

International publications of authors from Bosnia and Herzegovina in Current Contents indexed publications in 2009

1. Bešlija S, Bonneterre J, Burstein HJ, Cocquyt V, Gnant M, Heinemann V, Jassem J, Köstler WJ, Krainer M, Menard S, Petit T, Petruzella L, Possinger K, Schmid P, Stadtmauer E, Stockler M, Van Belle S, Vogel C, Wilcken N, Wiltchke C, Zielinski CC, Zwierzina H; Central European Cooperative Oncology Group (CECOG). Third consensus on medical treatment of metastatic breast cancer. *Ann Oncol.* 2009;20(11):1771-85.

Institute of Oncology, Sarajevo, Bosnia and Herzegovina

BACKGROUND: Treatment options for patients with metastatic breast cancer (MBC) include a rapidly expanding repertoire of medical, surgical and supportive care measures. DESIGN: To provide timely and evidence-based recommendations for the diagnostic workup and treatment of patients with MBC, an international expert panel reviewed and discussed the evidence available from clinical trials regarding diagnostic, therapeutic and supportive measures with emphasis on their impact on the quality of life and overall survival of patients with MBC. RESULTS: Evidence-based recommendations for the diagnostic workup, endocrine therapy, chemotherapy, use of targeted therapies and bisphosphonates, surgical treatment and supportive care measures in the management of patients with MBC were formulated. CONCLUSIONS: The present consensus manuscript updates evidence-based recommendations for state-of-the-art treatment of MBC depending on disease-associated and biological variables.

2. Bevanda M, Oršolić N, Bašić I, Vukojević K, Benković V, Horvat Knežević A, Lisičić D, Dikić D, Kujundžić M. Prevention of peritoneal carcinomatosis in mice with combination hyperthermal intraperitoneal chemotherapy and IL-2. *Int J Hyperthermia.* 2009;25(2):132-40.

Department of Internal Medicine, Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

PURPOSE: The purpose of this study was to investigate the effect of local chemoimmunotherapy and hyperthermal intraperitoneal chemotherapy (HIPEC) in a mouse model of induced peritoneal carcinomatosis. MATERIAL AND METHODS: Peritoneal carcinomatosis in mice was produced by intraperitoneal implantation of MCa cells (5×10^3). Interleukin-2 (4.1×10^4 IU/mouse) was injected into the abdominal cavity of mice at day 7 and 3 before implantation of tumour cells. Immediately after implantation of MCa cells mice were treated twice with 2 ml of saline that was heated either at 37 degrees C or 43 degrees C and cytostatics (doxorubicin 20 mg kg⁻¹, cisplatin 10 mg kg⁻¹, mitomycin 5 mg kg⁻¹, or 5-FU 150 mg kg⁻¹). We followed the survival of animals and side effects appearing with different forms of treatment. RESULTS: Combined treatment with Interleukin-2 (IL-2) and cytostatics (5-FU, CIS or MIT) significantly affected the development of peritoneal carcinomatosis and increased the survival of mice (ILS% - 37 degrees C = 29.88, 199.32, and 108.52, ILS% - 43 degrees C = 62.69, 260.50, and 178.05, respectively). However, intraperitoneal chemotherapy on survival time of mice with DOX + IL-2 was ineffec-

tive as compared with DOX alone. **CONCLUSION:** We would like to stress that treatment with IL-2 prior to tumour diagnosis is not clinically practical, rather, the manuscript attempts to describe an experimental proof of principle. Results suggest the synergistic effect of hyperthermia, chemotherapy and immunotherapy; IL-2 significantly increases antitumor activity of hyperthermic chemotherapy and survival rate of mice with peritoneal carcinomatosis.

3. Budimir D, Curić I, Curić S. Acute tonsillopharyngitis in a family practice in Mostar, Bosnia and Herzegovina. Coll Antropol. 2009;33(1):289-92.

School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina

The aim of this study was to examine the characteristics of acute tonsillopharyngitis diagnosis and treatment in the family care physicians in Mostar, Bosnia and Herzegovina. All patients diagnosed with acute tonsillopharyngitis in the Center of Family Medicine in Mostar in 2005 and 2006 were included in this study. Data were collected from medical records, including age and sex, month in which they visited their physician, symptoms and signs that they had (McIsaac's clinical score was calculated accordingly) and treatment. Results showed that there were no gender differences regarding diagnosis. Mean age was 32.6 +/- 16.9 years. The most patients were recorded during the January-March period. Total of 65.6% patients received antibiotic treatment. Phenoxymethylpenicillin, considered as the recommended antibiotic was used in 46.3% cases only. In conclusion, this first critical assessment of the existing family practice records on treating patients with tonsillopharyngitis suggested that physicians have to be more critical when treating patients with this diagnosis and that the knowledge and treatment of patients with pharyngitis need to be continuously improved in general medical practice.

4. Curić I, Curić S, Bradarić I, Bubalo P, Bebek-Ivanković H, Nikolić J, Polasek O, Bradarić N. Snakebites in Mostar region, Bosnia and Herzegovina. Coll Antropol. 2009;33 Suppl 2:93-8.

Department for Infectious Diseases, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

The aim of this study was to provide an overview of the snakebites in patients hospitalized at the Mostar Clinical Hospital, admitted between 1983 and 2006. A total of 341 patients were recorded, with moderate men predominance (52.8%). Majority of patients were bitten for the first time (99.1%). In 98.8% of patients snakebite occurred to the bare skin, most commonly

during June to September period (64.2%). Snakebites were the commonest in agricultural workers (48.1%). Until 2003 all admitted patients were treated according to Russel's scheme (3-anti). As of 2003 new treatment scheme was applied, resulting in the reduction of antidote and supportive treatment use, causing a reduction in the number of clinically apparent allergic reactions. Serum sickness was recorded in only 2 patients, while lethal outcome was recorded in one (0.3%). Overall results indicate that lethality of snakebite is low, and that patients were often administered treatment without medical indication. High number of tourists as well as the presence of the peace keeping troops and other visiting personnel in this region make the snakebites and awareness on snakes not only a local issue, but also more general concern.

5. Čavar I, Kelava T, Heinzel R, Čulo F. The role of prostacyclin in modifying acute hepatotoxicity of acetaminophen in mice. Coll Antropol. 2009;33 Suppl 2:25-9.

Department of Physiology, School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina

Prostaglandins (PGs) are lipid compounds that mediate the variety of physiological and pathological functions in almost all body tissues and organs. Prostacyclin (prostaglandin 12, PGI₂), which is synthesized by the vascular endothelium, is a potent vasodilator, inhibits the aggregation of platelets in vitro and has cytoprotective effect on gastrointestinal mucosa. The aim of this study was to determine whether PGI₂ is playing a role in host defense to toxic effect of acetaminophen (APAP). This was investigated in C57Black/6 mice which were intoxicated with single lethal or high sublethal dose of APAP. APAP was administered to mice by gastric lavage and PGI₂ agonists or antagonists were given intraperitoneally (i.p.) 30 minutes before or 2 hours after administration of APAP. The toxicity of APAP was determined by observing the survival of mice during 48 hours, by measuring the concentration of alanine-aminotransferase (ALT) in plasma 20-24 hours after APAP administration, and by liver histology. Mice were given either pure PGI₂ (PGI₂ sodium salt), its stable agonist (iloprost) or inhibitor of prostacyclin (IP)-receptor (CAY-10441). The results have shown that PGI₂ exhibits a strong hepatoprotective effect when it was given to mice either before or after APAP (both increase of survival of mice and decrease of plasma ALT levels were statistical significant). Iloprost has not shown a similar effect and CAY-10441 increased toxic effect of APAP if given 2 hours after its administration. Histopathological changes in liver generally support these findings. These investigations support the view that PGI₂ is involved in defense of organism to noxious effects of xenobiotics on liver.

6. Ćavar S, Maksimović M, Vidić D. The essential oil of *Thymus aureopunctatus* (Beck) K. Malý. *Nat Prod Commun.* 2009;4(3):415-20.

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Essential oil of *Thymus aureopunctatus* (Beck) K. Malý, obtained by hydrodistillation and headspace technique, was subjected to capillary GC-MS analysis, and its volatile composition was compared with essential oil profile of *Thymus serpyllum* L. and a botanically undetermined thyme species, *Thymus* spp., all growing wild in the same habitat in Bosnia and Herzegovina. This paper presents the first report on phytochemical analysis of the rare *T. aureopunctatus* species, and also the first report on headspace analysis of plants belonging to the genus *Thymus*. One hundred and two volatile constituents were identified. The investigated *Thymus* species of Bosnian origin clearly belong to the thymol-chemotype with relatively abundant level of this main constituent varying from 30.5% for *T. serpyllum*, and 34.5% for *T. aureopunctatus*, to 44.2% for *Thymus* spp., while their corresponding headspace samples contain very high percentage of p-cymene, thymol biosynthesis precursor, in the range from 29.1% to 68.1%.

7. Ćeremida-Dragišić M, Dragišić V. Characteristics of motor vehicle accidents in the Herzegovina region. *Coll Antropol.* 2009;33 Suppl 2:193-7.

Department of Physical Medicine and Rehabilitation, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

Epidemiological studies around the world point to motor vehicle accidents as being one of the leading causes of death. The objective of our study was to analyze some characteristics of motor vehicle accidents in the region of Herzegovina. The study included 226 patients treated at the Clinic for Surgical Diseases and Urology of the University Clinical Hospital Mostar in 2005. A total of 78.3% of examinees were men and 21.7% women. The majority of patients of both sexes were aged between 20 and 30 years. Most of the accidents occurred during autumn and winter months, on weekends and in sunny-dry weather conditions. As expected, most of the hospitalized patients were injured either while driving an automobile or in a pedestrian versus automobile collisions. Of the 226 patients 92.5% admitted to the emergency department and 60.2% were hospitalized. Most of the injured (72.1%) were not under the influence of alcohol at time of the accident. 82.7% of injured were examined by medical personnel at the site within 30 minutes from injury but only

43.0% of them arrived at the hospital within 30 minutes of injury. As most of the injured patients were not under the influence of alcohol at the time of the injury we are of the opinion that more attention in preventing motor vehicle accidents should be directed to speeding and the state of the motorways and vehicles themselves. We propose a large-scale epidemiological study in the Herzegovina region and a review of current road management practices and emergency protocols.

8. Damjanović V, Vasilj I, Vlák T, Zelenika D. Prevalence and risk factors of the rheumatoid arthritis in Herzegovina region in 2003-2005. *Coll Antropol.* 2009;33 Suppl 2:73-7.

School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina

In this study we evidenced prevalence of the rheumatoid arthritis (RA) in Herzegovina region of the Bosnia and Herzegovina and studied selected RA risk factors. Sample of subjects comprised RA diagnosed subjects which were compared to randomly selected controls. In diagnosing the RA we used criteria for the classification of rheumatoid arthritis suggested by The American College of Rheumatology. Risk factors of RA included in this investigation were (1) educational status, (2) quality of nutrition, and (3) socioeconomic status. Average prevalence of the RA in our sample was 0.46/100, ranged from 0.36/100 to 0.64/100, which is comparable to other European samples. The RA occurrence is six times more often in females than in males. We have found indices that the Mediterranean diet has to be considered as protective factor against RA. Although RA occurrence is more frequent in the low socioeconomic samples of subjects, because of the methodological reasons we can not undoubtedly support the socioeconomic status as significant risk factor of the RA. Finally, it is interesting that we have found education level as risk factor significantly related to RA occurrence in our sample. All evidenced should be more precisely studied in some future study, while accurately controlling all relevant factors.

9. Dedeić-Ljubović A, Hukić M, Pfeifer Y, Witte W, Padilla E, López-Ramis I, Albertí S. Emergence of CTX-M-15 extended-spectrum beta-lactamase-producing *Klebsiella pneumoniae* isolates in Bosnia and Herzegovina. *Clin Microbiol Infect.* 2010;16(2):152-6.

Institute of Clinical Microbiology, University of Sarajevo Clinics Centre, Sarajevo, Bosnia and Herzegovina

Fifty-seven nosocomial *Klebsiella pneumoniae* isolates producing extended-spectrum beta-lactamases

(ESBLs) were collected between February 2007 and November 2007 in different wards of the Sarajevo (Bosnia-Herzegovina) reference hospital. These isolates comprise two major epidemic pulsed-field electrophoresis-defined clones plus two minor clones. In addition to the ESBL-mediated resistance, all strains uniformly showed resistance to ciprofloxacin, gentamicin and tobramycin. The beta-lactamases involved in this resistance phenotype were TEM-1, SHV-1, and CTX-M-15, as demonstrated by isoelectric focusing, PCR amplification, and sequencing. TEM-1 and CTX-M-15 beta-lactamases, as well as the aminoglycoside resistance determinants, were encoded in plasmids that could be transferred to *Escherichia coli* by conjugation. In three of the infected patients with the predominant clone, cefoxitin resistance development (MICs >128 mg/L) was documented. The analysis of the outer membrane proteins of the cefoxitin-susceptible and cefoxitin-resistant isolates revealed that the former expressed only one of the two major porins, OmpK36, whereas in the latter, the expression of OmpK36 was altered or abolished. This is the first report of CTX-M-15-producing *K. pneumoniae* in Bosnia-Herzegovina. Furthermore, we document and characterize for the first time cefoxitin resistance development in CTX-M-15-producing *K. pneumoniae*.

10. Definis-Gojanović M, Gugić D, Sutlović D. Suicide and Emo youth subculture--a case analysis. Coll Antropol. 2009;33 Suppl 2:173-5.

