATIO AS AID IN DIAGNOSIS AND PREDICTION OF PREECLAMPSIA – OUR EXPERIENCE

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BACKGROUND:
Preeclampsia (PE) is a heterogeneous, multisystem disorder characterized by hypertension, proteinuria and oedema that develop after 20 weeks of gestation. PE affects 2-5% of pregnant women and remains one of the leading causes of premature birth worldwide. The aim of this study was a clinical validation of prenatal determination of soluble fms-like tyrosine kinase-1 (sFlt-1) to placental growth factor (PIGF) ratio.
METHODS:
In the study, we included 35 pregnant women, 12 patients with preeclampsia (PE) and 23 women with normal pregnancy outcomes (CTR). Serum samples were collected according to a standard operating procedure at 24 1/7-28 0/7 weeks of gestation and 28 1/7-32 0/7 weeks of gestation and analysed retrospectively. Levels of antiangiogenic sFLT-1 and proangiogenic PIGF were determined by electro-chemiluminescence immunoassay (Cobas e analyzers, Roche Diagnostics Ltd.Mannheim, Germany) and were used to calculate the sFLT-1/PIGF ratio. Based on the results of the ratio, with cut-off ratio value of 34, PE group was subdivided into PE group with elevated sFLT-1/PIGF ratio > 34 (PE+) and PE sFLT-1/PIGF ratio < 34 (PE-).
RESULTS:
Patients in the PE+ group had increased incidence of intrauterine growth restriction (IUGR) (67%), lower gestational age at birth (31 GA (29-36 GA)) and lower birth weight of infants (1095 g (810-2060 g)) compared to PE- (17%; 39 GA (37-40 GA); 3230 g (2400-4420 g)) and CTR group (0%; 39 GA (36-41 GA); 3350 g (2300-4400 g)). The value of sFLT-1/PIGF ratio was significantly elevated in PE+ group (46.643 (8.989-155.092) and 123.193 (33.831-217.457)) at both sample collections ($p<0.001$; $p<0.001$) compared to PE- (2.330 (0.958-9.544) and 3.375 (0.576-18.103) and CTR group (2.618 (1.087-6.180) and 2.599 (0.808-17.890)). There was no difference of age, body mass index (BMI), smoking habits and coagulopathy parameters between these three groups.
CONCLUSION:
Our results suggest that the sFLT-1/PIGF ratio has the potential to be implemented in clinical practice and could be used as an indicator for the development and estimation of the severity of PE.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T260

THE IGG AND THE IGM ISOTYPES OF ANTIPHOSPHOLIPID ANTIBODIES IN HEALTHY MIDDLE-AGED SUBJECTS

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BACKGROUND: No studies that analyze the association of antiphospholipid antibodies (aPL Abs) with sera#s proteins and lipids/lipoproteins in healthy subjects are available. Therefore, the aim of our study was to evaluate the prevalence of anticardiolipin (aCL) and anti-β2glycoprotein I (aβ2gpI) Abs in healthy middle-aged subjects and to investigate their potential association with serum proteins and lipids/lipoproteins.
METHODS: Study included 40 healthy subjects (no signs of thrombosis, pregnancy morbidity, cancer, infections and autoimmune diseases were observed; mean age ± SD, 58.22 ± 3.47). Obesity (BMI ≥ 30 kg/m2) was present in 2/16 (12.5%) female subjects and in 6/24 (25 %) male subjects. Levels of analyzed Abs were estimated by ELISA.
RESULTS: The increased titers of IgM and IgG aCL were observed in 2.5% and 5% of analyzed subjects, respectively, while increased titers of IgG and IgM aβ2gpI were observed in 2.5 % and 7.5% of analyzed subjects, respectively. The IgM isotype of both aCL and aβ2gpI Abs were in positive correlation ($r = 0.882$, $P = 0.000$). A positive correlation was found for the IgG and IgM isotypes of aCL Abs ($r = 0.502$, $P = 0.001$). In addition, the IgG isotype of aCL Abs was in positive correlation with both the IgG ($r = 0.632$, $P = 0.000$) and the IgM ($r = 0.421$, $P = 0.007$) isotypes of aβ2gpI Abs.
Significantly different concentrations of the IgG isotype of Acl Abs were observed in subjects with hypercholesterolemia and those without it (Mann-Whitney, $P = 0.048$). The IgG isotype of aβ2gpI Abs was significantly different between subjects with hypertriglyceridemia (Mann-Whitney, $P = 0.014$) and those without it. The IgG isotype of aβ2gpI Abs ($P = 0.020$), hsCRP ($P = 0.048$) and C3c ($P = 0.015$) were significantly different among subjects with different BMI values. Subjects with increased values of the IgM isotype of aCL Abs had significantly different hsCRP concentrations (Mann-Whitney, $P = 0.028$). Lp (a) concentrations were significantly different between subjects older and younger than 60 years of age (Mann-Whitney, $P = 0.036$).
CONCLUSION: Obesity and dyslipidemia were associated with aPL Abs despite their low prevalence in analyzed subjects.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T261

SERUM TOTAL THIOL LEVELS IN POSTOPERATIVE PATIENTS.

