

CROATIAN INTERNATIONAL PUBLICATIONS

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Rodin U¹, Filipović-Grčić B², Đelmiš J³, Glivetić T⁴, Juras J³, Mustapić Ž², Grizelj R². Perinatal Health Statistics as the Basis for Perinatal Quality Assessment in Croatia. *Biomed Res Int.* 2015;2015:537318.

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CONTEXT. Perinatal mortality indicators are considered the most important measures of perinatal outcome. The indicators reliability depends on births and deaths reporting and recording. Many publications focus on perinatal deaths underreporting and misclassification, disabling proper international comparisons. OBJECTIVE. Description of perinatal health care quality assessment key indicators in Croatia. METHODS. Retrospective review of reports from all maternities from 2001 to 2014. RESULTS. According to reporting criteria for birth weight ≥ 500 g, perinatal mortality (PNM) was reduced by 31%, fetal mortality (FM) by 32%, and early neonatal mortality (ENM) by 29%. According to reporting criteria for ≥ 1000 g, PNM was reduced by 43%, FM by 36%, and ENM by 54%. PNM in ≥ 22 weeks' (wks) gestational age (GA) was reduced by 28%, FM by 30%, and ENM by 26%. The proportion of FM at 32-36 wks GA and at term was the highest between all GA subgroups, as opposed to ENM with the highest proportion in 22-27 wks GA. Through the period, the maternal mortality ratio varied from 2.4 to 14.3/100,000 live births. The process indicators have been increased in number by more than half since 2001, the caesarean deliveries from 11.9% in 2001 to 19.6% in 2014. CONCLUSIONS. The comprehensive perina-

tal health monitoring represents the basis for the perinatal quality assessment.

Crnošija L¹, Krbot Skorić M², Gabelić T², Adamec I², Brinar V³, Habek M⁴. Correlation of the VEMP score, ambulation and upper extremity function in clinically isolated syndrome. *J Neurol Sci.* 2015;359(1-2):197-201.

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OBJECTIVE: To investigate the correlation of the vestibular evoked myogenic potential (VEMP) score with Timed 25-Foot Walk (T25FW), 9-Hole Peg Test (9HPT), Paced Auditory Serial Addition Test (PASAT) and EDSS in patients with multiple sclerosis (MS). METHODS: This prospective, cross sectional study included 52 patients with clinically isolated syndrome (CIS). Cervical VEMP (cVEMP) and ocular VEMP (oVEMP), analyzed in the form of the cVEMP, oVEMP and VEMP scores, T25FW, 9HPT, PASAT and Expanded Disability Status Scale (EDSS) were performed. RESULTS: The only predictor of walking impairment in this study was general disability as measured by the EDSS, after controlling for age, gender, PASAT and EDSS the effect of VEMP score was non-significant ($p=0.419$). 9HPT of the dominant hand did not correlate with the oVEMP score ($r_s=0.258$, $p=0.065$), however after controlling for age, gender, PASAT and EDSS, the effect of the oVEMP score on 9HPT of the dominant hand was statistically significant ($p=0.017$). After controlling for age, gen-

der and oVEMP score, the effect of the PASAT on 9HPT variable for the non-dominant hand was statistically significant ($p=0.001$). CONCLUSION: We found possible effects of brainstem dysfunction on walking impairment, however they were not seen after correction for EDSS and cognitive dysfunction. On the other hand, dominant hand function seems to be influenced by upper brainstem dysfunction measured with oVEMP, while cognitive dysfunction is related to non-dominant hand function.

Valic M¹, Pecotic R¹, Dodig IP¹, Valic Z², Stipica I¹, Dogas Z¹. Intermittent hypercapnia-induced phrenic long-term depression is revealed after serotonin receptor blockade with methysergide in anaesthetised rats. *Exp Physiol*. 2015 Dec 1. doi: 10.1113/EP085161.