Department of Forensic Medicine, School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina

Depression and suicide present a serious health problem especially for teenagers as they are increasingly diagnosed with mood disorders of different severity, possibly leading to suicidal activity. Reported here is a misfortunate young girl who committed suicide by jumping from high altitude. She left a suicide note which, together with her behavior in the death-preceding period, pointed to her apparently belonging to an Emo subculture. Although few and scarce, most existing articles and reports on Emo subculture found that its members like to focus on negative things, dark premonitions and deprivation of enjoyment, like self harm and suicide but no scientific information are available about the characteristics, trends and possible suicidal tendencies of children and adolescents who belong to this subgroup. It is for the future researches to answer whether this type of behavior and music preference are causal factors for increased suicidal vulnerability, or personal characteristics and anamnesis, upbringing and mental health status are actual sources of the problem.

11. Delibegović S, Matović E. Hem-o-lok plastic clips in securing of the base of the appendix during laparoscopic appendectomy. Surg Endosc. 2009;23(12):2851-2854.

Department of Surgery, University Clinic Center, Tuzla, Bosnia and Herzegovina

BACKGROUND: During laparoscopic appendectomy (LA), the standard technique in securing of the base of the appendix is by endoloop ligatures. However, application of the endoloop demands dexterity and a short training, while hem-o-lok clips may be more advantageous to use due to their simplicity of application and low cost. The objective of this study was to evaluate the technical feasibility and eventual advantages of this way of securing of the base of the appendix. **PATIENTS AND METHODS:** Prospective study was conducted in the period from August 2006 to August 2008. The patients were divided into two groups; in the first group the base of the appendix was secured by double endoloop ligatures, while in the second group it was done by double nonabsorbable hem-o-lok clips. The data collected included age, gender, operative time, hospital stay, costs, and intra- and postoperative complications. **RESULTS:** There was no difference in hospital stay between the two groups of patients; mean operative time was 47.1 +/- 6.7 min in the first group where the base was secured by endoloop ligatures, and was 38.7 +/- 5.0 min in the group where the base was secured by hem-o-lok clips. The cost of the three hem-o-lok clips was <euro>76.9, and that of the three endoloop ligatures was <euro>88.5. In hem-o-lok group of patients, one intraoperative complication was observed, involving bleeding of mesoappendix. There were no postoperative complications in either group of patients. **CONCLUSION:** The simplicity of application, shorter time of operation, and lower cost of hem-o-lok clips are advantages of this way of securing of the base of the appendix in relation to the standard endoloop procedure.

12. Fatušić Z, Hudić I. Incidence of post-operative adhesions following Misgav Ladach caesarean section--a comparative study. J Matern Fetal Neonatal Med. 2009;22(2):157-60.

Clinic for Gynecology and Obstetrics, University Clinical Centre, Tuzla, Bosnia and Herzegovina

AIM: To evaluate the incidence of peritoneal adhesions as a post-operative complication after caesarean section following the Misgav Ladach method and compare it with peritoneal adhesions following traditional caesarean section methods (Pfannenstiel-Dörffler, low midline laparotomy-Dörffler). **METHODS:** The analysis is retrospective and is based on medical documentation of the Clinic for Gynecology

and Obstetrics, University Clinical Centre, Tuzla, Bosnia and Herzegovina (data from 1 January 2001 to 31 December 2005). We analysed previous caesarean section dependent on caesarean section method (200 by Misgav Ladach method, 100 by Pfannenstiel-Dörffler method and 100 caesarean section by low midline laparotomy-Dörffler). Adhesion scores were assigned using a previously validated scoring system. RESULTS: We found statistically significant difference ($p < 0.05$) in incidence of peritoneal adhesions in second and third caesarean section between Misgav Ladach method and the Pfannenstiel-Dörffler and low midline laparotomy-Dörffler method. Difference in incidence of peritoneal adhesions between low midline laparotomy-Dörffler and Pfannenstiel-Dörffler method was not statistically different ($p > 0.05$). The mean pelvic adhesion score was statistically lower in Misgav Ladach group (0.43 ± 0.79) than the mean score in the Pfannenstiel-Dörffler (0.71 ± 1.27) and low midline laparotomy-Dörffler groups (0.99 ± 1.49) ($p < 0.05$). CONCLUSIONS: Our study showed that Misgav Ladach method of caesarean section makes possible lower incidence of peritoneal adhesions as post-operative complication of previous caesarean section.

13. Galić G, Tomić M, Galešić K, Kvesić A, Šoljić M, Možetić V, Lončar Z, Maričić A, Martinović Ž. Hypoalbuminemia and complication incidence in hemodialysed uremic patients. Coll Antropol. 2009;33(2):559-66.

Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

DISCUSSIONS whether hypoalbuminemia is just a marker for the malnutrition-inflammation syndrome as well as for the increased morbidity and mortality of those patients or is it an etiological factor, are becoming more and more intense. In this research of the relation between hypoalbuminemia and the complications that threaten the vascular access with special reference to infection, and consequently to the life of the patients treated with chronic haemodialysis, we have chosen 120 patients with terminal renal insufficiency (ESRD) treated at the Clinical Hospital Mostar by chronic haemodialysis. The chosen patients for this study were observed throughout a time period of 18 months. Only the patients who, at the moment of starting the research did not exhibit either a local or a systemic infection, as well as no signs of any other complication that might have endangered the vascular access and consequently the life of the patient, were selected. From the 120 (100.0%) patients, 86.8% of them had a serum albumin level below 40.0 g/L. By analysing the research results of the clinical material, it has been established that in patients with serum albumin level below 40.0 g/L, the infection incidence was sig-

nificantly higher than in those patients with the albumin level above 40.0 g/L ($\chi^2 = 7.215$ $P = 0.0077$). The complication incidence is significantly higher ($\chi^2 = 9.92$ $P = 0.0022$) among the patients with serum albumin level below 40.0 g/L, than in those patients with higher serum level. Among the patients with a serum albumin level lower than 40.0 g/L, the sepsis incidence was significantly higher ($\chi^2 = 4.77$ $P = 0.03$), than among those patients with a serum albumin level above this value. However, the difference in incidence of local infection of the vascular access between the group of patients with a serum albumin level below 40.0 g/L and those patients with albumin level above this value is not significant ($\chi^2 = 0.65$ $P = 0.69$). The total infection incidence in the 120 observed patients was 3.8 episodes per 100 patient months, and within the parameters mentioned by other authors.

14. Hudić I, Fatušić Z. Progesterone - induced blocking factor (PIBF) and Th(1)/Th(2) cytokine in women with threatened spontaneous abortion. J Perinat Med. 2009;37(4):338-42.

Clinic for Gynecology and Obstetrics, University Clinical Center, Tuzla, Bosnia and Herzegovina

OBJECTIVE: The aim of this prospective study was to compare serum and urine concentrations of progesterone-induced blocking factor (PIBF) and serum concentrations of anti-inflammatory (IL10) and pro-inflammatory (IL6, TNF α , IFN γ) cytokines of women with threatened spontaneous abortion with normal pregnancy and to evaluate the impact of PIBF on outcome of pregnancy. METHODS: A sample of 30 women with threatened spontaneous abortion (study group) and 20 healthy pregnant women (control group) between 6(th) and 24(th) gestational weeks was studied. Serum and urine PIBF, IL10 and IL6, TNF α , IFN γ cytokine concentrations were measured by enzyme-linked immunosorbent assay (ELISA). RESULTS: Five (16.7%) pregnancies in the study group ended missed abortion vs. none in the control group ($P < 0.05$). Five (20%) threatened aborters delivered between 24(th) and 37(th) weeks of gestation, whereas two (10%) preterm deliveries occurred in the controls ($P > 0.05$). PIBF concentrations in urine (19.5 ± 12.9 ng/mL) and serum (214.4 ± 120.6 of patients with threatened abortion were significantly lower than in healthy pregnant women (45.3 ± 33.7 ng/mL and 357.3 ± 159.9 ng/mL, respectively). Women with threatened abortion had significantly lower serum levels of anti-inflammatory cytokine, but levels of proinflammatory cytokines were higher in this group compared with healthy controls. CONCLUSIONS: Determination of progesterone-induced blocking factor level in body fluids in early pregnancy might be used for the diagnosis and prognosis of threatened abortion.

15. Hudić I, Fatušić Z, Szekeres-Bartho J, Balić D, Polgar B, Ljuca D, Dizdarević-Hudić L. Progesterone-induced blocking factor and cytokine profile in women with threatened pre-term delivery. Am J Reprod Immunol. 2009;61(5):330-7.

Clinic for Gynecology and Obstetrics, University Clinical Center, Trnovac bb, Tuzla, Bosnia and Herzegovina

PROBLEM: The objective of this study was to compare serum concentrations of progesterone-induced blocking factor (PIBF), anti-inflammatory (IL-10), and pro-inflammatory (IL-6, TNF α , and IFN γ) cytokines of women with threatened pre-term delivery, with those of women with normal pregnancy and to evaluate the impact of PIBF on the outcome of pregnancy. **METHOD OF STUDY:** A prospective study was conducted on a sample of 30 women with threatened pre-term delivery (study group) and 20 healthy pregnant women (control group) between the 24th and 37th gestational weeks. Serum PIBF, anti-inflammatory (IL-10), and pro-inflammatory (IL-6, TNF α , and IFN γ) cytokine concentrations were measured by enzyme-linked immunosorbent assay (ELISA). **RESULTS:** Thirteen of 30 patients (43.3%) with symptoms of threatened pre-term delivery, and one of 20 patients (5%) in the control group delivered before the 37th week of gestation. Mean PIBF concentrations in serum samples of patients with threatened pre-term delivery were significantly lower than in those of healthy pregnant women (171.12 \pm 162.06 ng/mL versus 272.85 \pm 114.87 ng/mL; $P < 0.05$). Women with symptoms of threatened pre-term delivery had significantly lower serum levels of IL-10, and higher levels of IL-6 as well as IFN γ compared with healthy controls. **CONCLUSION:** Our results indicate that measuring PIBF and cytokine concentrations in serum during pregnancy is feasible and may be important for understanding immunological causes of pre-term delivery.

16. Hukić M, Nikolić J, Valjevac A, Šeremet M, Tešić G, Markotić A. A serosurvey reveals Bosnia and Herzegovina as a Europe's hotspot in hantavirus seroprevalence. Epidemiol Infect. 2009;1-9.

Institute for Clinical Microbiology, Clinical Centre University of Sarajevo, Sarajevo, Bosnia and Herzegovina

SUMMARY The extent of hantavirus seroprevalence in the healthy population from Bosnia and Herzegovina has not yet been investigated; therefore, the aim of this study was to assess the hantavirus seroprevalence in the population from different regions of Bosnia and Herzegovina and in different risk groups. The serosurvey included 1331 subjects from endemic and non-endemic regions in Bosnia and Herzegovina. All sera samples were examined using IgG ELISA, and West-

ern blot (Bunyavirus IgG) tests. Hantavirus seroprevalence was 7.4% in the endemic region and 2.4% in the non-endemic region ($P < 0.05$). Former soldiers from the endemic region had significantly the highest seroprevalence (16.1%) compared to the general population from the endemic region (6.2%), the occupational risk group from the non-endemic region (5.6%) and the general population from the non-endemic region (0.8%) ($P < 0.01$). No difference in hantavirus seroprevalence between gender or age groups was observed. Hantavirus seroprevalence in different populations in Bosnia and Herzegovina was found to be highest compared to other central European countries.

17. Jandrić S, Manojlović S. Quality of life of men and women with osteoarthritis of the hip and arthroplasty: assessment by WOMAC questionnaire. Am J Phys Med Rehabil. 2009;88(4):328-35.

Department of Physical Medicine, Rehabilitation and Rheumatology, Institute for Rehabilitation Dr Miroslav Zotovic, Banja Luka, Republika Srpska, Bosnia and Herzegovina

OBJECTIVE: The aim of this study was to investigate the differences in quality of life between men and women in preoperative and postoperative period after hip arthroplasty because of severe hip osteoarthritis. **DESIGN:** This is a prospective study of 160 patients (average age, 61.7 yrs), 92 women and 68 men, with a diagnosis of osteoarthritis of the hip who underwent total hip arthroplasty. All patients completed the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) questionnaires that measured health-related quality of life preoperatively, at discharge, and 6-wk postoperatively. To establish the occurrence of differences between men and women in preoperative and postoperative period after arthroplasty, Student's t test and multivariate logistic regression analysis were used. **RESULTS:** The WOMAC global score was a significant predictor (the better the rather men) preoperatively ($P < 0.01$) and 6 wks after total hip arthroplasty ($P < 0.001$). Global WOMAC score was significantly better in men than in women preoperatively ($t = 4.02$; $P < 0.001$) and 6 wks after arthroplasty ($t = 3.42$; $P < 0.001$). **CONCLUSIONS:** These results suggest that men with severe osteoarthritis of the hip have better quality of life than do women preoperatively and 6 wks after hip arthroplasty. These findings would be important for improving quality of care of our patients.

18. Jurić M, Čarapina M. A case report of Madelung's disease in a 69 years old man. Coll Antropol. 2009;33 Suppl 2:169-71.

Department of Maxillofacial Surgery, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

Madelung's disease is an extremely rare disorder of unknown etiology. It is characterized by the huge, bilateral, fatty deposits in regions of the neck, shoulders and the upper extremities. A 69-old patient with developed symptoms of Madelung's disease with a 12-years history is described in this study. The patient was initially considered to have a goiter and chronic heart insufficiency, for which he has been treated for three years. Although the Madelung's disease can be diagnosed right after detailed clinical examination, this study pointed out possible diagnostic and therapeutic mistakes when a physician in a differentiation of symmetrical neck and shoulder swellings doesn't consider the possibility of diagnosing a Madelung's disease.

19. Klarić M, Letica I, Petrov B, Tomić M, Klarić B, Letica L, Francisković T. Depression and anxiety in patients on chronic hemodialysis in University Clinical Hospital Mostar. Coll Antropol. 2009;33 Suppl 2:153-8.