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Background: Postoperative important concerns are preventing infections, urinary retention, constipation, deep venous thrombosis, and blood pressure variability. Most of these conditions can be a cause or a result of oxidative stress. The aim of this study was to investigate serum Total Thiol (TTL) levels after surgical operation.
Methods: The levels of serum TTL were assessed in 12 patients who had various surgery and 31 control subjects. Serum total thiol levels were measured using a fully automated analyzer (Beckman Coulter, AU5800, Japan) with col-orimetric method (Relassay, Turkey). Statistical analysis was performed using the SPSS-20.
Results: Serum TTL levels in group of patients and in healthy individuals were as follows(results are expressed as mean ± SD) : Patient group (n=12): 330,14 ± 94,26 µmol/L, Control group (n=31): 391,85 ± 46,03 µmol/L. Statistically significant difference was observed between the patient group and control group (p=0,049).
Conclusions: Surgical operation may cause oxidative stress in patients. Measuring of oxidative stress parameters such as TTL can help the surgeons monitoring that patients who had undergone surgery. Widely focused studies are required on the use of TTL parameter on post operational patients.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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PON AND TTL LEVELS AFTER SURGICAL DEBRIDEMENT OF FOURNIER'S GANGRENE PATIENTS

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Background: Fournier's gangrene (FG) is a rapid progressive and potentially fatal bacterial infection that involves the subcutaneous fascia and part of the deep fascia but spares the muscle in the scrotal, perianal and perineal region. The aim of this study was to investigate serum Paraoxonase (PON) and Total Thiol (TTL) levels of postoperative FG patients.
Methods: Three FG patients's blood samples were collected after surgical debridement. Serum TTL and PON levels were measured using a fully automated analyzer (Beckman Coulter, AU5800, Japan) with colorimetric method (Relassay, Turkey).
Results: The mean age of the patients was 71,6 years. All of them were male. The PON results were as follows (U/L) patient 1: 164, patient 2: 60, patient 3: 249 and TTL results as follows (µmol/L) patient 1: 332, patient 2: 293, patient 3: 343. Mean ±SD of PON was 158±94, and Mean±SD of TTL was 323±26.
Conclusions: TTL and PON levels can be a good and useful early marker in the diagnosis or follow up of Fournier's Gangrene. Widely focused studies are required on the use of PON and TTL parameter on this kind of infections and pre/post operations.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T263

CLINICAL VALUE OF CYTOKINES IN CHRONIC DISEASES

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Background: We aimed to establish the role of cytokines in the degree of stenosis in cardiovascular disease, in patients with metabolic disease and in the development of liver cell necrosis associated with alcoholic liver diseases.
Methods: We recruited 198 patients males and females with CVD, subdivided in two groups, in basis of % stenosis, in accordance with CASS guidelines, group 1 non significant stenosis <50%, and group 2 significant stenosis >50%. 43 of them have metabolic syndrome MS(+). We recruited 160 males divided in five groups: (1) no alcohol intake (< 20 g ethanol/d); (2) low alcohol intake (20-40 g ethanol/day); (3) high alcohol intake (> 40 g ethanol/d) without liver necrosis; (4) high alcohol intake with liver necrosis; (5) high alcohol intake and proven liver cirrhosis. Cytokines TNFα, IL6, IL10, IL1β, IL2R, IL8, were analyzed with Immulite 1000® (Siemens), based on chemiluminescent reaction. Statistical tests were performed using MedCalc® 12.6.1.0.
Results: IL6, TNFα were increased significantly ($P<0.05$), in the group >50% stenosis. IL8, IL10 were slightly non significantly increased. IL-6 was increased from 5.9 pg/ml to 6.5 pg/ml in the group > 50% stenosis, with a less significant p value, ($P < 0.1$). In the patients group with MS (+), we calculated a lightly higher concentration of IL 10 ($P = 0.051$). IL-10 is responsabile for the low ratio IL 6/IL 10. The other inflammation markers were mostly unchanged. IL1β was significantly higher in the alcoholic liver cirrhosis group only. TNFα, IL6 showed significantly higher values only in group 4 and 5. IL10 showed no significant difference between all groups.
Conclusion: IL 6 and TNFα correlate with the extent of disease, but not provide diagnostic power. The metabolic syndrome seems to have no direct association with the cytokine production. Only TNFα, IL6 concentrations and not IL10, IL1β rise in alcoholics, when liver damage occurs.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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OXIDATIVE STRESS IN PATIENTS WITH DIABETES MELLITUS

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Oxidative stress occurs when the balance between the production of reactive oxygen species (ROS) and the ability of cells or tissues to detoxify the free radicals produced during metabolic activity is tilted in the favor of the former. The possible sources for the overproduction of ROS in diabetes mellitus (DM) are widespread and include enzymatic pathways, auto-oxidation of glucose, and mitochondrial superoxide production.
The aim of this study was to determine the plasma total antioxidant capacity (TAC), total cholesterol (CHOL), triglycerides (TG), and HDL cholesterol (HDLc) in diabetic patients and to estimate their relationship to levels of glycated hemoglobin (HbA1c), fasting blood sugar and duration of diabetes. The changes in the status of TAC were evaluated in plasma samples obtained from 42 diabetic patients and 38 apparently healthy sex and age matched subjects as control group. Total antioxidant status was measured using Randox kit.
Serum glucose, HbA1c, CHOL, and TG were significantly higher in diabetic patients versus the control group ($p<0.001$), while HDLc was significantly lower ($p<0.001$). Compared with the control, the total antioxidant capacity was significantly depleted in diabetic group ($p<0.001$). There was significant negative correlation between the TAC and serum glucose level, TAC and HbA1c, TAC and duration of DM.
The meaningful correlation between depletion of total antioxidant capacity and poor glycemic control suggests that measurement of total antioxidant capacity in diabetic patients can be used as an index of glycemic control and development of chronic diabetic complications.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T265

INFLAMMATION, OXIDATIVE STRESS AND GENE EXPRESSION IN PATIENTS WITH CHAGASIC CARDIOMYOPATHY.

