1. *Babuš V, Strnad M, Presečki V, Katić M, Kalinić S, Balija M. Helicobacter pylori and gastric cancer in Croatia. Cancer Lett 1998;125:9-15. *Andrija Štampar School of Public Health, Zagreb University School of Medicine, Zagreb, Croatia. The seroprevalence of Helicobacter pylori infection was studied in a population from two areas of Croatia with significantly different average gastric cancer (GC) cumulative incidence and mortality rates. In a random sample of 456 blood sera from both areas, which was tested with the ELISA Helicobacter pylori-antibody test, 48.8% of people in the north and 53.3% in the south of the country were found to be infected. The difference between the two areas in the seroprevalence of the infection was not statistically significant, nor did their populations differ in age, sex, educational background, smoking habit or wine consumption. Our results do not point to any association between the prevalence of Helicobacter pylori infection and the level of cumulative incidence and GC mortality levels.

2. Chen MS, *Mastilica M. Health care reform in Croatia: for better or for worse? Am J Public Health 1998;88:1156-60. *Department of Medical Sociology, Andrija Štampar School of Public Health, Zagreb University School of Medicine, Zagreb, Croatia. Along with the rest of Central and Eastern Europe, Croatia has begun to dismantle its long-standing socialist health care system and to replace it with a market-based approach. Marketization's advocates maintain that the market will bring efficiency and quality to the Croatian health care system. Nevertheless, data from consumer surveys and official statistics reflect the reform's hidden costs: limited access to care, heightened costs, growing inequality, and the deemphasis of preventive and proactive care in favor of costly therapeutic medicine.

3. Gridiša M, Lopotar N, Pavelić K. Effect of a 17-member azalide on tumor cell growth. Chemotherapy 1998;44:331-6. Division of Molecular Medicine, Rudjer Bošković Institute, Zagreb, Croatia. The action of the 17-member azalide 4'-demycarosyl-20-deoxo-20-(di-N-benzylamino)-8a-aza-8a-homotylosin was examined in vitro using five different human cell lines: laryngeal carcinoma (Hep2), pancreatic carcinoma (MiaPaCa2), breast carcinoma (MCF7), neuroblastoma, and normal diploid fibroblast (Hef522). After exposure, the cell growth was arrested, and morphological changes occurred in a dose-dependent manner. At a concentration of 10^-4 mmol/L the azalide completely inhibited the growth of all cell lines examined and induced morphological changes such as cell shrinkage, chromatin condensation, and DNA fragmentation. These features point to apoptosis.

4. Lauc G, Dabelić, Dumaić J, Flögel M. Stressin and natural killer cell activity in professional soldiers. Ann N Y Acad Sci 1998;851:526-30. Department of Biochemistry and Molecular Biology, Faculty of Pharmacy and Biochemistry, University of Zagreb, Zagreb, Croatia. Chronic stress causes multiple biochemical and physiological changes in the human organism. Recently we have identified stressin, a human serum glycoprotein that was significantly increased in sera of prisoners released from Serbian concentration camps. To eliminate malnutrition and maltreatment as possible causes for the increased stressin concentration, we have analyzed stressin in sera of 40 professional soldiers after involvement in major military activity and compared it to stressin in sera of 20 control individuals. As expected, the sera of professional soldiers contained more than 2.2 times higher concentrations of stressin than control sera. It is interesting that, contrary to expectations, the natural killer cell activity of professional soldiers was normal or even increased. We hypothesize that this might be an effect of winning the war that could have, at least temporarily, erased the immunosuppressive effects of stress.

5. Koraić Z, Krajačević I, Hančević J, Marušić Z. Multiple injuries in peacetime and wartime estimate of severity of injury by the Injury Severity Score and Polytraumaschlussel. Eur J Surg 1998;164:563-7. Department of Surgery, General Hospital Karlovac, Karlovac, Croatia. The aim of the study was to compare the Injury Severity Score (ISS) and Polytraumaschlussel (PTS) in patients with multiple peacetime and wartime injuries. Seventy-one patients with multiple injuries were admitted to the hospital between 1 January 1993 and 30 September 1994; 41 had peacetime (road traffic accident) injuries and 30 had been injured in battle. All patients with wartime injuries were men, compared with 30/41 (73%) of those with peacetime injuries.
injuries (p<0.0001). Those with wartime injuries were slightly but not significant younger (mean, 35 years, range 17-69 vs. 44 years, range 17-87). Mortality was higher among those with peacetime injuries, but not significantly so (11/41 compared with 5/30, p=0.39). The two scores correlated well for all injuries (r=0.76), and peacetime (r=0.71) and wartime injuries (r=0.84) separately (p<0.0001). In both groups, patients who subsequently died scored significantly higher with both scores (p<0.001). In conclusion, the two scores were equally good at describing the severity of injury and the likelihood of subsequent death.