Psychiatric Clinic, School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina

Depression and anxiety are prevailing mental problem in patients on chronic hemodialysis and they have great influence on outcome of illness. Additionally, these disorders are rarely identified in that population of patients and they are insufficiently treated. The aim of this study was to assess the prevalence of depression and anxiety in patients on chronic hemodialysis in University Clinical Hospital Mostar and to examine the correlation between the demographic variables and the time spent on dialysis with depression and anxiety levels. The experimental group consisted of 56 patients on chronic hemodialysis in Mostar Clinical Hospital. The control group 1 consisted of 53 patients diagnosed with a chronic illness and treated for at least a year, while the control group 2 consisted of 51 persons who were not diagnosed with any chronic somatic or mental illness. Demographic data were collected using the constructed questionnaire. The Beck Depression Inventory-BDI was used to determine depression, while the Spielberger State-Trait Anxiety Inventory-STAI was used to determine anxiety. We recorded significantly higher prevalence of depression in patients on chronic dialysis (51.8%) than in patients with a chronic illness (41.5%) and persons without chronic illnesses (9.8%; $p < 0.001$). Trait anxiety level was significantly higher in hemodialysed patients compared to the other two groups ($p = 0.006$) but there were no significant differences in state anxiety level. The study has not shown any sig-

nificant difference in the prevalence of depression and anxiety level regarding the differences in sex, gender and education level, apart from a higher level of state anxiety in patients with a lower education level ($p = 0.032$). These results indicate that patients on hemodialysis have a significantly higher level of depression and a higher level of trait anxiety compared to patients with chronic illnesses and especially compared to general population.

20. Kozomara D, Galić G, Brekalo Z, Kvesić A, Jonovska S. Abdominal pain patient referrals to emergency surgical service: appropriateness of diagnosis and attitudes of general practitioners. Coll Antropol. 2009;33(4):1239-43.

Department of Surgery, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

This study evaluate the need for general practitioners referrals and self referrals of acute abdominal pain patients to emergency surgical service, the appropriateness of GP referral diagnosis and their attitudes dealing with abdominal pain. In three months period all acute abdominal pain patient referrals to our hospital emergency surgical service were audited. Data on final diagnosis, surgical treatment, admission to hospital and surgery performance were recorded. Self referral or GP referral, referring GP diagnosis, referral letters indicating presenting complaint or history, axillar and rectal temperature measurement, laboratory checking and abdominal radiography checking by GP were recorded as well. Also, GPs examination details as palpation, auscultation and digit-rectal checking were recorded. We calculated sensitivity, specificity, positive and negative predictive value (PV) for referring diagnosis. Self referrals and GP referrals differences were evaluated. During the study 318 patients were admitted. A total of 163 (51.25%) referrals were deemed inappropriate; 102 (52.6% of GP referrals) and 61 (49.2% of self referred) ($p < 0.05$). There were no differences in general treatment, hospital admission and operative treatment in self referred and GP referred groups ($p < 0.05$ for all three categories). Sensitivity, specificity, positive and negative predictive values for most frequent GP referral diagnoses were: abdominal colic/abdomen in observation 0.78; 0.66; 0.74; 0.70; acute appendicitis 0.37; 0.92; 0.44; 0.90; acute abdomen/peritonitis 0.30; 0.97; 0.54; 0.92; constipation 0.95; 0.98; 0.85; 0.99; and ileus 0.83; 0.97; 0.50; 0.99. Data on GP including clinical examination, patient history and running basic diagnostics were poor. Our results suggest that a general agreement within the profession about what constitutes a necessary hospital referral is necessary. GP consultation quality must be improved by booking more time per patient and by giving more medical/technical attention to patients.

21. Lačević A, Pojskić LK, Lojo NK, Ramić J, Bajrović K. Tannerella forsythia detected in infected root canals using nested PCR. Am J Dent. 2009;22(4):211-4.

Department of Dental Pathology and Endodontics, School of Dentistry, Bolnicka 4a, University of Sarajevo, Bosnia and Herzegovina

PURPOSE: This study assessed the occurrence of *Tannerella forsythia* in patients with acute and chronic primary endodontic infections. **METHODS:** Clinical samples were collected from 40 patients with acute and chronic periradicular disease. Nested polymerase chain reaction (PCR) assay technique was used to detect the presence of *T. forsythia* in primary endodontic infections. The first round of PCR amplification used universal primers to detect the 16S rDNA sequence. Product from the first round was then used to amplify *T. forsythia* specific fragment with species-specific pairs of primers. **RESULTS:** *T. forsythia* was found in 12 of 27 chronic and 5 of 13 acute infected patients for an overall occurrence frequency of 42.5%. No significant correlation was found between patients with the *T. forsythia* positive genotype and the occurrence of clinical symptoms in the primary endodontic infections ($P < 0.05$) ($P = 0.496$). Also, no significant relationship was found between the occurrence of *T. forsythia* and the patient's age ($P = 0.61$) or gender ($P = 0.239$).

22. Lakičević G, Ostojić L, Splavski B, Roth S, Vlask T, Brekalo Z, Ostojić M. Comparative outcome analyses of differently surgical approaches to lumbar disc herniation. Coll Antropol. 2009;33 Suppl 2:79-84.

School Medicine, University of Mostar, Mostar, Bosnia and Herzegovina

Lumbar disc herniations (LDH) occur in the lower back, most often between the fourth and fifth lumbar vertebral bodies or between the fifth and the sacrum. It is evident lack of studies dealing with comparative analysis of the surgical outcomes of the spine operation techniques. In this paper we analyzed and compared outcomes of the LDH standard techniques (laminectomy and hemilaminectomy), and contemporary operation techniques (interlaminectomy, and micro-discectomy). Adult patients (18-75 years of age) surgically treated on the Neurosurgery Department of the University Clinical Hospital Mostar - Bosnia and Herzegovina between January 1998 and December 2007 were sampled as subjects. We analyzed and compared, number of the LDH surgically treated patients; age, patient's satisfaction with postoperative status, postoperative recurrence of the LDH; incidence of the postoperative complications, and duration of hospi-

talization. In conclusion, modern operating methods have to be considered as superior over traditional operating types mostly because of smaller violations of forms and integrity of lumbar spine.

23. Lepara O, Alajbegović A, Začiragić A, Nakaš-Ićindić E, Valjevac A, Lepara D, Hadžović-Džuvo A, Fajkić A, Kulo A, Sofić E. Elevated serum homocysteine level is not associated with serum C-reactive protein in patients with probable Alzheimer's disease. J Neural Transm. 2009;116(12):1651-6.

Institute of Physiology and Biochemistry, School of Medicine, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

Elevated plasma homocysteine (Hcy) levels have been associated with Alzheimer's disease (AD) and cognitive impairment. Studies have shown that Hcy may have direct and indirect neurotoxicity effects. The aim of the study was to investigate serum Hcy concentration in patients with probable AD with age-matched controls and to determine whether there was an association between serum Hcy and C-reactive protein concentration in patients with probable AD. We also aimed to determine whether there was an association between serum tHcy concentration and cognitive impairment in patients with probable AD. Serum concentration of total Hcy was determined by the fluorescence polarization immunoassay on the AX-SYM system, and serum C-reactive protein (CRP) concentration was determined by means of particle-enhanced immunonephelometry with the use of BN II analyzer. Cognitive impairment was tested by the MMSE score. Body mass index (BMI) was calculated for each subject included in the study. Age, systolic and diastolic blood pressure and BMI did not differ significantly between the two groups. Mean serum tHcy concentration in the control group of subjects was 12.60 $\mu\text{mol/L}$, while in patients with probable AD the mean serum tHcy concentration was significantly higher than 16.15 $\mu\text{mol/L}$ ($p < 0.01$). A significant negative association between serum tHcy concentration and cognitive impairment tested by the MMSE score in patients with probable AD was determined ($r = -0.61634$; $p < 0.001$). Positive, although not significant correlation between CRP and serum tHcy concentrations in patients with AD, was observed. Increased tHcy concentration in patients with probable AD, and the established negative correlation between serum tHcy concentration and cognitive damage tested by MMSE score in the same group of patients, suggests the possible independent role of Hcy in the pathogenesis of AD and cognitive impairment associated with this disease.

24. Ljuca F, Gegić A, Salkić NN, Pavlović-Čalić N. Circulating Cytokines Reflect Mucosal Inflammatory Status in Patients with Crohn's Disease. Dig Dis Sci. 2009.

Faculty of Medicine, University of Tuzla, Univerzitetska 1, Tuzla, Bosnia and Herzegovina

BACKGROUND: There is a great need for a simple activity assessment tool that can reliably predict activity in patients with Crohn's disease (CD). **AIM:** To investigate the relationship between serum cytokines and endoscopic activity of CD using Crohn's Disease Endoscopic Index of Severity (CDEIS) as a gold standard. **METHODS:** We prospectively evaluated 32 firmly established CD patients using ileocolonoscopy, CDEIS score, and Crohn's Disease Activity Index (CDAI) score. Blood samples for cytokine analysis were obtained 1 day prior to procedure. **RESULTS:** The correlation between CDEIS and CDAI was moderate ($r = 0.43$; $P = 0.01$); however, the correlation between CDEIS and inflammatory cytokines was excellent, with the highest coefficients for tumor necrosis factor alpha (TNF α) and interleukin-6 (IL-6) ($r = 0.96$ and $r = 0.96$, respectively; $P < 0.001$). CDEIS and anti-inflammatory cytokines were correlated nonlinearly (power function). We identified two separate models for predicting CDEIS value, based on the best performing pro-inflammatory [CDEIS = $0.445 \times (\text{IL-6}) - 5,143$] and anti-inflammatory [CDEIS = $27.478 \times (\text{IL-10}) - 0.71$] cytokines. Both IL-6 and IL-10 models had high adjusted R (2) values (0.916 and 0.954, respectively). IL-6 had excellent diagnostic accuracy for detecting patients with CDEIS >7 (active disease), with area under the receiver operating characteristic (ROC) curve of 1.0 [95% confidence interval (CI) = 0.89-1.0; $P < 0.001$]. **CONCLUSION:** Serum cytokine levels are excellent predictors of endoscopic activity in patients with CD.

25. Marjanović D, Durmić-Pašić A, Kovačević L, Avdić J, Džehverović M, Haverić S, Ramić J, Kalamujić B, Lukić Bilela L, Škaro V, Projić P, Bajrović K, Drobnić K, Davoren J, Primorac D. Identification of skeletal remains of Communist Armed Forces victims during and after World War II: combined Y-chromosome (STR) and MiniSTR approach. Croat Med J. 2009;50(3):296-304.

Institute for Genetic Engineering and Biotechnology, Gajev trg 4, Sarajevo, Bosnia and Herzegovina

AIM: To report on the use of STR, Y-STRs, and miniSTRs typing methods in the identification of victims of revolutionary violence and crimes against humanity committed by the Communist Armed Forces during and after World War II in which bodies were exhumed from mass and individual graves in Slovenia. **METH-**

ODS: Bone fragments and teeth were removed from human remains found in several small and closely located hidden mass graves in the Skofja Loka area (Lovrenska Grapa and Zolsce) and 2 individual graves in the Ljubljana area (Podlipoglav), Slovenia. DNA was isolated using the Qiagen DNA extraction procedure optimized for bone and teeth. Some DNA extracts required additional purification, such as N-buthanol treatment. The QuantifilerTM Human DNA Quantification Kit was used for DNA quantification. Initially, PowerPlex 16 kit was used to simultaneously analyze 15 short tandem repeat (STR) loci. The PowerPlex S5 miniSTR kit and AmpF/STR MiniFiler PCR Amplification Kit was used for additional analysis if preliminary analysis yielded weak partial or no profiles at all. In 2 cases, when the PowerPlex 16 profiles indicated possible relatedness of the remains with reference samples, but there were insufficient probabilities to call the match to possible male paternal relatives, we resorted to an additional analysis of Y-STR markers. PowerPlex Y System was used to simultaneously amplify 12 Y-STR loci. Fragment analysis was performed on an ABI PRISM 310 genetic analyzer. Matching probabilities were estimated using the DNA-View software. **RESULTS:** Following the Y-STR analysis, 1 of the "weak matches" previously obtained based on autosomal loci, was confirmed while the other 1 was not. Combined standard STR and miniSTR approach applied to bone samples from 2 individual graves resulted in positive identifications. Finally, using the same approach on 11 bone samples from hidden mass grave Zolosce, we were able to obtain 6 useful DNA profiles. **CONCLUSION:** The results of this study, in combination with previously obtained results, demonstrate that Y-chromosome testing and mini-STR methodology can contribute to the identification of human remains of victims of revolutionary violence from World War II.

26. Markota I, Markota D, Tomić M. Measuring of the heparin leakage into the circulation from central venous catheters--an in vivo study. Nephrol Dial Transplant. 2009;24(5):1550-3.

Division of Nephrology and Dialysis, Department of Medicine, Mostar University Hospital Center, University of Medicine Mostar, 88 000 Mostar, Bosnia and Herzegovina

BACKGROUND: A catheter lock with a highly concentrated heparin solution is often used to maintain its patency. The result of the in vitro study shows a significant catheter leakage that occurs after locking the catheter. The goal of this study is to develop a model to measure the catheter leakage in vivo and test it on various kinds of catheters. **METHODS:** Twenty-four patients with central venous dialysis catheters

were examined. After the 48-h interdialytic period, we aspirated the contents of the catheter lumen for analysis. We simultaneously took a sample of the peripheral blood for analysis. In the second part of the test, instead of taking the sample after 48 h, we took it after 10 min. Based on the difference in haematocrit in those two samples, we were able to determine the amount of heparin that remained in the catheter, and indirectly, the amount of heparin that leaked out of the catheter. RESULTS: Using the lock volumes indicated on the catheter by the manufacturer, the early leakage is significantly higher in nontunnelled catheters compared to tunnelled Hemoflow and Ash Split catheters ($P = 0.05$). There is no significant statistical difference in the early leakage between Ash Split and Hemoflow catheters. The late leakage is significantly higher in nontunnelled catheters compared to Hemoflow and Ash Split catheters ($P = 0.05$). There is no significant statistical difference in the total leakage between Ash Split and Hemoflow catheters. CONCLUSION: We present a model that enables the measurement of the catheter leakage in vivo. We applied the model on three kinds of catheters and concluded that both early and late leakages are significantly higher in nontunnelled catheters compared to Hemoflow and Ash Split tunnelled catheters. Our results show that the so-called early leakage measured in vivo is significantly lower compared to the results from in vitro studies. Further research is necessary to determine the amount of leakage volume for different kinds of catheters and to determine the exact leakage dynamics of lock solutions in vivo.