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Background: The pathogenesis of chronic chagasic cardiomyopathy (CCM) is controversial, there are no definitive proofs of which are the necessary factors to reach the determinate stage. Each host genetic factors could actively participate in the evolution of Chagas disease. Whereas the variability of phenotypic expression of the CCM could be because of genetic components of the patient, we decided to do a descriptive study of genotype frequencies (GF) of SOD-Mn Ala-9-Val, the enzyme activities of superoxide dismutase (SOD), glutathione peroxidase (GPx) and catalase (CAT), and as marker of inflammation factor tumor necrosis (TNFalpha) in chagasic patients with cardiomyopathy (G1) and without cardiomyopathy (G2) compared with healthy controls (CN).
Methods: The molecular characterization was performed by PCR-RFLP. Enzyme activities were determined by spectrophotometric techniques and the tumor necrosis factor alpha (TNFalpha) by immuno method (ELISA - BD OptEIA TNF HU). The hypothesis test under normal theory proportions and Kruskal Wallis test were carried out.
Results: The SOD-Mn FG (IC 95%) were CN: Ala/Ala 0.54 (0.40-0.67), Ala/Val 0.33 (0.20-0.45), Val/Val 0.13 (0.04-0.21); G2: Ala/Ala 0.36 (0.07-0.64), Ala/Val 0.46 (0.16-0.75), Val/Val 0.18 (0.00-0.40); G1: Ala/Ala 0.35 (0.14-0.56), Ala/Val 0.30 (0.10 - 0.50), Val/Val 0.35 (0.14 - 0.56). The enzyme activities were: CAT(K/gHb): CN 185±28, G2 332±41, G1 316±68; GPx(U/gHb): CN 61±11, G2 102±20, G1 98±17; SOD(USOD/gHb): CN 895±314, G2 2590±188, G1 3270±833. The results TNFalpha(pg/ml) were CN 7.7±2.4, G2 26.1±6.8, G1 33.3±7.2. The study of SOD-Mn GF of chagasic patients and CN showed significant differences ($p < 0.01$) between them. The activities of CAT, SOD, GPx and TNFalpha showed significant differences ($p < 0.01$) between chagasic patients and CN.
Conclusions: The data suggest that polymorphisms and inflamation involved in oxidative stress may have implications in the pathogenesis of CCM, modifying individual risk in the development of cardiomyopathies. These biomarkers are potentially useful in the design of predictive models to identify chagasic patients at risk of developing clinical complications.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T266

PLASMATIC SOLUBLE RECEPTOR FOR ADVANCED GLYCATION END PRODUCTS (SRAGE) AS A NEW OXIDATIVE STRESS BIOMARKER IN PATIENTS WITH PROSTHETIC-JOINT-ASSOCIATED INFECTIONS

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Background: Post-operative prosthetic joint infection (PJI) is the most common cause of failure of total joint arthroplasty, requiring revision surgery, but a gold standard for the diagnosis and the consequent treatment of PIJ is still lacking. In order to optimize the diagnostic process, infection biomarkers with fast response and high sensitivity and specificity for infection are needed. Among the scenario of infections diagnosis, an emerging role has been recently described for oxidative stress (OS) evaluation. Inflammatory response induces an over production of ROS, exacerbating organ and tissue injuries and recent evidences correlated OS to various diseases and to Advanced Glycation End Products (AGEs). AGEs are pro-inflammatory molecules that trigger a state of intracellular OS and inflammation after binding to their cell membrane receptors RAGE. Recent evidences indicated that soluble receptor AGE (sRAGE) could be considered as OS marker in children with end stage renal disease.
The aim of the present study was to evaluate the diagnostic value of plasmatic sRAGE correlated to the level of OS and antioxidant defenses, in post-operative prosthetic joint infection (PJI), in order to explore the possible application of this new biomarker in the early diagnosis of PJI.
Methods: In order to evaluate oxidative stress in PJI, plasmatic sRAGE levels (by ELISA assay), plasma antioxidant total defenses (by Lag-time method), plasmatic ROS and thiobarbituric acid reactive substances (TBARS) levels (by colorimetric assay) were evaluated in 11 PJI patients and in 30 matched controls.
Results: ROS and TBARS were significantly higher ($p<0,001$) while plasma antioxidant total defenses and sRage were significantly lower ($p<0,01$) in patients with PJI compared to controls.
Conclusions: Our result confirm the substantial OS in PJI and show a strong negative correlation between the level of sRAGE and oxidative stress, suggesting that plasmatic sRage can be considered as a potential OS markers. This new approach could represent a useful diagnostic tool for improving prosthesis joint infection diagnosis, where a clear detection of the infection is still lacking, in addition to routine inflammatory parameters.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T267

