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**1. ASSOCIATION OF VITAMIN D AND VITAMIN K DEFICIENCY IN NONSUPPLEMENTED CHILDREN**

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**ABSTRACT**

One of the objectives of this study was to investigate whether vitamin D and Vitamin K deficiencies are associated in young children, and whether the apolipoprotein E genotype is a genetic factor contributing to these deficiencies. Study design: Vitamin K-deficiency bleeding of the newborn (VKDBN) was analysed in a patient-control design, rickets patients were obtained from a mid-winter cross-sectional study among 127 inhabitants (aged 4-48 months) of one children's home. It came out that VKDBN was not correlated with apoE genotype, but in healthy controls the urinary Gla excretion was significantly lower in subjects bearing the  $\epsilon 2$  allele than in the others. In rickets the  $\epsilon 4$  allele was slightly overrepresented as compared to the adult control population. In January, 36% of all children analysed had developed rickets; besides low circulating vitamin D levels ( $8.7 \pm 1.1 \mu\text{g/L}$ ), also their urinary Gla-excretion ( $37.1 \pm 4.4 \text{ mg/g creatinine}$ ) was about half that in age-matched controls ( $18.0 \pm 4$  and  $72.6 \pm 13$ , respectively). Children diagnosed as healthy in January further decreased in serum vitamin D ( $7.0 \pm 1.4 \mu\text{g/L}$ ) and urinary Gla excretion ( $45.7 \pm 5 \text{ mg/g}$ ), whereas 13 more had developed rickets in April. In the population investigated, rickets is frequently associated with subclinical vitamin K deficiency. Supplementation of these children with both vitamins throughout the winter is strongly recommended.

**Key-words:** vitamin D, vitamin K, osteocalcin, apoE genotype

## **2. BRAIN NATIURETIC PEPTIDE- A BIOMARKER FOR THE ASSESSMENT OF HEART FAILURE**

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### **ABSTRACT**

B-type natriuretic peptide (BNP), a neurohormone synthesized in the myocardial cells of the ventricles as a result of increased wall tension was proven by many studies to be a sensitive and specific biomarker of left ventricular dysfunction which can be extremely valuable in assessing heart failure severity.

In our study on a group of 25 patients, who presented with clinical signs of chronic heart failure (CHF) in the Cardiology Department of the Cantonal Hospital of Lucerne/ Switzerland, we tried to establish whether there was any relationship between BNP relative values on one hand and the QRS duration on surface ECG as well as several echocardiographic parameters of the left ventricular systolic function on the other hand.

By proving a strong correlation between increasing BNP levels with longer QRS duration and worsening parameters of the left ventricular systolic function including the left ventricular ejection fraction (LVEF), the shortening fraction (LVSF) and the left ventricular diastolic diameter (LVEDD), we showed that BNP was an important marker for chronic heart failure diagnosis and severity assessment and could also become an important tool in the prediction of cardio-vascular outcome.

**Key words:** brain natriuretic peptide (BNP), chronic heart failure (CHF), left ventricular systolic function

## **3. IMOBILIZATION-INDUCED OSTEOPOROSIS**

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### **ABSTRACT**

It has been observed that persons immobilized for different disorder develop osteoporosis in segments, which are not solicited. In patients immobilized for a period of minimum 5 weeks, we revealed, using ultrasonographic method, a significant decrease in bone density ( $p < 0.01$ ), expressed by T-score. In the mean time, increased elimination of calcium through urine and significant increase of plasma cortisol level were also changes that were noticed.

Prolonged immobilization and increased plasma cortisol values induce amplification of bone resorption, associated with calciuria, which are osteoporosis generator factors.

**Key words:** prolonged immobilization, bone resorption, calciuria, plasma cortisol

#### **4. IN VITRO EFFECT OF CIGARETTE SMOKE EXTRACT ON 5'ADENOZINE INDUCED VASODILATATION IN GUINEA PIGS' THORACIC AORTA**

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##### **ABSTRACT**

Arterial endothelium produces a large range of active factors which are indispensable for modulation of vasomotor tone and maintenance of vascular wall integrity. From these factors, *nitric oxide* (NO), which is released by the endothelial cells as a response to acetylcholine or adenosine action on specific receptors, plays an important role. NO is the result of oxidation process of L-arginine into L-citrulline, under the action of endothelial *nitric oxide synthase* (NOS), which is activated by intracellular Ca<sup>2+</sup> - calmodulin complex.

Our study, performed in isolated organ bath, analyzed vascular reactivity of 12 guinea pigs' thoracic aorta rings. After phenylephrine – PHE 10<sup>-5</sup> mol/l precontraction, the dose-effect curves for acetylcholine – ACH, adenosine 5' phosphate – 5'ADP and sodium nitroprusside – SNP were determined, before and after incubation of preparation, for 1 hour, with 5% hydrosoluble cigarettes smoke extract (CSE).

Statistic analysis, performed with the use of „t” pair test and ANOVA parametric test, showed that incubation of vascular preparation with 5% CSE has increased the contractile response to PHE 10<sup>-5</sup> mol/l (p < 0.05), has reduced the endothelium-dependent relaxing response to ATP 10<sup>-5</sup> mol/l (p < 0.001) and 5'ADP 10<sup>-5</sup> mol/l (p < 0.001), but has not significantly modified the endothelium-independent relaxing response to SNP 10<sup>-5</sup> mol/l (p = 0.05).

Thus, it was proven that evaluation of vasodilatator response of endothelium to adenosine is an alternative viable and useful method to classical method of endothelial dysfunction identification based on endothelium vascular response to ACH.