The aim of this study was to examine the effect of concentrations of Na+, K+, and Ca2+ cations in medium within the canal and around the tooth, and also foramen diameter, on the accuracy of electronic root canal length measurements (ERCLMs). The model comprised 21 extracted single-rooted human teeth divided into two experimental groups and one control group, with seven teeth each. Two aqueous solutions of different concentrations of NaCl, KCl, and CaCl2 were mixed with agar. The concentrations of Na+, K+, and Ca2+ corresponded to the results of analyses performed by atomic spectrophotometry on the extracted human pulps. Our results indicate that at 0.25 mm diameters, the most accurate measurements were taken when the concentrations of ions inside the canal were higher than outside the canal (Xdif=1.39±1.21 mm) (group 1). At diameters of 0.45 and 0.70 mm, no significant differences were found (p<0.05) between the experimental groups (error amounted to Xdif=6.27±1.47 mm). In the control group measurement, error increased with enlargement of the foramen.


Thirty-two RSV strains recovered during the winter months of 1987/88 to 1993/94 from hospitalized children in Vienna, Austria and Zagreb, Croatia were analysed for antigenic and genetic variations. Twenty-nine of the 32 isolates investigated belonged to group A and 3 to group B, with the majority of infections caused by subgroup A1 (21 of 29). Restriction endonuclease mapping of PCR products derived from parts of the N and G gene of 18 group A strains identified 3 distinct lineages, very similar to those defined by analysis of recurrent epidemics in Birmingham, United Kingdom during the same period. Results of this study provide further information on the global pattern of RSV and show that very similar viruses are present simultaneously in widely separated areas.


Hypersensitivity to metals and tissue reaction around a failed implant were investigated in 40 patients undergoing revision hip arthroplasty. Metal sensitivity was tested using a standard cutaneous patch test. Nine patients were positive for chromium, nickel, cobalt, metal rust or endoprosthesis scrapings, or combinations of these allergens. Patients with positive or negative patch test did not differ in terms of their age, sex, primary diagnosis, number of endoprosthesis revisions, length of implant function, presence of other metals parts around the implant, circulating immunocomplexes, and histological appearance of the tissue around the implant. We conclude that stainless steel endoprostheses may be safely used for repeated revision hip arthroplasty, and that hypersensitivity to metals probably does not play a significant role in the loosening of the endoprosthesis.


The aim of the study was to modify the classic fetal biophysical profile (FBP) in order to obtain rapid and accurate information about actual fetal condition in non-compromised fetuses with a subsequent favorable outcome and to be suitable for a number of outpatient patients. Four-hundred and ninety-four fetuses from singleton pregnancies in two randomized groups were monitored by the modified FBP (mFBP) and 168 of them after the external vibratory acoustic stimulation (VAS/mFBP). According to our results the mFBP and particularly the VAS/mFBP antenatal protocol as a new and rational variant of the FBP could improve fetal assessment allowing in cases of non-compromised fetuses rapid and accurate information about actual fetal well-being. Because of its high accuracy and a reduced testing time the antepartal
method with observation of fetal breathing movements after VAS is becoming acceptable as a screening of fetal well-being evaluation in outclinic conditions.