ANTIOXIDATIVE STATUS IN PRE-ECLAMPSIA

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Background: Oxidative stress and the generation of reactive oxygen species (ROS) have been implicated in pathophysiological processes in variety of diseases including pre-eclampsia. The objective of our study was to evaluate diagnostic value of ceruloplasmin together with other enzymatic and non-enzymatic antioxidants (superoxide dismutase (SOD-1), glutathione peroxidase (GSH-Px) and uric acid) and to evaluate the level of oxidative stress in patients with pre-eclampsia.
Methods: In this prospective study, antioxidative markers were investigated in two groups of pregnant women: patients with preeclampsia (n=32) and the healthy pregnant women (n=60). The following anti-oxidative markers were evaluated: serum ceruloplasmin levels, uric acid, SOD-1 and GSH-Px.
Results: Serum levels of ceruloplasmin, uric acid, and SOD-1 were significantly higher in the PE group compared to the control group (471.2 ± 87.2 vs 404.4 ±74.5mg/L; 315.4 ±79.3 vs 219.1 ± 51.4 μmol/L; 29.9 ± 21.8 vs 20.5 ± 14.7 IU/ml). Serum levels of GSH-Px were not significantly higher in the PE group compared to the control group. Serum ceruloplasmin and serum uric acid have the best diagnostic accuracy for oxidative stress in PE and are more accurate compared to antioxidative enzymes-SOD-1 and GSH-Px.
Conclusions: Serum ceruloplasmin level may have significant role as the markers of oxidative stress in pre-eclampsia especially when used in combination with uric acid levels.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T268

THE EFFECT OF PNEUMOCOCCAL VACCINATION ON ACUTE PHASE REACTANTS AND TRACE ELEMENTS IN SICKLE CELL DISEASE CHILDREN.

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Background: Sickle cell disease (SCD) is an inherited chronic haematological disorder, with inflammatory responses arising from different pathways. Clinical observations in patients with sickle cell disease indicate dramatic increase in pneumococcal infections. Previous trials have shown that conjugate pneumococcal vaccines are safe and effective in healthy children but it is not known if this vaccine will affect indicators of inflammation and trace elements of the SCD children after administration of Pneumococcal vaccine. In this study the levels of acute phase reactants (CRP, C1q, C4, transferrin, albumin, ferritin) and trace elements (Fe, Zn, Cu) in HbSS children below the age of five were determined before and after pneumococcal vaccination.

Subjects and Methods: Twenty three (23) steady state HbSS children and twenty two (22) HbAA children below the age of five years were recruited as control. Trace elements and acute phase reactants were determined using standard procedures.

Results: There were no significant differences ($P>0.05$) between serum mean levels of Zn, Cu, Ferritin, albumin, C4, C1q and CRP in HbSS children before vaccination compared to their HbAA counterparts before vaccination. However there was a significant ($P>0.05$) increase in the serum mean level of Fe and transferrin in HbSS children compared to their HbAA counterpart.
There were significant increases ($P<0.05$) in the serum concentration of Cu, ferritin and CRP but a significant decrease ($P<0.05$) in the serum mean level of albumin in HbSS Children compared to HbAA children after vaccination.

There were significant increases ($P<0.05$) in the serum concentration of Fe, Zn, Cu, ferritin and C4 in post-vaccinated HbSS compared with pre-vaccinated HbSS Children. There was significant ($P<0.05$) decrease in the serum level of albumin in post vaccinated HbSS Children compared to HbSS before vaccination.

Conclusion: This study observed that Pneumococcal vaccination could result to alteration of trace elements in HbSS children and mild inflammatory responses.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T269

EFFECT OF DIET ON THE ANTIOXIDANT STATUS IN THE STUDENT POPULATION

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Background. The post teen period of students population is period when the physical activity is markedly reduced and certain harmful habits, such as smoking and drinking, become a part of the student lifestyle and the possible genetic predisposition exhibits its first negative effects on their health.
The aim of this study was to gain the insight into their health, nutrition habits and general lifestyle with a comprehensive analysis of the student health conducting the survey, specific measurements, laboratory analyses, and to established novel targets for the cardiovascular prevention.
Methods.The study included 510 students of the University of Novi Sad who completed the survey with general and personal information, the data from personal and family medical history. They also gave answers to a number of other questions related to the lifestyle and nutritive status. Two groups of the students were formed, the control group of 74 students and the risk group of 164 students, based on the analysis of the conducted survey, the body-mass index (BMI), lower and higher than 25 kg/m^2, and the waist circumference (WC), lower or higher than 94 cm or 80 cm, respectively for males and females and the laboratory examinations. Laboratory studies have included biochemical parameters suitable for the assessment of nutritional status, as well as activity of antioxidant enzymes.
Results.The activities of the antioxidant enzymes were significantly lower among students in the high risk group -obese students with increased risk for cardiovascular disease (CVD) compared with the control group. Activity of two important enzymes, superoxide dismutase (SOD-1) and glutatione reductase (GR) are even lower of reference values in risk group. Significant correlations were obtained between antioxidant and anthropometric parameters in risk students. BMI correlated significantly with GR ($p<0.001$) and Activity of TAS and SOD showed significantly positive correlation of nutritive status as weekly consumation of fish and drinking red wine ($p<0,05$) and as well as suplementation of omega -3-fatty acids in the risk student population. TAS ($p<0.001$) and WC showed significantly negative correlation with all antioxidant parameters($p<0.05$).
Conclusions. Data can provide a good basis for taking primordial and primary prevention measures through change and promoting a healthy lifestyle and diet habits and modification of risk factors.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T270