27. Markota NP, Markota I, Tomić M, Zelenika A. Inappropriate drug dosage adjustments in patients with renal impairment. J Nephrol. 2009;22(4):497-501.

Department of Family Medicine, DZ Mostar, Mostar, Bosnia and Herzegovina

BACKGROUND: The aim of this study was to determine whether appropriate dosage adjustments were made in patients with renal impairment discharged from the Department of Internal Medicine and to evaluate a possible role for family medicine physicians in reducing the number of inadequate drug dosages. METHODS: The study included all patients discharged from the Department of Internal Medicine. Data regarding serum creatinine levels, age, sex and prescribed drugs and their dosage were collected from the patients' medical records and discharge letters after discharge from hospital. We calculated the estimated glomerular filtration rate (GFR) using the abbreviated MDRD equation. Drug dosage adequacy was controlled in the patients with GFR less than 60 ml/min per 1.73 m². RESULTS: At the time of discharge

from the hospital, 161 of 712 patients (22.6%) had estimated GFR <60 ml/min per 1.73 m². These patients were prescribed 874 drugs, which amounted to 5.43 per patient. Dosage adjustment according to renal function was necessary for 171 prescriptions (19.6%). This adjustment was performed adequately in 81 cases (47.4%) and inadequately in 90 cases (52.6%). Digoxin metformin and the combination of ACE inhibitors and spironolactone amounted to 65.6% of the inadequate prescriptions. There were significantly more incorrect drug dosages in women. CONCLUSION: Drug dosage in patients with renal impairment can be improved. Since a computerized dynamic alert system is not available in our hospital the role of family medicine physicians is significant in reducing the number of inadequate drug dosages at hospital discharge.

28. Marković-Peković V, Stoisavljević-Šatara S, Škrbić R. Utilisation of cardiovascular medicines in Republic of Srpska, Bosnia and Herzegovina, 5 years study. Pharmacoepidemiol Drug Saf. 2009;18(4):320-6.

Health Insurance Fund, Republic of Srpska, Banja Luka, Bosnia and Herzegovina.

PURPOSE: The objective of this study was to analyse cardiovascular medicines utilisation patterns in Republic of Srpska (Bosnia and Herzegovina) over the 2002-2006 period. METHODS: A retrospective study was taken to analyse utilisation medicines reimbursed by the Health Insurance Fund (HIF), with a focus on cardiovascular medicines utilisation. ATC/DDD methodology was used to monitor utilisation of medicines. Drug utilisation 90% (DU90%) method was used to determine the prescribing quality of cardiovascular medicines. RESULTS: Utilisation of cardiovascular medicines accounted for more than one half of the total medicines utilisation, with an increasing trend. Most prescribed were antihypertensive medicines i.e. ACE inhibitors, both plain and in combination with thiazide diuretics, and calcium channel blockers (CCB). Utilisation of beta-blockers and thiazide diuretics remains rather low despite an overall increase in utilisation. Re-introduction of statins in 2004 instantly led to high utilisation. The number of cardiovascular medicines within DU90% segment varies from 8 in 2002 to 12 in 2006. CONCLUSIONS: This study showed a constant increase in total medicines utilisation with the cardiovascular medicines as the most prescribed. DU90% is shown as a simple method for assessing general quality of medicines prescribing, which indicated that better adherence to the guidelines is needed in order to practice a more rational use of medicines and a cost-efficient use of all resources. More stratified routinely performed analyses are also needed.

29. Maslov B, Marčinko D, Miličević R, Babić D, Đorđević V, Jakovljević M. Metabolic syndrome, anxiety, depression and suicidal tendencies in post-traumatic stress disorder and schizophrenic patients. Coll Antropol. 2009;33 Suppl 2:7-10.

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Persons with schizophrenia and post-traumatic stress disorder (PTSD) tend to have higher psychiatric and somatic morbidity. They typically have higher rates of substances abuse (including smoking), more prevalent obesity, diabetes mellitus, and cardiovascular disease (CVD). This is especially well seen in case of the metabolic syndrome, with a number of published studies on psychiatric patients in the last few years. This study investigated the associations between metabolic syndrome, anxiety, depression and suicidal tendency in schizophrenic and combat-related PTSD patients controlled by healthy controls. Higher rates of anxiety, depression and recent life changes scores in participants with metabolic syndrome were recorded compared to those without metabolic syndrome. Suicidal tendencies were equally present in both groups.

30. Memišević H, Sinanović O. Epilepsy in children with intellectual disability in Bosnia and Herzegovina: effects of sex, level and etiology of intellectual disability. Res Dev Disabil. 2009;30(5):1078-83.

Center for Education and Rehabilitation of Children with Intellectual Disability, Mjedenica, Sarajevo, Bosnia and Herzegovina

The purpose of this study was to examine the occurrence of epilepsy in children with intellectual disability. An additional goal was to determine if there were statistical differences in the occurrence of epilepsy related to the sex, level and etiology of intellectual disability of children. The sample consisted of 167 children with intellectual disability attending two special education schools in Sarajevo, Bosnia and Herzegovina. The method for data collection was the examination of the children's medical records. A chi-square test was performed to determine if there were any significant differences in the occurrence of epilepsy among different categories of children with intellectual disability. Additionally, Phi coefficient and Cramer V coefficient were calculated to determine the strength of association. The occurrence of epilepsy in children with intellectual disability is high and certain etiological categories are associated with an even higher risk of epilepsy. The study confirmed a high occurrence of epilepsy in children with intellectual disability. Some psycho-educational implications of epilepsy were discussed and in the future there should be

better cooperation between medical and educational institutions in treating the bio-psycho-social issues of a child with epilepsy.

31. Mikulić I, Petrik J, Galešić K, Ž, Čepelak I, Zeljko-Tomić M. Endothelin-1, big endothelin-1, and nitric oxide in patients with chronic renal disease and hypertension. J Clin Lab Anal. 2009;23(6):347-56.

Mostar University Hospital, Mostar, Bosnia and Herzegovina

The complex pathogenesis of chronic renal disease (CRD) depends on endothelin (ET) axis (ETs and ET receptors) and nitric oxide (NO) because of their vasoactive effects and their role in general modulation of vascular homeostasis. Various renal cells synthesize ETs and NO that play a significant role in renal hemodynamics as well as in water and salt excretion via urine. ET-1 is a strong vasoconstrictor. Besides its vasoactive effects, ET-1 modulates mitosis and apoptosis in a cell type-dependent manner, and may play an important role in CRD pathogenesis. The aims of this study were to emphasize the role and interactions of ET-1, Big ET-1, and NO in CRD. Concentrations of these vasoactive molecules were measured in plasma/serum and/or urine of 57 patients with diabetic nephropathy (subgroup 1), arterial hypertension (subgroup 2) or CRD with chronic renal insufficiency (subgroup 3), and in healthy control subjects (n=18). In comparison with control group, urine concentration of Big ET-1 was significantly increased (13.13 pmol/L vs. 11.34 pmol/L; $P < 0.001$) in CRD patients, whereas plasma and urine concentrations of ET-1 did not differ significantly. NO concentrations were also significantly increased in CRD patients (serum, 72.55 micromol/L; $P < 0.001$, and urine 141.74 micromol/L; $P < 0.05$) as compared to control group. Study results indicated that Big ET-1 and NO could be useful diagnostic parameters in CRD for their diagnostic sensitivity and diagnostic specificity (Big ET-1 in urine: 56.1 and 88.9%, and NO in serum: 66.7 and 83.3%, respectively). In addition, Big ET-1 may prove useful in the differential diagnosis of diabetic nephropathy (78.6% diagnostic sensitivity and 88.9% diagnostic specificity).

32. Mimica M. Management of Helicobacter pylori-associated diseases: survey of attitudes changes among general practitioners in Bosnia and Herzegovina. Coll Antropol. 2009;33 Suppl 2:159-63.

Department of Internal Medicine, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

The aim of the study was to investigate the attitude change of general practitioners (GPs) in Bosnia and

Herzegovina considering the key decision points in the management of treatment of *Helicobacter pylori* (*H. pylori*)-associated diseases in 2008, after the four-year period. The first survey was done from February to April 2004. Two hundred and sixty four GPs in B&H responded to questionnaire especially designed for the study. In May 2008, four years after the first survey, data were collected again by same questionnaire from 53 GPs. The most important source of information about the management of treatment of *H. pylori*-associated diseases in both surveys were symposia sponsored by pharmaceutical companies, but the percent decreased from 53% in 2004 to 34% in 2008. The percent of GPs who named the Internet as the major information source increased from 5% in 2004 to 28% in 2008. Medical journals were used as the most important source of information by every fourth GP in 2008 almost in the same percent as in 2004. In 2008 the percent of GPs who considered that the main obstacle to proper management of *H. pylori*-related diseases was the patient's low income status which was doubled in relation to 2004 (64%; 31% respectively). Almost all GPs (98%) claimed to eradicate *H. pylori* in 2008--a significant increase compared to 2004 when 71% of GPs reported eradication. Sixty percent of GP in 2008 claimed confirmation of infection prior to prescribing the eradication therapy which was significant increase in comparison to 2004 when only 9% of GPs confirmed presence of the *H. pylori* infection before starting eradication. All GPs who claimed to eradicate *H. pylori* infection used a proton pump inhibitor based on triple drug therapy, while in 2004 18% of GPs chose some other inadequate eradication therapy. As a conclusion, better selection of information sources eliminated management options of questionable value, but scarce economic resources in B&H will probably remain the main obstacle to the comprehensive *H. pylori* treatment.

33. Naletilić M, Tomić V, Šabić M, Vlak T. Cerebral palsy: early diagnosis, intervention and risk factors. Coll Antropol. 2009;33 Suppl 2:59-65.

School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina

Early diagnosis and intervention intensity were suggested to be crucial factor in cerebral palsy (CP) treatment. Herein we observed 347 children diagnosed for CP in Clinical Hospital Mostar, Bosnia and Herzegovina, and studied the relationship between (a) intervention start point and the final motor outcome, (b) intensity of treatment and final outcome, and (c) relationship between documented risk factors and early diagnosis of the CP. Our study suggests that it is possible to relatively accurately diagnose the CP in the first trimester. Previous miscarriages, sepsis and

intracerebral haemorrhage were significantly related to early diagnosis, while delivery outcome, RDS, premature birth, intracerebral haemorrhage, sepsis, meningitis, hydrocephalus and convulsions were found as significantly related to final motor CP outcome. We have found no significant influence of the intervention intensity and final diagnosis. Our results support the idea that the intervention start point has to be considered as one of the most important factors for the effective intervention program. In future studies dealing with the CP interventions and risk factors, special attention should be paid to homogeneity and size of the sample, as well as necessity of including the non-treated controls in the investigation.

34. Nežić L, Škrbić R, Dobrić S, Stojiljković MP, Šatara SS, Milovanović ZA, Stojaković N. Effect of simvastatin on proinflammatory cytokines production during lipopolysaccharide-induced inflammation in rats. Gen Physiol Biophys. 2009;28 Spec No:119-26.

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The effect of simvastatin applied in a short-term pretreatment on proinflammatory cytokines production in acute systemic inflammation induced by endotoxin - lipopolysaccharide (LPS) in rats was investigated. Both LPS and simvastatin doses were established in separate experiments in which increasing doses of both compounds were given to obtain the LD(50) LPS and the maximally protective dose of simvastatin against LD(50) LPS. To determine the anti-inflammatory effect, simvastatin was given orally for 5 days, followed by a single intraperitoneal non-lethal dose of LPS (0.25 LD(50)). Plasma concentrations of tumor necrosis factor alpha (TNF-alpha), interleukin (IL)-1beta and IL-6 were measured by enzyme-linked immunosorbent assay. The acute i.p. LD(50) LPS amounted to 22.15 mg/kg. Simvastatin of 20 mg/kg p.o. was maximally protective against LD(50) LPS, and this dose was used for studying its effects on LPS-induced cytokines production. Cytokines concentrations were significantly increased upon challenge of non-lethal dose of LPS. The peak levels of TNF-alpha and IL-1beta were significantly suppressed by simvastatin, compared to control rats only treated with dimethylsulfoxide before LPS. In contrast, simvastatin did not affect IL-6 levels at all timepoints. Simvastatin pretreatment given orally produced acute anti-inflammatory effects by inhibiting TNF-alpha and IL-1beta, but no IL-6 production.

35. Nežić L, Škrbić R, Dobrić S, Stojiljković MP, Jačević V, Šatara SS, Milovanović ZA, Stojaković

N. Simvastatin and indomethacin have similar anti-inflammatory activity in a rat model of acute local inflammation. *Basic Clin Pharmacol Toxicol.* 2009;104(3):185-91.