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This study was performed to test the hypothesis that intermittent hypercapnia can evoke a form of respiratory plasticity known as long-term depression of the phrenic nerve (pLTD) and that 5-HT receptors play a role in the initiation of pLTD. Adult, male, urethane anesthetized, vagotomized, paralyzed, mechanically ventilated Sprague-Dawley rats were exposed to an acute intermittent hypercapnia protocol. One group received intravenous injection of the non-selective 5-HT receptor antagonist methysergide, and another group received intravenous injection of the selective 5-HT_{1A} receptor antagonist WAY-100635 twenty minutes before exposure to intermittent hypercapnia. A control group received intravenous injection of saline. Peak phrenic nerve activity and respiratory rhythm parameters were analyzed at baseline (T₀), during each of five hypercapnic episodes, and 15, 30, and 60 (T₆₀) minutes after the last hypercapnia. Intravenous injection of methysergide, prior to exposure to acute intermittent hypercapnia, induced development of amplitude pLTD at T₆₀ (decreased by $46.1 \pm 6.9\%$, $P = 0.003$). Conversely, in control and WAY-100635 pre-treated animals exposure to acute intermittent hypercapnia did not evoke amplitude pLTD. However, a long-term decrease in phrenic nerve frequency was evoked both in control (42 ± 4 at T₀ vs. 32 ± 5 breaths min⁻¹ at T₆₀; $P = 0.036$), and methysergide pre-treated animals (42 ± 2 at T₀ vs. 32 ± 3 breaths min⁻¹ at T₆₀; $P = 0.028$). In WAY-100635 pre-treated animals, frequency pLTD was prevented. These results suggest that 5-HT receptors

modulate respiratory plasticity induced by acute intermittent hypercapnia in anesthetized rats.

Pustišek N¹, Šitum M², Vurnek Živković M³, Ljubojević Hadžavdić S⁴, Vurnek M¹, Niseteo T¹. The significance of structured parental educational intervention on childhood atopic dermatitis: a randomized controlled trial. *J Eur Acad Dermatol Venereol*. 2015 Nov 30. doi: 10.1111/jdv.13519.

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BACKGROUND: Parental education is important in managing childhood chronic diseases. OBJECTIVES: The aim of the study was to evaluate the effects of a short-term structured educational programme for parents of children with moderate to severe atopic dermatitis (AD), aged 3 months to 7 years, on the clinical course of AD, parental stress, anxiety and the quality of family life. METHODS: One hundred thirty-four parents with AD children were recruited in a randomized controlled clinical trial at the Outpatient Unit of Pediatric Dermatology, Children's Hospital in Zagreb. The primary outcome was change in the severity of eczema measured using SCORing AD (SCORAD) and Patient Oriented (PO) SCORAD index, changes of symptom scores for pruritus and sleep disturbance. Secondary outcomes included change in stress level according to the Perceived Stress Scale (PSS); change in anxiety level according to State Trait Anxiety Inventory (STAI) and change in the quality of family life according to the Croatian version of the Family Dermatology Life Quality Index (FDLQI). RESULTS: Participants in the intervention group had a significantly lower SCORAD ($P = 0.000$), PO SCORAD ($P = 0.000$) index, pruritus ($P = 0.000$), sleep disturbance ($P = 0.001$), level of perceived stress ($P = 0.024$) and anxiety as a state ($P = 0.42$) than those in the control group at the second visit. After the educational programme, participants in the intervention group had a significantly lower impact of AD on the total quality of family life ($P = 0.006$). We found a statistically significant difference between the two groups with respect to additional education received between the visits. The control group had acquired significantly more additional

education ($P = 0.007$). There was no significant difference between groups in the amount of corticosteroid used. **CONCLUSION:** Our structured educational programme had a positive effect on AD severity, quality of family life, parental stress and anxiety.

Crnković T^{1,2}, Trkulja V³, Bilić R⁴, Gašpar D⁵, Kolundžić R⁶. Carpal tunnel and median nerve volume changes after tunnel release in patients with the carpal tunnel syndrome: a magnetic resonance imaging (MRI) study. *Int Orthop*. 2015 Nov 23.

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PURPOSE: Our aim was to study the dynamics of the post-surgical canal and nerve volumes and their relationships to objective [electromyoneurography (EMNG)] and subjective (pain) outcomes. **METHODS:** Forty-seven patients with carpal tunnel syndrome (CTS) (median age 52, range 23-75 years) with a prominent narrowing of the median nerve within the canal (observed during carpal tunnel release) were evaluated clinically using EMNG and magnetic resonance imaging (MRI) before and at 90 and 180 days post-surgery. **RESULTS:** Canal and nerve volumes increased, EMNG findings improved and pain resolved during the follow-up. Increase in tunnel volume was independently associated with increased nerve volume. A greater post-surgical nerve volume was independently associated with a more prominent resolution of pain, but not with the extent of EMNG improvement, whereas EMNG improvement was not associated with pain resolution. **CONCLUSIONS:** Data confirm that MRI can detect even modest changes in the carpal tunnel and median nerve volume and that tunnel release results in tunnel and nerve-volume increases that are paralleled by EMNG and clinical improvements. Taken together, these observations suggest that MRI could be used to objectively persistent post-surgical difficulties in CTS patients.