CORRELATION OF OXIDATIVE STRESS AND CARDIO-METABOLIC RETRIBUTIONS IN CHRONIC OPIATE ABUSERS WITHOUT CO-MORBIDITIES

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Background:
There has been long-standing myths of opium abuse having cardio-protective effects. There is a paucity of Indian data on the cardio-metabolic profile of opiate abusers without any co-morbidities. We aim to study the cardio-metabolic retributions of chronic pure opiate abusers attending de-addiction clinic of a tertiary care centre from North-west India.

Methods:
The study included 30 healthy controls and 30 male, chronic opiate abusers without any co-morbidity. The subjects were screened for their basic biochemical profile including fasting blood sugar (FBS), insulin, Homeostasis model assessment insulin resistance (HOMA-IR), lipid profile, Hs-CRP, total antioxidant capacity (TAC) and for anthropometric parameters including waist to hip ratio (WHR), body mass index (BMI) and blood pressure (systolic – SBP and diastolic – DBP). The study data was analysed statistically using Student's t -test, multiple regression analysis and Pearson's correlation analysis using SPSS 21.

Results:
We observed the male chronic opiate abusers without any co-morbidity had higher BMI, WHR, SBP (p=0.04), DBP, FBS (p=0.004), Insulin, HOMA-IR, TAC and Hs-CRP as compared to healthy controls. Age adjusted multiple regression analysis done with pure opiate abusers showed that WHR (R^2=0.24, F=8.54, p=0.007) and TAC (R^2=0.38, F=7.99, p=0.002) were significant independent predictors and opiate abusers with higher WHR and TAC tended to be older and age adjusted correlation analysis showed a significant positive association of TAC with WHR (p=0.04), SBP (p=0.04), DBP (p=0.01), FBS (p=0.04); Hs-CRP significant positive association with DBP (p=0.04), Total cholesterol (p=0.04) and HDL (p=0.01). Adjusting for the dependence years - DBP, Insulin, HOMA-IR and TAC were independent predictors and with increasing dependence years there was increase in DBP, insulin, IR and oxidative stress and dependency adjusted correlation analysis showed significant association of TAC with BMI (p=0.01), WHR (p=0.03), SBP (p=0.01), DBP (p=0.01), FBS (p=0.01), Insulin (p=0.001), HOMA-IR (p=0.008), Triglycerides (p=0.02) and HDL (p=0.01).

Conclusions:
We conclude that in male chronic opiate abusers there are severe cardio-metabolic retributions even in the absence of associated co-morbidities. Advancing age and dependency years increases the cardio-metabolic risk factors WHR, Blood pressure and oxidative stress.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T271

HIGH SENSITIVITY CRP ASSAY (981798) FOR THERMO SCIENTIFIC INDIKO AND INDIKO PLUS CLINICAL CHEMISTRY ANALYZERS

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Background: C-reactive protein (CRP) is a normal constituent of serum present in healthy individuals in very low concentrations. CRP is one of the most sensitive acute phase proteins; levels in plasma usually rise dramatically after myocardial infarction, trauma, infection, inflammation, surgery, or neoplastic proliferation. The increase begins within 6 to 12 hours, and levels may reach 2000 times normal.
Measurement of CRP by sensitive CRP assays may add to the predicative value of other markers used to assess the risk of cardiovascular and peripheral vascular diseases.
Thermo Scientific™ Indiko™ and Indiko™ Plus used in this study are bench top clinical chemistry analyzers, especially suitable for small and medium sized laboratories or as a back-up analyzer for bigger ones. Colorimetric, turbidimetric and ISE methods are well applied and CE marked. The Indiko analyzers are complete easy-to-use systems including the instrument, system reagents, calibrators and controls.
Method: hsCRP method is immunoturbidimetric. Specific microparticles coated with anti-human CRP are added in excess to buffered samples. The increase in absorbance is caused by formation of immunocomplexes between the measured analyte and antibody coated microparticles. The absorbance is measured at 540nm when the reaction has reached the end-point. The change in absorbance is proportional to the amount of antigen (CRP) in solution.
Results: The repeatability (within-run precision) is 0.5–2.0 % (CV; n=84) and the within device (total) precision is 2.0–5.5 % (CV; n=84).
A comparison study was performed using the Konelab PRIME 30i hsCRP method as a reference. Linear regression was $y = 0.97x + 0.14$ and $r = 0.999$ (N=61).
Conclusion: With this ready-to-use system reagent, hsCRP analysis on Indiko and Indiko Plus analyzers is quick and accurate. It is a reliable tool for monitoring low level of CRP concentrations.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T272

OXIDATIVE STRESS AND ARGININES PLASMA LEVELS IN NOT SEVERE COPD.