Department of Pharmacology, Toxicology and Clinical Pharmacology, Medical Faculty, University of Banja Luka, Banja Luka, Republic of Srpska, Bosnia and Herzegovina

Statins, such as simvastatin, lower circulating cholesterol levels and are widely prescribed for the treatment of hypercholesterolaemia. Several studies have shown unexpected effects of statins on inflammation. We studied the anti-inflammatory effect of simvastatin using a standard model of an acute local inflammation, the carrageenan-induced footpad oedema. Experimental groups (n = 6-8) were given simvastatin in a dose range 5-30 mg/kg, indomethacin 1-8 mg/kg and methylcellulose (control) per os. Footpad volume was measured with a plethysmograph and compared with the pre-injection volume of the same paw. Swelling (in microlitres) was then calculated, and in drug-treated animals, per cent inhibition was derived through comparison with the control group. Histopathological examination of the skin biopsies was performed to examine severity of paw skin lesions and to confirm the simvastatin-induced inhibition of acute inflammation. Both simvastatin and indomethacin administered orally, 1 hr before carrageenan injection, significantly reduced the extent of footpad oedema. Indomethacin dose-dependently blocked the swelling; the maximal effect was obtained with 8 mg/kg by 48.3% (P < 0.05). Simvastatin produced a comparable anti-inflammatory activity at a dose of 5 mg/kg (32%), while 10 and 30 mg/kg caused a 47.6% and 51.7% reduction, respectively, with the maximal effect observed at 20 mg/kg by 57.2% (P < 0.05). The comparison of the ED(50) of these agents on molar basis showed equipotent anti-inflammatory activity. Histopathological examination of the footpad skin biopsies revealed that simvastatin, dose-dependently and comparably to indomethacin, reduced polymorphonuclear leucocyte infiltration. These data support the hypothesis that simvastatin has an acute anti-inflammatory activity.

36. Nikolić J, Kuzman I, Markotić A, Rode OD, Curić I, Ivanković HB, Grgić S. The occurrence of hemorrhagic fever with renal syndrome in southern parts of Bosnia and Herzegovina. *Coll Antropol.* 2009;33 Suppl 2:37-42.

Clinic for Infectious Diseases, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

Bosnia and Herzegovina (B&H) has been known as an endemic region for hemorrhagic fever with renal syndrome (HFRS) for over 50 years. Multiple epidemics

of this disease have been registered so far, especially in endemic parts of Central and Northeastern Bosnia, as well as the Sarajevo region. Seroepidemiological investigations demonstrate naturalization of Hantaviruses and their wide spread in B&H. However, there are no studies from the southern areas of B&H, and endemic foci of this disease are unknown. The aim of this study was to determine the distribution and serologic prevalence of Hantavirus infections by testing for specific IgG antibodies against hantaviruses in the population of Herzegovina. This study included two groups of participants. The target group consisted of 300 participants from exposed professional and population groups, and control group included 100 educators with lower exposure to HFRS. Identification of specific IgG antibodies against hantaviruses in 16 participants confirmed an initial assumption about the presence of Hantavirus infections in the region of interest. Seroprevalence of 5% was registered in the "exposed" and 1% in the "unexposed" group. Simultaneous circulation of Puumala (PUU) and Dobrava (DOB) viruses was discovered. The frequency of positive antibody results was higher in the population above 50 years of age, and three times more prevalent in men than at women. The highest proportion of exposed participants (80%) was registered in the municipalities which geographically belong to high or mountainous Herzegovina.

37. Novaković M, Babić D, Dedić G, Leposavić L, Milovanović A, Novaković M. Euthanasia of patients with the chronic renal failure. *Coll Antropol.* 2009;33(1):179-85.

Department of Psychiatry, Faculty of Medicine, Foca, Bosnia and Herzegovina

This study deals with frequency and form of euthanasia in dialysis patients with chronic renal failure (CRF) in Bosnia and Herzegovina (B&H) within the period from 2000 to 2006. Of total number of 2700 patients on dialysis we examined n = 753 of them. Examinees with the Balkan Endemic Nephropathy (BEN) (n = 348) were in the first group, and the Control group was formed of patients with other diseases (n = 405). In this study the following methods were used: adapted Questionnaire from the Renal Registry of B&H, Beck's Anxiety Inventory (BAI), Hamilton's Depression Rating Scale (HDRS) and Mini-Mental Scale of Estimation (MMSE). Age of the BEN group of patients ranged: 64.77 +/- 8.86 and the control one 53.85 +/- 3.60. Multivariate analysis for the BEN group with passive euthanasia was: 0.760 (95%, CI = 0.590-0.710) (p = 0.001) and for the active one was 0.450 (95%, CI = 0.125-0.510 (p = 0.001). Euthanasia is associated with the rural life and renal heredity, and psychological BAI scale-total, HDRS-total and MMSE-total. For

the BEN group passive euthanasia is 3.75% as well as active 0.86%. The findings stressed that euthanasia of dialysis patients requires better nephrological-psychiatric control and social care in B&H as well as complete program for the CRF samples protection too.

38. Omeragić J, Vejzagić N, Zuko A, Jažić A. Culicoides obsoletus (Diptera: Ceratopogonidae) in Bosnia and Herzegovina-first report. Parasitol Res. 2009;105(2):563-5.

Department of Parasitology and Invasive Diseases, Veterinary Faculty of Sarajevo, Zmaja od Bosne 90, 71000, Sarajevo, Bosnia and Herzegovina

The first occurrence of bluetongue disease in Bosnia and Herzegovina was registered in 2002 in the area of Kalesija municipality. Entomological investigation of the presence of *Culicoides* species in that area was conducted in 2007. The aim of the research was to establish the presence of the main vector of bluetongue virus. Collections and analyses of *Culicoides* midges were performed in accordance with the protocols of the National Reference Centre for Exotic Diseases (Centro Studi Malattie Esotiche) in Teramo, Italy. Traps for capturing midges were placed next to four sheep farms. During the investigation, a total of 2,256 *Culicoides* midges were collected and only one species was identified, *Culicoides obsoletus* Meigen, 1818.

39. Pajević I, Hasanović M, Koprić A. Psychiatry in a battle zone. Bioethics. 2009.

School of Medicine, University of Tuzla, Bosnia and Herzegovina

ABSTRACT The authors describe the arrival and treatment of 164 severe chronic psychiatric patients who were displaced from the Serbian army-controlled Jakes psychiatric hospital and off-loaded on the afternoon of 28th of May, 1992 at the gates of the Psychiatry Clinic in Tuzla. Through analysis of their incomplete medical records, which arrived with the patients in Tuzla, and analysis of their activities during and after the war, they found that 83 of the patients (50%) were males and 147 (89.6%) were admitted to the Psychiatry Clinic in Tuzla. Of the patients, 86 (58.5%) were found to be Serbs. The majority of them were incapable of independent living and required ongoing medical and social care. They were from all regions of Bosnia-Herzegovina, 81.6% had schizophrenia and 70 (47.6%) were over 50 years of age. For its humanitarian work, its contribution to peace and for the maintenance of the multi-ethnic Bosnia-Herzegovina, the Psychiatry Clinic in Tuzla received the Golden Award for Peace from the International Legion of Humanists in May 1998.

40. Pravdić D, Vladić N, Bošnjak ZJ. Intracellular Ca²⁺ modulation during short exposure to ischemia-mimetic factors in isolated rat ventricular myocytes. Coll Antropol. 2009;33 Suppl 2:121-6.

Department of Physiology, School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina

We investigated the effects of different ischemia-mimetic factors on intracellular Ca²⁺ concentration ([Ca²⁺]_i). Ventricular myocytes were isolated from adult Wistar rats, and [Ca²⁺]_i was measured using fluorescent indicator fluo-4 AM by confocal microscopy. Intracellular pH was measured using c5-(and-6)-carboxy SNARF-1 AM, a dual emission pH-sensitive ionophore. Myocytes were exposed to hypoxia, extracellular acidosis (pH(o) 6.8), Na-lactate (10 mM), or to combination of those factors for 25 min. Monitoring of [Ca²⁺]_i using fluo-4 AM fluorescent indicator revealed that [Ca²⁺]_i accumulation increased immediately after exposing the cells to Na-lactate and extracellular acidosis, but not during cell exposure to moderate ischemia. Increase in [Ca²⁺]_i during Na-lactate exposure decreased to control levels at the end of exposure period at extracellular pH 7.4, but not at pH 6.8. When combined, Na-lactate and acidosis had an additive effect on [Ca²⁺]_i increase. After removal of solutions, [Ca²⁺]_i continued to rise only when acidosis, hypoxia, and Na-lactate were applied together. Analysis of intracellular pH revealed that treatment of cells by Na-lactate and acidosis caused intracellular acidification, while short ischemia did not significantly change intracellular pH. Our experiments suggest that increase in [Ca²⁺]_i during short hypoxia does not occur if pH(i) does not fall, while extracellular acidosis is required for sustained rise in [Ca²⁺]_i induced by Na-lactate. Comparing to the effect of Na-lactate, extracellular acidosis induced slower [Ca²⁺]_i elevation, accompanied with slower decrease in intracellular pH. These multiple effects of hypoxia, extracellular acidosis, and Na-lactate are likely to cause [Ca²⁺]_i accumulation after the hypoxic stress.

41. Prohić A. Distribution of Malassezia species in seborrhoeic dermatitis: correlation with patients' cellular immune status. Mycoses. 2009.

Department of Dermatology, University Clinical Center, Sarajevo, Bosnia and Herzegovina

Malassezia species are implicated in the pathogenesis of seborrhoeic dermatitis (SD), but the relationship between each species and the disorder remains unclear. It is hypothesised that the pathogenesis of SD has an immune component, which is supported by the increased incidence in patients with immunosuppressive disorders. The purpose of our study was to analyse the prevalence of Malassezia species in lesional skin

of SD, and to assess the distribution of the species according to severity of the disease and cellular immune status of the patients. Forty SD patients with scalp involvement were included in the study. The samples were obtained by scraping the skin surface of the scalp and then incubated on Sabouraud dextrose agar and modified Dixon agar. The yeasts isolated were identified by their morphological and physiological properties according to the method of Guillot et al. In addition, we performed two-colour flow cytometry analysis to investigate the lymphocyte subpopulations in the peripheral blood. The most commonly isolated species was *Malassezia restricta* (27.5%), followed by *Malassezia globosa* (17.5%) and *Malassezia slooffiae* (15%). We demonstrated low helper/suppressor ratios in 70% patients, because of an increase in the suppressor T-cell population, suggesting an impaired cellular immunity. However, we found no significant difference in the distribution of isolated *Malassezia* species according to the severity of the scalp involvement and changes in the peripheral blood lymphocyte subpopulations.

42. Rašić S, Hadžović-Džuvo A, Tomić M, Unčanin S, Ćorić S. Impact of hemoglobin concentration on plasma B-type natriuretic peptide level and left ventricle echocardiographics characteristics in chronic kidney disease patients. Coll Antropol. 2009;33 Suppl 2:141-4.

Clinic of Nephrology, University Clinical Center Sarajevo, Sarajevo, Bosnia and Herzegovina

Anemia is common in patients with chronic kidney disease (CKD) and contributes to cardiovascular alterations. Recent findings suggest that B-type natriuretic peptide (BNP) is a sensitive biomarker for left ventricular dysfunction, but relationship between hemoglobin and BNP in CKD patients is unclear. Hemoglobin, plasma BNP and serum creatinine levels were measured in 49 patients with CKD (without heart failure), divided in two groups according to the hemoglobin status (cut-off point 110 g/L). All patients underwent echocardiography in order to assess left ventricular (LV) morphology and function. The results showed that in the group of patients with hemoglobin levels under 110 g/L BNP levels were significantly elevated ($p < 0.001$), as well as left ventricular mass index ($p < 0.001$). Systolic and diastolic LV function were significantly better in patients with hemoglobin levels above 110 g/L ($p < 0.001$). Hemoglobin levels were inversely related to BNP values ($r = -0.451$, $p < 0.001$). Significantly negative correlation between BNP level and creatinine clearance ($p = 0.009$), and significantly positive correlation between BNP level and left ventricular mass index (LVMI) were established. A similar but positive relationship was observed between hemo-

globin levels and creatinine clearance ($p < 0.01$). We established statistically significant negative correlation between hemoglobin levels and LVMI ($r = -0.564$, $p < 0.001$). In conclusion, BNP and hemoglobin levels depend on the renal function. Anemia may contribute to elevated BNP levels in CKD patients, and may represent an important confounder of the relationship between BNP and cardiac alteration in these patients.

43. Salkić NN, Pavlović-Čalić N, Gegić A, Jovanović P, Bašić M. Ulcerative colitis in the Tuzla region of Bosnia and Herzegovina between 1995 and 2006: epidemiological and clinical characteristics. Eur J Gastroenterol Hepatol. 2009.

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BACKGROUND: Bosnia and Herzegovina (B&H) is one of the Eastern European countries that lacks data on the epidemiology of ulcerative colitis (UC). AIMS: We aimed to assess the epidemiological and clinical characteristics of UC in Tuzla Canton of B&H during a 12-year period (1995-2006). PATIENTS AND METHODS: We retrospectively evaluated hospital records of both UC inpatients and outpatients residing in Tuzla Canton of B&H (total of 496 280 inhabitants) between 1995 and 2006. Patients that firmly satisfied the diagnostic criteria for UC were included in the study. Incidence rates were calculated with age standardization using European population standards. Trends in incidence were evaluated as moving 3-year averages. RESULTS: During the observed period, 214 patients met the diagnostic criteria for UC. The average age-standardized incidence was found to be 3.43/10 inhabitants [95% confidence interval (CI) = 2.97-3.89], ranging from 0.22 to 7.44 per 10. The mean annual crude incidence in the last 5 years of study (2002-2006) was 5.55/10 (95% CI = 4.63-6.48). The prevalence of UC during the observed period was found to be 43.1/10 (95% CI = 37.3-48.8). The incidence of UC increased dramatically from the average of 1.01/10 in the period between 1995 and 1997 to 6.04/10 between 2004 and 2006, as did the number of colonoscopies performed, from 29 in 1995 to 850 in 2006. The average yearly incidence of confirmed UC cases detected on colonoscopy was 5.56 per 100 colonoscopies per year (95% CI = 4.81-6.30) and only 3.92 per 100 colonoscopies (95% CI = 3.26-4.57) in the last 5 years of the observed period. CONCLUSION: Tuzla Canton of B&H is a region with an increasing incidence of UC, which is most likely a direct consequence of a wider use of colonoscopy. We believe that in the next few years, the incidence of UC in this region will probably reach the annual incidence rate of 6 per 10 inhabitants.