Klarica M¹, Jukić T², Miše B³, Kudelić N¹, Radoš M⁴, Orešković D⁵. Experimental Spinal Stenosis in Cats: New Insight in Mechanisms of Hydrocephalus Development. *Brain Pathol*. 2015 Nov 9. doi: 10.1111/bpa.12337.

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In our new experimental model of cervical stenosis without inflammation we have tested hypothesis that cranio-spinal communication impairment could lead to hydrocephalus development. Spinal and cranial cerebrospinal fluid (CSF) space separation was obtained with positioning of plastic semi-ring in epidural space at C2 level in cats. Brain ventricles planimetry, and CSF pressure recording in lateral ventricle (LV) and lumbar subarachnoid space (LSS) were performed in acute and subchronic experiments. In all experiments opening CSF pressures were normal. However, in acute experiments, an infusion of artificial CSF into the LV led to increase of CSF pressure and significant gradient pressure development between LV and LSS due to limited pressure transmission. After 3 or 6 weeks spinal cord atrophy was observed at the site of cervical stenosis, and pressure transmission from LV to LSS was improved as a consequence of spinal tissue atrophy. Planimetry of both the coronal brain slices and the ventricles' surface showed that control ventricular surface was $0.6 \pm 0.1\%$ ($n=5$), and $1.6 \pm 0.2\%$ ($n=4$) in animals with subchronic cervical stenosis ($p < 0.002$). These results support the mentioned hypothesis claiming that CSF volume cranio-spinal displacement impairment could start pathophysiological processes leading to development of hydrocephalus.

Miličević N1, Mrčela M2, Galić J3, Marjanović K2. Expression of proinflammatory cytokine interleukin-6 in tissue samples of human prostate obtained by needle biopsy. *Pathol Res Pract*. 2015;211(11):865-70.

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Interleukin-6 (IL-6) has been associated with the development of prostate cancer. The aim of the study was to clarify whether IL-6 expression in prostate tissue could be a useful marker in differentiation of prostate diseases in small foci by pathologist visual scoring. Archival paraffin-embedded specimens of benign prostate hyperplasia (BPH), high-grade prostatic intraepithelial neoplasia (PIN), prostatitis and prostate adenocarcinoma were studied by immunohistochemistry with a mouse monoclonal antibody IL-6 using the streptavidin-biotin method. Significantly, lower IL-6 immunoreactivity was observed in normal epithelial cells ($p=0.000$) and basal cells ($p=0.000$) in the samples of prostate adenocarcinoma in comparison to the samples with BPH, PIN and prostatitis. There was no significant difference in IL-6 expression in malignant and premalignant cells ($p=0.814$) as well as in stromal cells among the four diagnoses ($p=0.22$). IL-6 was expressed in normal epithelial cells, premalignant epithelial cells and malignant epithelial cells as well as in stromal cells. However, in our research IL-6 was of limited utility as a single marker for differential diagnosis of the prostate diseases in small foci needle biopsy by pathologist visual scoring. The standardization of immunohistochemical (IHC) staining protocol for IL-6 is required to determine IL-6 expression in order to avoid possible misinterpretation of the IHC results.

emergency settings in cases of femoral trauma. Its speed and performance depend on how well the puncture site can be accurately located, something that usually is achieved via visible landmarks and/or by combining various universal preestablished measurements. Most of these methods have been derived from cadaver studies, which often suffer limitations in clinical settings. To facilitate a quick and easy determination of the puncture site, we here attempt to find an *in vivo* anthropometric measure that closely corresponds to the distance between the femoral artery and femoral nerve. **PATIENTS:** The study includes 67 patients presenting for elective surgery. **MEASUREMENTS:** The distance from the femoral nerve to the femoral artery, projected to the skin, was measured by a 13-MHz ultrasonographic linear probe. Anthropometric measurements of the width of the hand fingers were carried out at the distal interphalangeal joints. **RESULTS:** The distance from the femoral artery to the femoral nerve projected to the skin was found to closely correspond to the width of the fifth finger of the dominant hand measured at the distal interphalangeal joint. **CONCLUSION:** Because it relies on individual anthropometric information, this finding offers an individualized approach to determining the puncture site in a given patient. We believe that such an approach can improve and simplify femoral nerve blockade procedures in prehospital and emergency settings.

Frković V¹, Wärmländer SK², Petaros A³, Španjol-Pandelo I⁴, Ažman J⁵. Finger width as a measure of femoral block puncture site: an ultrasonographic anatomical-anthropometric study. J Clin Anesth. 2015 Nov;27(7):553-7.

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STUDY OBJECTIVE: Femoral nerve blockade is a regional anesthetic procedure that may be used in prehospital and