#### **5. CLOSING WEDGE TIBIAL OSTEOTOMY – TECHNIQUE AND FUNCTIONAL OUTCOME**

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##### **ABSTRACT**

The authors are describing their experience with the supratuberositar valgus osteotomy of the tibia, in gonarthrosis over a period of ten years. They are detailing the indication and their technique utilizing a personal implant for the fixation of the osteotomy.

The method still has its value due to the simptomatological improvement and the delay of the endoprosthetic replacement.

**Key words:** supratuberositar osteotomy, arthritis, endoprosthetic replacement

#### **6. THE ACTIVITY OF ERYTHROCYTE SUPEROXIDE DISMUTASE IN PREMATURE AND MATURE INFANTS - THE RELATIONSHIP WITH THE GESTATIONAL AGE**

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#### ABSTRACT

We studied 14 premature infants with mild respiratory distress and grade I, II and III neonatal asphyxia, who required oxygen therapy in the first three days of life, in order to measure the antioxidative defense capacity through superoxide dismutase (SOD) in infants. The control group included 14 healthy infants who were born at term. The SOD activity was measured in erythrocytes (venous blood) using Ransod kits. The Drabkin method was employed for hemoglobin determination.

The results were analyzed using Student's t test (statistical significance  $\alpha=0.05$ ).

The study group underwent two determinations: on the first day of life and at 72 hours after birth. One evaluation was carried out in the control group on the first day of life. The SOD values registered on the first day of life in the two groups were compared. The two values recorded in premature infants were also compared. Statistically significant differences were noted in premature infants as compared with infants born at term ( $p=0.01$ ). Increased and significantly different values were also registered in premature infants at 72 hours of life ( $p<0.05$ ). Our study confirms the existence of SOD deficiency in premature infants with gestational age below 32 weeks. The SOD increase after 72 hours of life in the context of respiratory distress and oxygen therapy reveals the existence of a possible compensatory mechanism for reactive oxygen species.

In conclusion, SOD deficiency in premature infants requires rigorous oxygen therapy in order to limit SRO production and toxic effects on human body cells.

**Key words:** infant, oxidative stress, superoxide dismutase

#### **7. DETERMINATION OF TOTAL AND REDUCED GLUTATHIONE IN GUINEA PIGS EXPOSED TO SIMULATED EXPERIMENTAL HYPERBARIC STRESS**

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#### ABSTRACT

Experimental hyperbaric exposure using air and Nitrox I as respiratory mixtures induces an increase of organisms' free radicals production. The terrestrial beings react to such conditions modifying the concentration of the protective antiradical system components and intensifying their corresponding action mechanisms.

The glutathione (GSH) represents the main ingredient of the sophisticated and adaptive protective antiradical system, being the most frequent low-molecular weight thiole within the living cells. Its remarkable ability of donating electrons, and the high concentrations within the cells, provide the glutathione with appreciable reductive effects, involved in the regulation of a complex thiole exchange system ( $SH \leftrightarrow -S-S-$ ).

Our study followed the evolution of the total and reduced glutathione as a result of the production of free radicals during experimental hyperbaric exposure. The experiment was based on guinea pigs undergoing

a single simulated diving, exposing them to a 6 ATA pressure followed immediately after hyperbaric exposure by blood sampling for measurement purposes.

Following the blood samples measurements we noted a significant change in the total glutathione as well as in the reduced glutathione proving the oxidative stress induced by hyperbaric exposure whenever breathing in either air or Nitrox I pressurized at 6 ATA.

The increase of the plasma oxygen concentration whenever using Nitrox as a respiratory mixture (oxygen concentration in this mixture being 32%) during simulated diving lead to an additional variation of the total and reduced glutathione concentrations.

**Key words:** hyperbaric stress, Nitrox I, glutathione

## 8. THE EFFECTS OF THE SYMPATHETIC NERVOUS SYSTEM ON THROMBOCYTOPOIESIS

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### ABSTRACT

We tried to assess the effects of catecholamines upon thrombocytopoiesis in normal conditions and under the influence of hypobaric hypoxia. The experiments were performed on 40 Wistar white rats. For the evolution of thrombocytopoiesis the number of blood platelets, the adhesivity and the proportion of circulating platelets aggregates were established. The  $\alpha_2$ -adrenergic receptors were stimulated with Dopegyt both at normoxic and hypoxic animals. Hypoxia was induced in the barochamber, at an atmospheric pressure of 380 mm Hg. We have chosen a period of 14 days for the exposure of animals to hypoxia because during this time a reduction in the number of circulating blood platelets is provoked. Our results indirectly demonstrate that thrombocytopoiesis is under the control of the sympathetic division.

**Key words:** thrombocytopoiesis, hypobaric hypoxia, Dopegyt

## 9. BOOK REVIEW

### IMMUNOLOGY OF INFECTION

Manole Cojocaru, Ed. Cartea Universitară, București, 159 pages. ISBN 978-973-731-491-8, Published March 2007

Suzana Rogoz about this book:

A tremendous increase in fundamental knowledge on immunology of infection has taken place in recent years. The book has been written by Dr. Manole Cojocaru experienced in teaching integrated courses, he was trained in country and also in abroad, have made of Dr. Manole Cojocaru a complete physician well trained and well informed, he is outstanding personality in his field of activity. This subject is very difficult not only due to its complexity but also because the impetuous development of immunology has led to numerous nosologic changes of infectious diseases as well as of their physiopathologic bases. The volume is conceived as a monograph. The book contains up-to-date information, without unnecessary details. The rich illustration contributes to emphasize the valuable ideas of the text. From the very large number of publications only those which open new prospects are given. Immunology of infection is a useful book for both specialist and the general practitioner, and also for medical students. We hope you enjoy reading it.