44. Salkić NN, Zerem E, Zildžić M, Ahmetagić S, Čičkušić E, Ljuca F. Risk factors for intrafamilial spread of hepatitis B in northeastern Bosnia and Herzegovina. Ann Saudi Med. 2009;29(1):41-5.

Department of Gastroenterology, Internal Medicine Hospital, University Clinical Center Tuzla, University of Tuzla, Tuzla, Bosnia and Herzegovina

BACKGROUND: Accurate estimations of hepatitis B virus transmission risk for any region in Bosnia and Herzegovina are not clearly established. We aimed to determine levels of risk associated with intrafamilial transmission of hepatitis B infection within families in our region. **PATIENTS AND METHODS:** Family members of 81 chronic carriers of hepatitis B surface antigen (>6 months positive and considered as index case) were tested for hepatitis B markers. For family members, we recorded their age, sex, and family relationship to the index case, and vaccination status. **RESULTS:** The proportion of HBsAg positive family members was 25/207 (12.1%), while the proportion of family members with evidence of exposure to HBV was 80/207 (38.6%). Only 17/207 (8.2%) family members had evidence of past HBV vaccination. Age was found to be a significant predictor of HBV exposure of family members (odds ratio 1.05, 95% CI 1.03-1.07, $P<.001$). In a multivariate analysis, HBsAg positivity was associated with a female index case (odds ratio 11.31, 95% CI 3.73-34.32, $P<.001$), HBeAg positivity in the index case (odds ratio 5.56, 95% CI 1.80-17.23, $P<.005$) and being a mother of the index case (odds ratio 9.82, 95% CI 2.43-39.68, $P<.005$). A female index case (odds ratio 4.87, 95% CI 2.21-10.72, $P<.001$), HBeAg positivity in the index case (odds ratio 3.22, 95% CI 1.15-9.00, $P<.05$) and being a mother of the index case (odds ratio 3.72, 95% CI 1.19-11.64, $P<.05$) were also risk factors for HBV exposure among family members. The combination of HBeAg positivity and female index case was a significant predictor for HBsAg positivity of family members (odds ratio 70.39, 95% CI 8.20-604.61, $P<.001$). **CONCLUSIONS:** Children of HBeAg positive mothers are at highest risk for becoming chronic carriers themselves and generally, the combination of female sex and HBeAg positivity dramatically increases the chances of HBV transmission within the family.

45. Salkić NN, Zildžić M, Zerem E, Smajić M, Gegić A, Alibegović E, Jovanović P. Simple uninvestigated dyspepsia: age threshold for early endoscopy in Bosnia and Herzegovina. Eur J Gastroenterol Hepatol. 2009;21(1):39-44.

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OBJECTIVE: To establish an optimal age threshold for endoscopy referral in patients with simple uninvestigated dyspepsia in the setting of European developing country (Bosnia and Herzegovina) with low availability and high workload of endoscopy units. **METHODS:** We reviewed patient information on all upper endoscopies performed during a 6-year period (2000-2005). Different age thresholds were evaluated in terms of their predictive power for absence of malignancy. **RESULTS:** A total of 82 of 4403 (1.86%) dyspeptic patients had upper gastrointestinal (GI) malignancy. Age cutoffs of 40 years for men and 45 years for women had the best predictive power, without any cases of upper GI malignancies below those thresholds. Age cutoffs of 45 years for men and 50 years for women also had excellent negative predictive values (99.7 and 99.9%, respectively) with 1.45 and 0.98 cases of missed upper GI malignancies per 1000 endoscopies, respectively. A total of 1709 of 4403 (38.8%) of endoscopies might have been avoided in men of less than 45 and women of less than 50 with uninvestigated dyspepsia. **CONCLUSION:** (i) Age thresholds for endoscopy referral are lower than in Western countries and should be different for men and women. (ii) Cutoff values of 40 and 45 years for men and women, respectively, are completely safe to use. (iii) Thresholds of 45 years for males and 50 years for females have a small level of risk of missing upper GI malignancy, but are acceptable to use in areas of low availability of endoscopy.

46. Sarajlić N, Topić B, Brkić H, Alajbeg IZ. Aging quantification on alveolar bone loss. Coll Antropol. 2009;33(4):1165-70.

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Objectives were to measure labial alveolar resorption using Lamendin's method; to correlate the measured values of resorption with age at death; to determine whether age influences alveolar resorption, and if so, to quantify this impact. The study was performed during the 1992-1995 period in identified war casualties in Bosnia and Herzegovina. Data on the date, month and year of birth, and on the month and year of death were known in all cases. Measurements were carried out in 845 anterior monoradicular maxillary and mandibular teeth from male bodies ($n=198$) aged 23-69, divided into five age groups of 23-29, 30-39, 40-49, 50-59 and 60-69 years. Teeth with macroscopic pathologic lesions were excluded from analysis. Lamendin's method was used to measure the alveolar bone level on the labial aspect of the extracted teeth. Results are presented in tables. Regression analysis was used to determine the alveolar resorption increase with age. Results are also presented by the factor of alveolar re-

sorption, where the youngest age group was divided by older age groups. In the total sample of 845 teeth, alveolar bone level of up to 3.49 mm was recorded in 740 (87.76%), of 3.50-5.99 mm in 99 (11.79%), and of > 6.00 mm in 6 (0.71%) teeth. In anterior monoradicular teeth, labial alveolar resorption increased with age and showed a regular age dependent pattern toward older age groups in mandibular but not in maxillary teeth. A > 6-mm pocket was very rarely recorded. Study results contribute to clinical practice, demonstrating that periodontology is a preventive discipline in dental medicine.

47. Smajlović A, Berbić S, Schiene-Fischer C, Tušek-Žnidarič M, Taler A, Jenko-Kokalj S, Turk D, Žerovnik E. Essential role of Pro 74 in stefin B amyloid-fibril formation: dual action of cyclophilin A on the process. FEBS Lett. 2009;583(7):1114-20.

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We report that Pro74 in human stefin B is critical for fibril formation and that proline isomerization plays an important role. The stefin B P74S mutant did not fibrillate over the time of observation at 25 degrees C, and it exhibited a prolonged lag phase at 30 degrees C and 37 degrees C. The peptidyl prolyl cis/trans isomerase cyclophilin A, when added to the wild-type protein, exerted two effects: it prolonged the lag phase and increased the yield and length of the fibrils. Addition of the inactive cyclophilin A R55A variant still resulted in a prolonged lag phase but did not mediate the increase of the final fibril yield. These results demonstrate that peptidyl prolyl cis/trans isomerism is rate-limiting in stefin B fibril formation.

48. Šimić D, Šitum M, Letica E, Penavić JZ, Živković MV, Tomić T. Psychological impact of isotretinoin treatment in patients with moderate and severe acne. Coll Antropol. 2009;33 Suppl 2:15-9.

Department for Dermatology and Venerology, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

Acne patients are subject to different degree of psychosocial distress. The emotional impact of acne vulgaris due to disfigurement caused by the disease is undisputed. Most common reactions to the acne are depression and anxiety. The use of isotretinoin, one of the most effective options in acne treatment, increases depression symptoms. The aim of this study was to investigate the psychological status of the patients with moderate to severe acne and to compare patients treated with isotretinoin with patients treated with vitamin C. A total of 85 patients suffering from

acne vulgaris were included in the study. The results of this study do not find a significant correlation between the use of isotretinoin and the psychological effects of the drug.

49. Škrbić R, Igić R. Seven decades of angiotensin (1939-2009). Peptides. 2009;30(10):1945-50.

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Two research groups in both North and South America independently discovered that renin released a novel vasopressor agent. The Argentine group named it hypertensin, and called its plasma protein substrate hypertensinogen. The group from the United States named it angiotonin. In 1958, Braun Menendez and Irvine Page suggested that the peptide should be named angiotensin. The combined name eventually became commonly used to avoid linguistic confusion. Research scientists and physicians today acknowledge that studies of the renin-angiotensin system (RAS) have greatly improved our understanding of several diseases. Certainly, medical practice profited significantly from the synthesis and application of numerous pharmacological agents that antagonize either the biosynthesis or pharmacological responses of endogenously generated angiotensin II. Ultimately, discovery of the renin-angiotensin system led to many studies that resulted in therapies for vascular disease. This article briefly reviews research related to the discovery of angiotensin and indicates the importance of additional studies related to the RAS.

50. Šumanović-Glamuzina D, Božić T, Brkić V, Robović A, Saraga-Karačić V. Minor malformations: neonatal or anthropological story? Coll Antropol. 2009;33 Suppl 2:31-5.

Clinic for Child Diseases, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

Minor malformations (mM) are mild physical deformities that with their incidence, number and evolution may be external indicators of hidden, more serious disorders. Most often these are recognized by the neonatologists. First studies done some forty years ago showed an average incidence of 15% in the general population of newborns and about 50% in children with major malformations (MM). A study done in Maternity Hospital Mostar covering a one-year cohort of the newborns and assessing 38 mM showed an average incidence 23.7% mM in children without MM. Twelve mM have had a frequency above 1%, many of them in the head region. The most frequent specific

mM was a deep sacral dimple (4.6%). Eighteen mM malformations that appeared more often were re-evaluated three months later. A large part (50-80%) disappeared, but a small number (about 17%) were newly discovered. In the newborns with MM, the incidence of mM was 57.5%. 15 of 23 children with MM (65.2%) had more than three associated mM. The highest percentage was in the group of hypotrophic newborns. The connection of mM with MM and specificity of incidence of mM in one population are the reason why the search for mM in the neonatal period could be benefit also for children and whole population.

51. Tahirović E, Begić H, Nurkić M, Tahirović H, Varni JW. Does the severity of congenital heart defects affect disease-specific health-related quality of life in children in Bosnia and Herzegovina? Eur J Pediatr. 2009.

Heart Center Sarajevo, Clinical Center, University of Sarajevo, Sarajevo, Bosnia and Herzegovina

The aim of this study was to assess whether the severity of congenital heart defects (CHD) affects disease-specific health-related quality of life (HRQOL) in children after open heart surgery. One hundred and fourteen children with CHD and one of their parents participated in the study. HRQOL was evaluated by the PedsQL 3.0 Cardiac Module. The children were assigned to one of three groups according to severity of CHD. Children with cyanotic CHD (Group 3) reported that their HRQOL on several domains was lower than that of children with anomalies with the left-right shunt and children with obstructive anomalies. Also, by parent proxy-report, patients with anomalies with the left-right shunt had statistically significant, better HRQOL scores for the heart problems and treatment scales, perceived physical appearance, treatment anxiety, cognitive problems, and communication scales in comparison to the children with cyanotic CHD. By self-report, children of Group 1 reported that they had statistically significant, better HRQOL in the heart problems and treatment scales compared with Group 2. Conclusions: The results of the assessment by the PedsQL 3.0 Cardiac Module, a cardiac disease-specific instrument for children with CHD, indicate that HRQOL is poorest in children with complex CHD. Therefore, it is necessary to take the appropriate preventive measures for these patients, which include early (timely) cardiosurgical intervention and active psychological support to limit the negative impact of serious forms of CHD on the quality of life of these children.

52. Tahirović H, Toromanović A, Balić A, Grbić S, Gnat D. Iodine nutrition status of pregnant women

in an iodine-sufficient area. Food Nutr Bull. 2009;30:351-354.

Department of Pediatrics, University Clinical Center, Tuzla, Bosnia and Herzegovina

Background. Iodine is necessary for the synthesis of thyroid hormones, which play a decisive role in the development of the brain during fetal and early postnatal life. **Objective.** To evaluate whether prophylaxis with 20 to 30 mg of iodine per kilogram of salt is enough to ensure optimal iodine nutrition during pregnancy in an iodine-sufficient area. **Methods.** A cross-sectional study of pregnant women was conducted in 2007. The urinary iodine concentration (UIC) was measured in 300 randomly selected women in Tuzla, Bosnia, and Herzegovina, in all three trimesters of pregnancy. **Results.** The median UIC of the pregnant women was 142 µg/L, ranging from 27 to 1,080 µg/L. The median UIC of the pregnant women in each trimester of pregnancy who were not restricting their salt intake was consistent with adequate iodine nutrition, as defined by the World Health Organization Technical Consultation, whereas the median UIC of women who were restricting their salt intake was insufficient. **Conclusions.** Pregnant women in the urban area of Tuzla had adequate iodine status except for those with restricted salt intake, which presents an increased risk to the mother as well to as the unborn child. Women in the rural area of Tuzla were found to be iodine-deficient, regardless of whether they had restricted their salt intake or not. However, for those pregnant women who have been advised to restrict their salt intake and who thus face the risk of iodine deficiency, the use of salt with higher concentrations of iodine could be advised.

53. Tahirović H, Toromanović A, Grbić S. Higher frequency of screening TSH above 5 mIU/l in infants likely exposed to higher doses of iodine-containing skin antiseptic: implications for assessment of iodine sufficiency. J Pediatr Endocrinol Metab. 2009;22(4):335-8.