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Introduction: Chronic obstructive pulmonary disease (COPD) is a common airway disorder characterized by airflow limitation, persistent productive cough, mucus plugging and dyspnea. It is known that oxidative stress (OS) plays an important role in the pathophysiology of lung diseases and in these conditions increase of OS biomarkers are usually observed. Elevated plasma concentrations of the endogenous nitric oxide synthase (NOS) inhibitor asymmetric dimethylarginine (ADMA) have been reported in respiratory conditions such as asthma and cystic fibrosis. Since enzymes involved in ADMA synthesis and degradation are redox sensitive, the aim of this study was to assess arginines concentrations in COPD patients.

Methods: 43 COPD patients, divided into 2 groups on the basis of COPD severity (n=29 mild and n=14 moderate), and 43 age- and sex- matched controls were recruited for the study and underwent to medical examination. Oxidative stress biomarkers, as thiobarbituric acid reactive substances (TBARS), antioxidants as plasma proteins SH (PSH), taurine and paraoxonase 1 (PON1) activity, and plasma arginine, ADMA and symmetric dimethylarginine (SDMA) were measured in all subjects.
Results: Results obtained show that PSH decreased with COPD severity (6.69±1.15 vs 6.04±0.85 vs 5.33±0.96 μmol/gr prot, respectively in controls, mild and moderate group, $p<0.0001$ by ANOVA), whereas TBARS increased (median 2.93 vs 3.18 vs 3.64 μmol/L, $p<0.0001$ by ANOVA). Also increased ADMA/arginine ratio was observed with disease severity (median 0.0067 vs 0.0075 vs 0.0100, $p<0.0001$ by ANOVA). In multiple logistic regression analysis, only ADMA/Arginine ratio (OR 1.72, 95% CI 2.27–13.05; $p = 0.02$) and TBARS (OR 0.44, 95% CI 0.25–0.77; $p = 0.0045$) were independently associated with COPD severity.
Conclusions: These results suggest that COPD presence and severity are associated with oxidative stress and alteration in arginine metabolism. The increased ADMA/arginine ratio is due to reduced arginine concentration, which cause is likely due to increase of arginase activity stimulated by oxidative stress. The reduced arginine concentrations in COPD may offer a new target for therapeutic interventions increasing arginine availability.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

Cod: T273

COPEPTIN AS A BIOMARKER OF POSTOPERATIVE INFLAMMATION

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Background. Copeptin is a glycopeptide coproduced in the hypothalamus together with vasopressin. Normal level of copeptin is < 5 pmol/l, although it can be affected by numerous factors and medical conditions such as diabetes, myocardial infarction, trauma, pneumonia, and sepsis.
Surgery causes a neuroendocrine stress response that leads to a postoperative secretion of vasopressin and copeptin, similar to the release of several acute phase proteins, such as CRP. The aim of the present study was to investigate the changes in copeptin in patients after abdominal surgery and also the usefulness of copeptin in the diagnoses of postoperative complications.
Methods. Daily serum samples from 53 patients undergoing surgery were collected on day 0-5. Retrospectively the patients were categorized into two groups; patients with and without clinical signs of complications. Copeptin was measured by a commercial immunometric assay on a Kryptor Compact Plus instrument from Thermo Scientific Brahms. CRP was measured on Vitros 5.1 FS using immuneturbidimetry.
Results. In patients without clinical signs of complications (n= 35) the mean level of copeptin increased significantly during the first postoperative 24 hours (p=0,0028), thereafter trending to reach a maximum at day two with a subsequent decrease. Similarly, the level of CRP increased significantly (p<0,0001) and reached a maximum at day two, with a subsequent significant decrease (p=0,0352 for day3-4 and p=0,0035 for day 4-5). In patients with clinical signs of complications (n=18) the level of CRP increased during all five postoperative days (day 0-1; p<0,0001, and day 1-2; p=0,0024), while the level of copeptin increased until day two (day 0-1; p=0,0185) and then remained at a high level the subsequent days. The concentration of the two parameters was higher in patients with complications than in patients without complications.
Conclusions. The main findings are that copeptin and CRP respond similarly to large abdominal surgery both in patients with and without clinical signs of complications. The results show that copeptin may be used as a biomarker of inflammation. Whether copeptin has an additional diagnostic power compared to CRP and other biomarkers has to be further investigated.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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PREDOMINATION OF ANGIOGENESIS IN FEMALES AND TISSUE REMODELLING IN MALES – A GENDER-SPECIFIC DYSREGULATION OF CYTOKINES IN EARLY KNEE OSTEOARTHRITIS