10. Prebeg Ž. Changes in growth patterns in Zagreb school children related to socio-economic background over the period 1973-1991. Ann Hum Biol 1998;25:425-39. Andrija Štampar School of Public Health, Zagreb University School of Medicine, Zagreb, Croatia. The purpose of this paper is to present the changes in growth patterns in different socio-economic classes of Zagreb school children over the period 1973-1991. Classes are defined by parental occupation. Surveys were performed in 1973, 1982 and 1991 covering 8,938, 10,700, and 7,400 examinees aged 7 to 19 respectively. In all three observed generations boys and girls belonging to social group I (nonmanual workers' families) were taller than their peers in group III (manual workers' families). Differences were most pronounced in 1973. Mean height of children from 'mixed' families (class II) were mostly between two other groups. Positive secular changes in both genders were most pronounced in children belonging to manual workers' families – girls observed in 1991 being 2-4 cm and boys 2-6 cm taller than their peers in 1973. In children from nonmanual workers' families the secular increase was small in younger age groups – in boys up to 11 hardly noticeable, while in both genders from the age of 13 on, the mean height increase reached or even surpassed that observed in manual workers' children. Positive changes in all observed groups were more pronounced in the period 1973-1982 than in 1982-1991. Mean weight changes, in general over period 1973-1991 corresponded to changes in height. However, the average weight gain in girls in class I was somewhat lower compared to the gain in height, particularly in older age groups. In the same period, 1973-1991 the mean menarcheal age in girls showed the reversed trend i.e., a shift towards the older age.

11. Splavski B, Vrankoviæ D, Šariæ G, Saftiæ R, Maksimoviæ Z, Bajek G, et al. Early surgery and other indicators influencing the outcome of war missile skull base injuries. Surg Neurol 1998;50:194-9. Division of Neurosurgery, Osijek University Hospital, Osijek, Croatia. The aim of this study was to analyze the effect of early surgical management protocol and other important clinical features on the prognosis of patients suffering from war missile skull base injuries. Twenty-one patients who suffered from war missile skull base injuries were analyzed in this study. Craniotomy represented the standard treatment in all patients. Investigated clinical features included Glasgow Coma Scale score on admission, the mode and the extent of brain injury, time to patient admission to hospital, and the presence of an intracranially retained foreign body. The clinical characteristics that implied favorable outcome were: Glasgow Coma Scale score greater than 12, location of injury in the anterior cranial fossa, time to admission shorter than 1 hour, and absence of an intracranially retained foreign body and postoperative complications. The statistical significance of those predictors was at the level of p<0.001 in all cases. Although the wounds were associated with a high mortality rate, this study showed that there are major differences in prognosis of patients with war missile skull base injuries with respect to certain presenting clinical features.

12. Šimaga Š, Babiae D, Osmak M, Iliæ-Forko J, Vitale L, Miliæiæ D, et al. Dipeptidyl peptidase III in malignant and non-malignant gynaecological tissue. Eur J Cancer 1998;34:399-405. Department of Organic Chemistry and Biochemistry, Rudjer Boškoviæ Institute, Zagreb, Croatia. The aim of this study was to investigate dipeptidyl peptidase III (DPP III) in gynaecological tissues by measuring both the enzyme activity and enzyme content. DPP III activity was assessed in normal (n=65), benign (n=9) and malignant (n=51) gynaecological tissues. A statistically significant higher DPP III activity was observed in endometrial and ovarian malignant tumours, whereas no significant difference was detected for leiomyomas, if compared to the activity in normal tissue. A matched pair analysis of normal and cancerous endometrial tissue confirmed the significance of the DPP III activity increase in the transformed tissue (n=7, p=0.022). Western blot analysis revealed a significantly (p=0.014) increased level of DPP III in endometrial cancer. Further, regression analysis showed a positive correlation between the activity and the content of DPP III in normal tissue (r=0.637, p=0.047) and in endometrial cancer (r=0.574, p=0.007). The increase of the DPP III activity was observed in the endometrial carcinomas of various histological types, grade or the depth of myometrial invasion. The easy-to-perform determination of this exopeptidase activity may serve as a potential indicator of endometrial and ovarian malignancies.

The expression of human paired-box-containing PAX2 gene was examined in 7 human conceptuses 6 to 9 weeks old by in situ hybridization using S35 labeled PAX2-probe. In the neural tube of 6-week embryos, PAX2 was expressed in the outer part of the ventricular zone on both sides of the sulcus limitans. At later stages, it was expressed in the intermediate zone of the spinal cord, both in alar and basal plates except in the region of motor neuroblasts. In the brain, expression of PAX2 extended from mesencephalic-rhombencephalic border along the entire rhombencephalon in a manner similar to that described for the spinal cord. Expression of PAX2 gene in the eye was seen in the optic cup and stalk, and later in the optic disc and nerve. In the ear, expression was restricted to the part of the otic vesicle flanking the neural tube and later to the utricle and cochlea. Expression of PAX2 was observed in developing kidneys as well. During human development PAX2 has a spatially restricted expression along the compartmental boundaries of the neural tube, and within developing eye, ear and kidneys. Differentiation of those organs seems to be mediated by PAX2 gene at the defined stages of human development.