Department of Pediatrics, University Clinical Center, Tuzla, Bosnia and Herzegovina

BACKGROUND: Neonatal TSH screening has as its main goal the early detection and treatment of permanent sporadic congenital hypothyroidism. At the same time neonatal TSH is one of the indicators for monitoring progress towards eliminating iodine deficiency disorders (IDD). **AIM:** To evaluate the usefulness of neonatal TSH screening data as a monitoring tool for IDD evaluation and control in Bosnia and Herzegovina. **INFANTS AND METHODS:** The study included a total of 8,105 newborns. Neonatal TSH was measured in whole blood drawn between day 3 and day 5 of life, spotted on filter paper using a sensitive fluorometric

assay (Delfia). RESULTS: Levels above 5 mIU/l were found in 282 (5.5%) neonates. Median TSH values and the percentage of samples of neonatal TSH above 5 mIU/l were significantly higher in neonates who were born by Caesarean section (6.4%) compared with neonates born by vaginal delivery (1.4%). CONCLUSION: Our findings suggest that neonatal TSH should not be used as a monitoring tool for IDD evaluation and control if iodinated skin disinfectant is used on a large part of the mother's skin in maternity hospitals.

54. Tahirović H, Toromanović A, Grbić S, Bogdanović G, Fatušić Z, Gnat D. Maternal and neonatal urinary iodine excretion and neonatal TSH in relation to use of antiseptic during caesarean section in an iodine sufficient area. J Pediatr Endocrinol Metab. 2009;22(12):1145-9.

Department of Pediatrics, Division of Endocrinology & Diabetes, University Clinical Center, Tuzla, Bosnia and Herzegovina

AIM: To evaluate the influence of topical iodine-containing antiseptics on neonatal TSH in full-term infants born by Caesarean section in an iodine sufficient area. POPULATION AND METHODS: Urinary iodide excretion (UIE) was estimated in 86 mothers on the second day after delivery by Caesarean section and their 86 full-term neonates. The mothers were divided into two groups according to the use of antiseptic to prepare Caesarean sections: 42 mothers who were prepared with povidone-iodine (Isosept, Bosnalijek) comprised the study group, and 47 mothers who were prepared with alcoholic solution (Skinsept color, Ecolab) formed the control group. Neonatal TSH was measured in whole blood drawn between day 3 and 5 of life, spotted on filter paper using a sensitive fluorometric assay (Delfia). RESULTS: Maternal and neonatal UIE were significantly higher ($p < 0.05$) in the study group compared to the control group. No significant difference was found for neonatal TSH. CONCLUSION: Our data suggest that perinatal iodine exposure of full-term neonates who were born by Caesarean section in an iodine sufficient area did not influence neonatal TSH, although median UIE was higher, suggesting optimal iodine intake during pregnancy. Further research is needed to define a critical value of urinary iodine concentrations in full-term neonates in an iodine sufficient area that may lead to the impairment of thyroid function.

55. Tahirović H, Toromanović A, Grubić M, Grubić Z, Dumić K. Untreated congenital adrenal hyperplasia due to 21-hydroxylase deficiency. Eur J Pediatr. 2009;168(7):847-9.

Department of Pediatrics, University Clinical Center, Tuzla, Bosnia and Herzegovina

Congenital adrenal hyperplasia (CAH) is an inherited metabolic disease caused by the deficiency of one of the enzymes necessary for cortisol synthesis. With carefully supervised medical treatment, CAH patients have the capacity for normal puberty and fertility. We report on a 12.4-year-old female who, because of the early interruption of treatment, developed progressive virilization with reduced final height and altered psycho-social orientation to male. One of the reasons for interrupting replacement therapy in our case was the difficult social and economic status of the family, who lived for many years without basic medical care.

56. Tomić T, Peršić M, Rajić B, Tomić Z. Endoscopic features of gastric mucosa in children having pathohistological evidence of Helicobacter pylori infection. Coll Antropol. 2009;33 Suppl 2:53-7.

Clinic for Children's Diseases, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina.

Infection with *Helicobacter pylori* (Hp) is common in children from developing countries, particularly in adolescents. It is associated with chronic gastritis and stomach cancer. A characteristic endoscopic finding in children is nodular gastritis. The aim of this study was to assess and confirm association of nodular gastritis, mainly of antral mucosa, with Hp infection in children. A total of 195 children 1 to 15 years of age were studied during a two-year period (2004-2006). There were 107 girls (54.9%) and 88 boys (45.1%). The patients presented with recurrent epigastric pain, nausea, vomiting, heartburn, sour mouth, regurgitation, bloating or other dyspeptic symptoms. The complaints were recorded by a structured interview with parents and older children. Upper endoscopy was performed in all children. The presence and degree of mucosal granulation was recorded and two samples of mucosa from the antrum and the small curvature were taken. Biopsy material was processed for histology as usual, stained with 2% Giemsa and examined by a pathologist for the presence of Hp. A total of 40 of 195 children (20.5%) have had positive Hp infection and a 27 of 40 (67.5%) have had a granular aspect of antral mucosa at the endoscopy. Sensitivity of the finding was 87.5%, specificity 93.5%, positive predictive value 73%, negative predictive value 91.8%, $p < 0.05$. Average age of those patients was 11.5 +/- 3.0 years. Subjective symptoms of dyspepsia (as recorded by the questionnaire) were often associated with Hp positivity, but short of statistical significance. No difference between boys and girls was noted. Endoscopic finding of nodular gastritis, especially in areas of antrum and small curvature, showed a highly positive correlation with Hp infection.

57. Tomić V, Petrović O, Petrov B, Bjelanović V, Naletilić M. Hypertensive disorders in pregnancy: a 5-year analysis of the wartime and postwar period in South-Western region of Bosnia and Herzegovina. Coll Antropol. 2009;33 Suppl 2:115-9.

Department of Obstetrics and Gynecology, School of Medicine, University of Mostar, Bosnia and Herzegovina

Hypertensive disorders are among the most common complications in pregnancy and a major cause of perinatal morbidity and mortality. The aim of this study was to investigate the risk factors and adverse perinatal outcomes of pregnancies in mothers with hypertensive disorders, as well as the adequacy of prenatal care during the wartime and postwar period in South-Western region of Bosnia and Herzegovina. This study included a total of 542 pregnancies with hypertensive disorders during 5-year study period (1995-1999) and 1559 randomly selected controls. Data on risk factors, adverse perinatal outcomes (for singleton pregnancies only) and prenatal care on pregnant women were extracted from the medical records and compared with controls. Chi-square test and crude odds ratio (OR) with 95% confidence interval (95% CI) were used in statistical analysis. The average five-year incidence of hypertensive pregnancy disorders was 6.5% and it was significantly higher in 1995, the last year of the war, than in the postwar period (1996-1999) ($p = 0.02$). Factors significantly associated with hypertensive pregnancy disorders were maternal age > 34 , nulliparity, multifetal gestation and male newborn ($p < 0.001$; except $p = 0.002$ for male newborn). Severe forms of hypertensive disorders were significantly associated with adverse perinatal outcomes: preterm birth (OR 2.6, 95% CI 1.08-6.3), cesarean delivery (OR 9.2, 95% CI 5.4-15.6), fetal growth restriction (OR 63.8, 95% CI 34.8-117.0), and stillbirth (OR 5.5, 95% CI 2.1-14.1). Women with hypertensive pregnancy disorders had significantly lower number of prenatal care visits than controls ($p < 0.001$). There was a high proportion of normally formed macerated stillbirths in the study (27 out of 30 or 90%) and in the control group (10 out of 12 or 83%). In conclusion, severity of the disorder and adequacy of prenatal care are strongly associated with adverse perinatal outcome related to hypertensive pregnancy disorders.

58. Toromanović A, Tahirović H. Congenital hypothyroidism associated with neonatal tooth, Pierre-Robin syndrome and congenital heart defects. J Pediatr Endocrinol Metab. 2009;22(10):881-2.

Department of Pediatrics, University Clinical Center, Tuzla, Bosnia and Herzegovina

A female infant was born as the second child of healthy unrelated parents at 37 weeks of gestation by Caesarian section at a local hospital with birth weight 2,880 g, length 51 cm, and head circumference 33 cm. The pregnancy was complicated by polyhydramnion and placenta previa. The infant had stigmata of Pierre-Robin syndrome, and on the 5th day of age a tooth eruption in the region of the lower central incisor was noted. She required nasogastric tube feeding. Jaundice occurred during the first week of life. The patient was recalled because of a positive screening test for congenital hypothyroidism. At the time of screening on day 4, thyroid-stimulating hormone (TSH) was 136 mIU/l. On admission to our hospital, on the 13th day of age, physical examination revealed temperature 38.7°C, tachypnoea, peripheral cyanosis, slight oedema of the eyelids, low frontal and posterior hairline, micrognathia, retrognathia, cleft soft palate, muscular hypotonia. In addition, a continuous murmur with weak radial and femoral pulses were noted. An ultrasound examination of the thyroid gland was carried out confirming the absence of any thyroid tissue in the thyroid area at the base of the neck. At the same time, an ultrasound examination of the knee was done. She had evidence of delayed bone maturation based on absence of the distal femoral epiphyses. She was immediately started on 25 µg/day of L-thyroxine before awaiting biochemical confirmation of suspected diagnosis. Thyroid function tests done on the 13th day of life revealed TSH >100 mIU/l (normal range: 0.15-3.2), free thyroxine (fT4) 0.10 pmol/l (normal range: 10-25), total thyroxine (T4) 0.0 nmol/l (normal range: 65-160), total triiodothyronine (T3) 0.5 nmol/l (normal range: 1.04-2.5), and thyroglobulin (Tg) 6.1 ng/ml (normal range: 2-70). Roentgenography of the knee demonstrated absence of distal femoral epiphyses. Thyroid scintigraphy was not done. Echocardiography showed coarctation of the aorta, patent ductus arteriosus and patent foramen ovale with aneurysma of interatrial septum. Cytogenetic analysis demonstrated normal female karyotype. Because of a high degree of mobility, the tooth was extracted on the 20th day of life. Her clinical condition markedly improved and she was discharged from hospital on the 36th day of life. During the following weeks she demonstrated signs of airway obstruction and failure to thrive. Unfortunately the child died from cardiorespiratory insufficiency on the 65th day of age at a local hospital. Higher incidence of congenital extrathyroid anomalies in infants with congenital hypothyroidism than in the general population has been reported and especially congenital heart diseases^{1,2}. However, neonatal teeth with congenital hypothyroidism, as in our patient, has not to our knowledge been previously published. Further studies on congenital malformations in the general population and those associated

with congenital hypothyroidism are still needed to help us understand the role of local genetic and environmental factors.

59. Toromanović A, Tahirović H. Transient neonatal hypothyroidism manifested at birth. J Pediatr Endocrinol Metab. 2009;22(1):11.

Department of Paediatrics, University Clinical Center, Tuzla, Bosnia and Herzegovina

A 2 day-old male infant was referred to the Department of Paediatrics for a large goiter. The boy was born as the third child of healthy unrelated parents at 40 weeks of gestation with birth weight 4,950 g and length 55 cm. Antiseptics containing iodine were not used in the mother, nor in the infant. Physical examination revealed myxedema of the face, protruding tongue, dry skin, hoarse cry, large goiter and hypotonia. An ultrasound examination revealed enlarged thyroid gland. Thyroid function tests at 2 days of age were as follows: total triiodothyronine (T3) 3.0 nmol/l (normal range: 1.04-2.5), total thyroxine (T4) 23.2 nmol/l (normal: 65-160), free thyroxine (fT4) 2.6 pmol/l (normal range: 10-25), thyroid-stimulating hormone (TSH) 165.1 mIU/l (normal range: 0.15-3.2), and thyroglobulin 2,093 ng/ml. He was immediately started on 50 µg/day of L-thyroxine. Roentgenography of the knee demonstrated dysgenesis of the distal femoral epiphysis, while the proximal tibial epiphysis were not visualized. Molecular genetic analysis of the TPO gene was done. In the examined regions of the TPO gene, all 17 exons except exon 14, no mutations were detected. His mother's serum T4 and TSH levels were normal, and thyroglobulin and thyroperoxidase antibody tests were negative. There was no family history of thyroid diseases. No maternal use of medication was reported. Weaning off the L-thyroxine was started on the 23rd day of life due to elevated T4 level. At the age of 4 months he was completely weaned off L-thyroxine and has not required any since. The patient is now 3.8 years old, thyroid enlargement is still present, and physical and neurological development are normal. Iodine overload, iodine deficiency, and maternal thyroid antibodies are common causes of transient congenital hypothyroidism. The etiology of transient hypothyroidism in this newborn is unknown. More research is required in order to evaluate the frequency, causes and optimal therapy of transient neonatal hypothyroidism.

60. Toromanović A, Tahirović H, Milenković T, Koehler K, Kind B, Zdravković D, Hasanhodžić M, Huebner A. Clinical and molecular genetic findings in a 6-year-old Bosnian boy with triple A syndrome. Eur J Pediatr. 2009;168(3):317-20.

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The triple A syndrome is a rare autosomal recessive disease that is characterised by the triad of adrenocorticotropin (ACTH)-resistant adrenal insufficiency, achalasia and alacrima. In most patients, neurological and dermatological abnormalities are associated features. We report on the first Bosnian patient with triple A syndrome. Endocrine investigation confirmed primary adrenal insufficiency at the age of 5.8 years. Two months later, achalasia was diagnosed, and in the presence of alacrima, the patient satisfies the diagnostic criteria of triple A syndrome. In addition, a large number of associated neurological and dermatological features were present in this patient. Moreover, he has dysmorphic facial features, which have not been previously described in triple A syndrome. Triple A syndrome was confirmed by molecular analysis, revealing a nonsense mutation p.W84X in the AAAS gene. The parents are both heterozygous carriers of the mutation. The affected twin brother unfortunately died from hypoglycaemic shock, despite a normal cortisol rise in an ACTH stimulation test. Further, triple A syndrome patients carrying the identical homozygous p.W84X mutation have to be studied to assess a genotype-phenotype relationship for this mutation.