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Background. Investigation of the pathogenesis of osteoarthritis (OA) is particularly difficult due to myriad of processes involved. The aim of the present study was to investigate shifts in the profile of cytokines in early knee OA (KOA).
Methods. We assessed 60 cytokines, by xMAP technology (R&D Systems), in EDTA plasma of a subset (61 subjects) of an initial Estonian population-based middle-aged KOA cohort (mean age 50±7.3). The stage of KOA was assessed by grading system (grades 0–3) of Nagaosa-Doherty (2000).
Results. The prevalence of KOA (grade 1–3) in the investigated population was 65%. The proportion of early cases of OA (grade 1) was relatively high (32%) and that of advanced cases (grade 3) comparatively low (10%) as might be expected in a middle-age population. Osteophytosis was the prevailing diagnostic feature in both early and in more advanced stages (grades 2 and 3).
We found that KOA associated ($p<0.05$) with angiogenesis markers (ANG1, FGFacidic, PDGF-BB and TSP2) and proinflammatory markers (RANTES, MIP1b, IP10) in females. In males, KOA associated with proinflammatory IP10 and MIC1 and tissue remodelling biomarkers (TIMP2 and TIMP4). In females, MMPs or TIMPs did not associate with KOA. Dysregulation of cytokines took place already in early stage (grade 1) of KOA. So, RANTES was significantly upregulated but IP10 was downregulated in grade 1 of KOA in the whole group ($p<0.02$). We also demonstrated that leptin associated significantly with KOA in the whole group ($p = 0.0017$) and definitely in females ($p = 0.0006$). In addition, BMI correlated positively with FactorD in females but inversely with adiponectin in males. Of note, inflammatory markers IL6, IL1R4 or TNF-RII did not associate with BMI in our study.
Conclusions. The present study in a middle-aged population demonstrated that several biochemical processes proceed in parallel in the early phases of knee OA. However, remarkable gender-differences take place. In females, KOA associated more prominently with inflammation and angiogenesis. In males, KOA is characterised by a shift in the plasma level of tissue remodelling biomarkers as MMPs and TIMPs. The xMAP technology is an excellent tool to study OA mechanisms and to identify biomarkers in a cost-effective manner.

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Inflammation, Vascular biology, Endothelium, Oxidative stress

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HYPERFERRITINEMIA IN HOSPITALIZED PATIENTS AS INDICATOR OF OUTCOME

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BACKGROUND
Ferritin is known as a body iron store and as an acute phase response marker. Lately, other clinical conditions have implied ferritin as an immunomodulatory molecule. It has some pro-inflammatory effects but also immunosuppressive actions that suggest its direct participation in the inflammation development.
For most clinicians, serum ferritin levels are a non-specific marker of the acute phase response; but, when these levels are extremely high, we can use them as a helpful diagnostic data.
The purpose of this study was to assess the association between serum ferritin and the outcome of hospitalized patients in serious state of health.
METHODS
A cross-sectional study was conducted in January 2016. A total of 107 adult patients who were hospitalized in Internal Medicine Unit were enrolled. The sample was divided in two groups: patients who died or not. Hyperferritinemia was defined as a ferritin value over 1000 ng/mL. A Kaplan-Meier analysis was used to evaluate the patient survival. Trend analysis and Mantel-Haenszel method were used to compare outcomes. Statistical analysis was performed using STATA 13.
RESULTS
The 58.72% of the participants were men. The mean age was 69.28 years and the ferritin mean value was 445.67 ng/mL (95%CI: 326.54-564.79 ng/mL). Hyperferritinemia increased the risk of death 2.81 times more than those with lower ferritin levels (95% CI: 1.11 to 7.11). Age-adjusted risk of death in 65 to 80 years old group was 2.64 times (95% CI: 1.75 to 3.99) higher in patients with hyperferritinemia and 3.0 times more (95% CI: 1.81 to 4.98) in those over 80 years and hyperferritinemia. The survival of the group with hyperferritinemia was lower than that of the group with ferritin under 1000 ng/mL ($\chi 2$ =5.31; df=1; p=0.0213).
CONCLUSION
Not only is ferritin a non-specific marker of acute phase response, but also its elevation is related to the outcome of the patient. Patients with extremely high serum values (over 1000 ng/mL) have higher risk of death than those who have lower levels. Moreover, it depends on the age of the patient, elder the patient with hyperferritinemia is, higher the mortality is. Ferritin is not just an iron store or a simple acute phase response marker, but it plays an important role in patients in serious state of heath.

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EVALUATION OF THE ANTINOCICEPTIVE AND ANTI-INFLAMMATORY PROPERTIES OF MICRONEUROTROPHINS IN INFLAMMATION-INDUCED ANALGESIA

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Introduction: Pain is an unpleasant sensory and emotional experience caused by intense or damaging stimuli. Although pain is an unpleasant feeling, it is essential for the individual to avoid a harmful stimulus or to protect a damaged part of the body. Pain can be divided into nociceptive, neuropathic and inflammatory pain. Neurosteroids like Dehydroepiandrosterone (DHEA) contribute with positive effects in pain and hyperalgesia. Based on the above, the aim of our study was to investigate the contribution of the novel spiro-epoxy derivative of DHEA, now called microneurotrophin, BNN27 to inflammation-induced analgesia.
Methods: Adult male mice were injected with BNN27 (100 mg/kg or 10 mg/kg of body weight) either for 4 consecutive days or with a single dose right just before the induction of inflammation by an intraplantar injection of 20μl Complete Freund's Adjuvant (CFA). At 3, 6, 24 hours following the last administration of BNN27, pain threshold and edema were evaluated using the Hargreaves Test and a Plethysmometer, respectively. Peripheral blood and tissues were collected for histochemical studies, ELISA, and PCR analysis.
Results: Our results demonstrate that all doses of BNN27 used, when administered for 4 consecutive days before the induction of inflammation, increased pain threshold under basal and inflammatory conditions, at all time points, while a single dose of BNN27 increased pain threshold only 3 hours after the induction of the inflammation. At 3 and 6 hours BNN27 triggered the release of cytokines (TNF-α, IL-6, IL-10), and nerve growth factor (NGF). Infiltration of immune cells in inflamed tissues was also elevated. At 24 hours BNN27 decreased TNF-α, infiltration of immune cells in inflamed tissue, and increased IL-10. In dorsal root ganglia (DRGs), BNN27 decreased NGF at all time points. The analgesic effect of BNN27 seems to be mediated by the μ-opioid receptor (MOR), as its mRNA levels were elevated in inflamed tissues. POMC was also elevated at 3 and 6 hours, while PENK, was elevated at 24 hours.
Conclusions: Our results indicate significant analgesic and anti-inflammatory properties of BNN27. Its possible mechanism of action seems to involve the inhibition of NGF in DRG, and the synthesis of opioid peptides and their receptors in the inflamed tissue. Ongoing studies are in progress to further elucidate the possible mechanism BNN27 utilizes to exert its effects.