Laser nephelometry (LN) is a rapid and very sensitive method for simultaneous determination of albumin, immunoglobulins, C3c and C4 in diluted serum and paired cerebrospinal fluid (CSF) samples. The incidence of complement activation within CSF is influenced by the method of choice (native molecules, activation products and complexes, inhibitors) and the mode of interpretation of results according to the functional state of the blood-brain barrier (BBB). Calculation of indexes and the modified Reiber's graph method are valid means of detection of complement activation within CSF. Complement activation within CSF was confirmed in 36% (111/302) of neurological patients examined; in 55% (48/87) of patients with inflammatory and demyelinating diseases, in 40% (37/94) of patients with CNS infections and complications, in 33% (4/12) of patients with motor neuron diseases, in 27% (11/40) of patients with spinal cord compression and sequelae, in 25% (8/32) of patients with neoplastic disease, and in 17% (6/37) of patients with cerebrovascular accidents.


The HCV genotypes in a group of 203 Croatian patients with chronic hepatitis C were examined. The most common genotype was 1b (61.1% of patients), followed by 3a (26.1%), and 1a (10.8%). Other genotypes such as 2a and 4 were only rarely found in our patients (2%). Genotype 1b was most commonly acquired via blood transfusion, while genotype 3a was strongly related to intravenous drug use. Genotype 1b was associated with older age (mean 42.6 vs 29.3 years), longer duration of the disease (mean 6.0 vs 3.5 years), higher histologic activity score (mean 13.2 vs 10.6) and higher viremia (mean 9.06 vs 5.93 Meq/mL) at statistically significant levels (p<0.001) when compared to genotype 3a. The prevalence of HCV genotypes follows the patterns of southeastern European countries, except for a lower prevalence of genotype 2. The observation that genotype 1b is associated with higher viremia and more severe liver injury is confirmed.


In the present study, we evaluated the effect of recombinant human OP-1 for the treatment of acute renal failure after 60 min bilateral renal artery occlusion in rats. We show that OP-1 preserves kidney function, as determined by reduced blood urea nitrogen and serum creatinine, and increased survival rate when administered 10 min before or 1 or 16 h after ischemia, and then at 24-h intervals up to 72 h after reperfusion. Histochemical and molecular analyses demonstrate that OP-1: a) minimizes infarction and cell necrosis, and decreases the number of plugged tubules; b) suppresses inflammation by downregulating the expression of intercellular adhesive molecule, and prevents the accumulation and activity of neutrophils; c) maintains the expression of the vascular smooth muscle cell phenotype in pericellular capillaries; and d) reduces programmed cell death during the recovery. Collectively, these data suggest that OP-1 prevents the loss of kidney function associated with ischemic injury and may provide a basis for the treatment of acute renal failure.

The aim of this study was to reveal if post-traumatic change(s) of hormone levels in patients with traumatic brain injury (TBI) and bone fractures could be associated with the phenomenon of enhanced osteogenesis. The blood values of ACTH, cortisol, growth hormone (GH), parathyroid hormone (PTH) and prolactin (PRL) were studied weekly over a period of three months after injury in patients with bone fractures only, those with TBI only or combined bone fractures and TBI. Stress hormones, ACTH and cortisol, or the hormones related to the bone growth (GH and PTH) did not show any particular post-traumatic changes in the blood of patients with combined injury that could be associated with the enhanced osteogenesis. On the other hand, patients with combined bone fractures and TBI accompanied by enhanced osteogenesis had significantly elevated PRL levels in blood during the 5th week of the post-traumatic period. Thus, the maximal PRL values were measured at the time when in this group of patients fractures were in consolidation and hypertrophic callus or heterotopic ossifications were developing. PRL seems to be one of the humoral factors involved in the phenomenon of enhanced osteogenesis in patients with TBI.