61. Trninić Z, Vidačak A, Vrhovac J, Petrov B, Šetka V. Quality of life after colorectal cancer surgery in patients from University Clinical Hospital Mostar, Bosnia and Herzegovina. Coll Antropol. 2009;33 Suppl 2:1-5.

Surgery Clinic, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

Quality of life (QoL) has become an important outcome measure for patients with cancer, but results from population-based studies are infrequently published. The objective of this study was to assess QoL in patients who underwent the colorectal cancer (CRC) surgery and to compare it to the QoL of general population. The patients who were admitted from January 2004 until May 2006 at the Department of Gastrointestinal Surgery at the Clinical Hospital Mostar, Bosnia and Herzegovina were divided in three groups: group of CRC patients who had received surgery and as a result of surgical treatment have colostomy, group of CRC patients who had received surgery in the same period and don't have colostomy and the third group that consisted of controls. QLQ-C30 and QLQ-CR38 questionnaires by the European Organization for Cancer Research and Treatment (EORTC) were used. A total of 67 patients were included in this study, supplemented by the thirty healthy examinees. Healthy group had significantly better results in physical

functioning compared with colorectal cancer patients and better results in cognitive and social functioning. Also, they reported symptoms of diarrhea and constipation less frequently than the group with colostomy and. The group with colostomy had poorer results in emotional functioning than the group without colostomy, and also reported significantly poorer results for domain "body image". Healthy group showed better results in sexual enjoyment than the patient with colorectal cancer. Patients without colostomy reported more micturition and defecation problems and female sexual problems compared to the healthy group. Generally we found that healthy population had better results than the CRC patients, while the patients with stoma had worse results than the nonstoma patients. The results presented here suggest that psychological treatment should be an integral part of the CRC treatment plan.

62. Vasilj I, Pilav A, Maslov B, Polašek O. Cardiovascular risk factors research in Bosnia and Herzegovina. Coll Antropol. 2009;33 Suppl 2:185-8.

Institute for Epidemiology and Biostatistics, School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina

This study describes the current situation of cardiovascular risk factors research in the Bosnia and Herzegovina, with special emphasis on the Herzegovina region. The available data for the analysis includes various secondary sources, including project reports, official vital statistics data and other sources. Currently, there is a substantial lack of relevant information, which is available from occasional surveys or isolated studies. One of the main problems in detailed analysis is the lack of detailed and reliable census data, which causes problems in calculation of various rates and disables the creation of representative population samples for the field work and subsequent analysis. Comparison of the available information with neighbouring Croatia indicates interesting mixture of relatively high prevalence of some risk factors and rather low prevalence of others; almost 50% of men reported smoking on a daily basis, while only 16.5% of men were obese, while 40% of them had blood pressure over 140/90 mmHg. The results provide useful but incomplete information for the policy, thus suggesting that broader scope of public health research is needed in the region coupled with the census data, in order to provide better information for health policy and ultimately delivery of the optimal health care to the entire population.

63. Vlatković V, Trbojević-Stanković J, Stojimirović B. Malnutrition-inflammation complex syndrome

and hepatitis C in maintenance hemodialysis patients. Ther Apher Dial. 2009;13(2):113-20.

International Dialysis Center, Banja Luka, Republic of Srpska, Bosnia and Herzegovina

Protein-energy malnutrition and inflammation are among the leading causes of poor outcome in hemodialysis patients. Hepatitis C virus (HCV) infection is accompanied by elevated proinflammatory mediators, also found in dialysis patients with malnutrition-inflammation complex syndrome. We aimed to study the rate and characteristics of malnutrition-inflammation complex syndrome (MICS) in hemodialysis patients, especially those with hepatitis C. The study included 147 patients (mean age 55.1 +/- 12.9 years), 24.5% of whom were HCV-positive, undergoing adequate hemodialysis three times a week for the last 52.7 +/- 52.5 months. Parameters of nutrition and inflammation were investigated to evaluate MICS. HCV-positive vs. HCV-negative patients had significantly higher hematocrit (29.6 +/- 4.5 g/dL vs. 28.1 +/- 4.3, $P < 0.05$), uric acid (345.8 +/- 96.5 vs. 321.3 +/- 118.8 micromol/mL, $P < 0.05$), aspartate aminotransferase (AST, also known as serum glutamic oxaloacetic transaminase [SGOT]) (23.3 +/- 14.9 vs. 17.8 +/- 9 U/L, $P < 0.008$), alanine aminotransferase (ALT, also known as serum glutamic pyruvic transaminase [SGPT]) (41.2 +/- 28.7 vs. 26.6 +/- 17.1 U/L, $P < 0.0003$), serum creatinine (980.4 +/- 219.1 vs. 888.4 +/- 202.9 micromol/mL, $P < 0.022$), intact parathyroid hormone (329.7 +/- 630.5 vs. 110.2 +/- 145.3 pg/mL, $P < 0.002$), malnutrition-inflammation score (7.4 +/- 5.2 vs. 5.6 +/- 4.1, $P < 0.038$), and Charlson comorbidity index (4.5 +/- 1.5 vs. 4 +/- 1.4, $P < 0.05$). MICS had a prevalence of 20-40% in our study. HCV-positive patients had a significantly higher prevalence of MICS than HCV-negative patients (30-40% vs. 20-30%).

64. Vukojević M, Soldo I, Granić D. Risk factors associated with cerebral palsy in newborns. Coll Antropol. 2009;33 Suppl 2:199-201.

School of Medicine, University of Mostar, Mostar, Bosnia and Herzegovina

The aim of this study was to investigate the risk factors associated with cerebral palsy (CP). For this purpose, a total of 55 newborns were investigated in the case control design study, with a total of 55 additional newborns that were matched to the cases. All patients were recruited in University Clinical Hospital Mostar and other institutions in the region between 1997-2005. The comparison of the Apgar score did not seem to show significant differences between cases and controls (odds ratio [OR] = 1.15, 95% confidence intervals [CI] 0.36-3.69). Hypoxia was more common in the CP group (36.3% vs. 5.4% in the control group;

$p < 0.001$). Additionally, cases were more frequently exposed to the infections ($p < 0.001$), intracranial hemorrhage ($p = 0.002$), premature delivery, before the 28th gestation week ($p = 0.027$), as well as the premature delivery during the 28-34 gestation week ($p = 0.001$), and 34-38 gestation week ($p = 0.018$). Accordingly, small birth weight was associated with cases more often than controls ($p = 0.003$). Bleeding during pregnancy was also more common in cases than controls ($p = 0.032$), while the breech presentation, emergency cesarean section, hydrocephalus, placenta disorders and pre-eclampsia were not associated with CP. The results suggest that CP cases were more commonly exposed to numerous risks, which all seem to contribute to the increased chances of PF. Traditional indicator, poor Apgar score was not found to be significantly associated with the CP.

65. Zelenika D, Karanović N. Diffusion lung capacity of patients with arterial hypertension. Coll Antropol. 2009;33 Suppl 2:165-7.

Department of Internal Medicine, University Clinical Hospital Mostar, Mostar, Bosnia and Herzegovina

The aim of this study was to investigate the diffusion lung capacity in patients with untreated hypertension. For this purpose, a total of 30 cases and 30 controls were included in the present study, which was based on several spirometry indicators in the analysis. The measurements were based on "single breath approach". The results indicated that the two groups differed in several spirometry results, including vital capacity, maximum willing ventilation, but the overall lung diffusion capacity did not seem to be significantly different between cases and controls. The results suggest that although there is a strong link between respiratory and circulatory system, the overall lung diffusion capacity is not altered by the increased arterial pressure and hypertension. Furthermore, the results of this suggest the need for creation of the population-specific spirometry standards for the population of Herzegovina in order to provide more meaningful results of spirometry.

66. Zerem E, Imamović G, Omerović S. Percutaneous drainage without sclerotherapy for benign ovarian cysts. J Vasc Interv Radiol. 2009;20(7):921-5.

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PURPOSE: To evaluate percutaneous short-term catheter drainage in the management of benign ovarian cysts in patients at increased surgical risk. MA-

TERIALS AND METHODS: Thirty-eight patients with simple ovarian cysts were treated with drainage of fluid content by catheters until output stopped. All patients were poor candidates for surgery. All procedures were performed under ultrasonographic (US) control and local anesthesia. Cytologic examination was performed in all cases. The patients were followed up monthly with color Doppler US for 12 months. Outcome measure was the recurrence of a cyst. **RESULTS:** During the 12-month follow-up period, 10 of 38 cysts recurred. Seven of the 10 cysts required further intervention, and three were followed up without intervention. Four of the seven patients who required further intervention underwent repeat transabdominal aspiration and three declined repeat aspiration and subsequently underwent surgery. After repeated aspirations, two of four cysts disappeared, one necessitated follow-up only, and one necessitated surgical intervention. Cyst volume ($P = .009$) and diameter ($P = .001$) were significantly larger in the cysts that recurred. No evidence of malignancy was reported in the cytologic examination in any patient. No patients developed malignancy during follow-up. No major complications were observed. The hospital stay was 1 day for all patients. The median duration of drainage in the groups with resolved and recurrent cysts was 1 day (interquartile range, 1-1) and 2 days (interquartile range, 1-3), respectively ($P = .04$). **CONCLUSIONS:** In patients considered poor candidates for open surgery or laparoscopy, percutaneous treatment of ovarian cysts with short-term catheter drainage without sclerotherapy appears to be a safe and effective alternative, with low recurrence rates.

67. Zerem E, Imamović G, Omerović S. Simple renal cysts and arterial hypertension: does their evacuation decrease the blood pressure? J Hypertens. 2009;27(10):2074-8.

The University Clinical Center Tuzla, Trnovac bb, Tuzla, Bosnia and Herzegovina

OBJECTIVE: To evaluate the relationships between simple renal cysts and arterial hypertension and whether their evacuation decreases the blood pressure (BP). **METHODS:** In a cross-sectional design, we analyzed 184 study participants with cysts and compared hypertensive and nonhypertensive among them. Outcomes were the number, the size and the location of a cyst. In a cross-over design, we first evaluated the change in absolute value of SBP, DBP and mean BP in 62 hypertensive patients who underwent percutaneous evacuation of a cyst and then the decrease of BP as a categorical variable that comprised all study participants. **RESULTS:** There were 55% giant renal cysts among hypertensive and 24% among nonhypertensive patients ($P = 0.0001$). The prevalence rates of multiple

and peripheral cysts in hypertensive and nonhypertensive patients were similar to those of single and perihilar cysts, respectively. Significant differences in SBP, DBP and mean BP were found between pretreatment readings and 3 days, 1 month, 3 months and 6 months after cyst evacuation ($P < 0.001$). The differences were significant in all hypertensive patients ($P < 0.001$). There were less hypertensive patients 3 days after treatment than before treatment ($P < 0.0001$). CONCLUSION: An apparent association between the size of a simple renal cyst and hypertension was found, and aspiration of cysts resulted in a reduction of BP. Location and number of cysts were not related to BP.

68. Zerem E, Imamović G, Omerović S, Imširović B. Randomized controlled trial on sterile fluid collections management in acute pancreatitis: should they be removed? Surg Endosc. 2009;23(12):2770-2777.

The University Clinical Center Tuzla, Trnovac bb, Tuzla, Bosnia and Herzegovina

OBJECTIVE: To evaluate if percutaneous drainage of sterile fluid collections recurring after initial aspiration in acute pancreatitis yields better results than their conservative management. METHODS: Fifty-eight patients with fluid collections in acute pancreatitis were followed up prospectively. Forty of them with sterile fluid collections that recurred after initial aspiration were randomly assigned to two groups of 20 in each. One group was initially treated with conservative management and the other group with prolonged catheter drainage. Patients with unsuccessful initial treatment were converted to more aggressive procedure. Outcome measure was conversion rate to more aggressive procedure. RESULTS: Conversion to more aggressive procedure was done in 11 and 3 patients treated conservatively and with catheter drainage, respectively ($p = 0.02$). Four and 11 patients had bacterial colonization of their fluid collections in conservative management and drainage group, respectively ($p = 0.048$). Conservative treatment was successful in all six patients with sterile liquid collections < 30 ml. However, this treatment was unsuccessful in all

seven patients with multiloculated and liquid collections >100 ml. CONCLUSIONS: Prolonged catheter drainage is more efficient for management of recurrent sterile fluid collections in acute pancreatitis than is conservative treatment. Conservative treatment is successful for patients with small fluid collections.

69. Zerem E, Omerović S. Minimally invasive management of biliary complications after laparoscopic cholecystectomy. Eur J Intern Med. 2009;20(7):686-9.

The University Clinical Center, Tuzla, Bosnia and Herzegovina

BACKGROUND: We conducted this prospective study to evaluate the efficacy of percutaneous catheter drainage as a minimally invasive treatment in the management of symptomatic bile leak following biliary injuries associated with laparoscopic cholecystectomy. METHODS: Twenty two patients with symptomatic bile leak following laparoscopic cholecystectomy underwent percutaneous drainage of the bile collection under ultrasound control. In patients with jaundice and in those with persistent drainage, endoscopic retrograde cholecysto-pancreatography (ERCP) was performed immediately for diagnostic and for therapeutic intervention when appropriate. In other patients, ERCP was performed 4-6 weeks after the discharge from the hospital to document the healing of the leaking site. RESULTS: Five patients with jaundice were initially treated by a combination of endoscopic plus percutaneous drainage. One of them required surgical treatment following diagnosis of a major duct injury. The other 17 were treated by percutaneous drainage initially and for 14 of them it was definitive treatment. Three patients required sphincterotomy as additional treatment for stopping the leak. There were no complications related to the percutaneous drainage procedure. CONCLUSIONS: Most patients with bile leakage can be managed successfully by percutaneous drainage. If biliary output does not decrease, endoscopy is needed. In patients with jaundice endoscopic diagnostic and therapeutic procedures should be performed immediately.

By Nerma Tanović