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PLASMA OXIDATIVE STRESS MARKERS AND GLUCOSE DISTURBANCES IN OBSTRUCTIVE SLEEP APNEA PATIENTS

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Background
Hyperglycemia and obstructive sleep apnea may contribute to oxidative stress, and each is associated with increased risk for cardiovascular disease.
The aim of the study was to analyze total antioxidant status (TAS) and lipid peroxidation products in plasma of mild and moderate obstructive sleep apnea (OSA) males, according to results of oral glucose tolerance test (OGTT).
Methods:
Non-smoking Caucasians aged 30-64, with body mass index (BMI) 25,0-39,9 kg/m2 and no acute or severe chronic disorder were qualified for the study. OSA-suspected males underwent full-night polysomnography and apnea/hypopnea index (AHI) was used to diagnose mild (AHI: 5-15) and moderate (AHI: 16-30) OSA. The results of OGTT allowed to select: normal glucose tolerance (NGT), impaired glucose tolerance (IGT) and type 2 diabetes (T2DM) patients. Finally three research categories: all study population as NGT (n=26), IGT (n=26) and T2DM (n=26) groups, and either Mild OSA subjects or Moderate OSA subjects as NGT (n=13), IGT (n=13) and T2DM (n=13) groups, were studied. Fasting plasma lipid profile: T-C, HDL-C, LDL-C, TG (Dimension X Pand Plus, Siemens), serum insulin (ELISA BioSource, Sunrise Tekan), total antioxidant status, TAS (Randox, StatfaxTM 1904 Plus), thiobarbituric acid-reacting substances, TBARS, reflecting plasma lipid peroxidation (Okhawa method, Sigma reagents, Specord M40) were measured. Statistica 10.0 for Windows was used for statistical analysis, including Kruskal-Wallis test with subsequent Dunn test to compare NGT, IGT, T2DM groups in each category.
Results:
Subjects did not differ in their age and BMI. NGT, IGT and T2DM patients were observed different TAS and TBARS levels in each research category. Increased TAS was observed in IGT (1.59 mmol/l) comparing with NGT (1.32 mmol/l) and T2DM (1.16 mmol/l) subjects diagnosed with mild OSA ($p=0.0001$). Increased TBARS was found in T2DM subjects (14,71 µmol/l) comparing with NGT (4.53 µmol/l) and IGT (4.59 µmol/l), in mild OSA ($p=0.0002$) and increasing TBARS was observed from NGT (4.43 µmol/l) via IGT (7.35 µmol/l) to T2DM (14.79 µmol/l), in moderate OSA ($p<0.0001$). Different correlations between metabolic factors and oxidative stress markers were found in the studied groups.
Conclusion:
The advanced stage of obstructive sleep apnea could facilitate the development of hyperglycemia-related oxidative stress. Glucose tolerance should be taken into consideration when assessing cardiovascular risk in OSA patients.

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REDOX STATUS CHANGES IN NATURALLY AND MIMETICALLY AGED RAT TESTICULAR TISSUE

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Increased testicular oxidative stress is considered as an important risk factor for age-related testicular dysfunction; however, mimetic aging dependency of the type and magnitude of oxidative damage on testicular tissue remains to be elucidated.
We found higher levels of protein oxidation (protein carbonyl groups, advanced oxidation protein products) and lipid peroxidation (malondialdehyde, lipid hydroperoxides) biomarkers and decreased levels of antioxidant defense activity (Cu,Zn-superoxide dismutase) in both mimetically aged and naturally aged testicles. All these biomarkers were measured in testicle tissue of mimetically aged (MA) rats (5-months-old) subjected to D-galactose-induced experimental aging, naturally aged (NA) rats (24-months-old), and their corresponding young controls (YC) (5-months-old). MA rats given daily intraperitoneal injections of D-galactose (60 mg/kg body weight) for 6 weeks.
Our current results shows that testicular tissue oxidative stress biomarkers of MA group share significant similarities in terms of impaired redox homeostasis with the NA rats and may be considered as a reliable experimental aging model for testicular aging. Reversing or preventing testicular oxidative damage in both mimetic and natural aging should therefore be considered for the development of effective therapeutic strategies to prevent or treat age-related testicular disorders.