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1. REVIEW: THE HEMODYNAMIC SHEAR STRESS AND ITS EFFECTS ON ENDOTHELIAL CELL FUNCTION

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ABSTRACT

Mechanical forces are important modulators of cellular function in many tissues and are particularly important in the cardiovascular system. In this study, we examine data which suggest that hemodynamic shear stress is an important determinant of endothelial cell function and phenotype. Measurement using different modalities shows that shear stress ranges from 10 to 70 dyne/cm² in the arterial vascular network. High laminar stress (> 15 dyne/cm²) induces endothelial quiescence, and an atheroprotective gene expression profile. Low or oscillatory shear stress (\pm 0-4 dyne/cm²) stimulates an atherogenic phenotype and gene expression profile. Elevated shear induces early and late response on endothelial cells. Short-term response, resulting from second-to-minute-scale variation in the flow, includes activation of some ion channels, cell hyperpolarization, and intracellular protein phosphorylation, stimulating the synthesis of vasodilator factors, such as nitric oxide and prostacyclin. Long term response regulates the endothelial cells function on a time scale of hours to days by controlling the gene expression levels.

Key words: shear stress, laminar flow, oscillatory flow, endothelial cell, atherosclerosis.

2. THE EFFECTS OF MAGNESIUM UPON THE THROMBOCYTOPOIESIS IN NORMAL AND HYPOBARIC CONDITIONS

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ABSTRACT

We tried to evaluate the effects of the increase in the ionic concentration of magnesium upon the thrombocytopoiesis in normal conditions and under the influence of hypobaric hypoxia. The experiments were performed on 40 Wistar white rats in order to evaluate the evolution of thrombocytopoiesis. The number of blood platelets, their adhesivity and the proportion of circulating platelets aggregates were established.

Two groups of rats were treated with MgSO₄ in normoxic and hypoxic conditions. Hypoxia was induced in the barochamber, at an atmospheric pressure of 380 mmHg. We choose a period of 14 days for the exposure of animals to the hypoxia because this induces a reduction of the blood platelets number.

A 14 days administration of MgSO₄ decreased the number of blood platelets in both normoxic and hypoxic conditions. The adhesivity remained unchanged and the proportion of circulating platelets aggregates increased in normoxic conditions and decreased in case of hypoxia.

Key words: magnesium, thrombocytopoiesis.

3. REACTIVE OXYGEN SPECIES AND THE OVARIAN CANCER

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ABSTRACT

Although there are some factors involved in the etiology of the ovarian cancer, little is known about the actual cause of ovarian cancer. Therefore, the aim of our study was to determine the serum levels of reactive oxygen species and antioxidants and to evaluate whether oxidative stress occurs. We found significantly higher values of serum reactive oxygen species and significantly lower values of serum antioxidants in patients with ovarian cancer than in healthy women with the same age. Moreover, the serum level of reactive oxygen species was in direct correlation with the tumor stage. We conclude that the oxidative stress is one of the factors involved in the development of ovarian cancer and the damage produced by reactive oxygen species is also responsible for the progression of the tumor.

Key words: reactive oxygen species, antioxidants, ovarian cancer.

4. MATERNAL THYROID HORMONES AND FETAL NEUROLOGICAL DEVELOPMENT

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ABSTRACT

Experimentally, we investigated the impact of maternal hypothyroidism upon fetal neurological development in various stages of gestation. A low concentration of maternal thyroid hormones during the first, second, as well as during the whole gestation led to neuronal alterations in fetal cerebral cortex and to impairment of the learning capacity of conditioned reflexes of active avoidance.

Key words: thyroid hormones, gestation, cerebral cortex, learning.

5. THE EFFECTS OF ZOLPIDEM AND ZOPICLONE ON EXPERIMENTAL ACUTE AND CHRONIC INFLAMMATION AND ON CENTRAL AND PERIPHERAL ALGESIA

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ABSTRACT

Zolpidem, an imidazopyridine has a proinflammatory effect in dose of 5 mg/kg in experimental acute inflammation and an analgesic effect on experimental peripheral algisia induced in rats. It has no effect on chronic experimental inflammation and on experimental central algisia. Zopiclone, a cyclopyrrolone has a proinflammatory effect on experimental acute inflammation in rats and has no influence on experimental chronic inflammation and on both types of algisia. In chronic inflammation, the administration of Zolpidem and Zopiclone has an analgesic effect. Central algisia was not influenced by chronic inflammation. The mechanism of these effects are still unknown.

Key words: zolpidem, zopiclone, rats, inflammation, algisia.

6. DEPRESSION OF THE ELDER AND SOY FOOD NOURISHMENT

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ABSTRACT

Depression can be defined as a total fall of the mood with temporary or durable character, recollection of annoying, sad and threatening experiences.

Depression is a term, which can be applied both to a negative mood, to a set of symptoms and experiences, and to a medical syndrome. The difference between vital and psychological importance of depression is characterized not only by the absence of the object of suffering, but is also abnormal, perverted and distorted; the subject becomes the object of its own sufferings. Clinical studies revealed disorders in serotonin activity in states of depression. Soy is one of the food-stuffs rich in proteins, which contains essential quantity of tryptophan, and this amino-acid contributes to serotonin synthesis, which leads to decreased depression symptoms. Also, there are some correlations between soy diet and the cholesterol blood level, which is increased in depression states.

Key words: depression, soy, tryptophan, serotonin, cholesterol.

7. A NEW NON-INVASIVE ELECTROPHYSIOLOGIC APPROACH – THE WEDENSKY MODULATION

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ABSTRACT

The present study, based on a method recently introduced by Hoium et al., intends to confirm the capacity of the Wedensky modulation to distinguish between patients at risk for ventricular tachycardia (VT) and ventricular fibrillation (VF) and patients without a risk for VT/VF. We included in the study a number of 40 patients with myocardial infarction (MI) and compared 2 subgroups of

patients with VT/VF and without VT/VF in the electrophysiologic study (EPS). We compared in the two groups the signal-average ECG (SAECG) parameters and the Wedensky modulation index. Our results suggest that the Wedensky modulation index is correlated with several SAECG parameters and higher in the MI patients with propensity to develop VT/VF than in the patients without VT/VF.

Key words: ventricular tachycardia (VT), ventricular fibrillation (VF), electrophysiologic study (EPS), signal-average ECG (SAECG), Wedensky modulation index (WMI).

8. EPIDEMIOLOGICAL STUDY OF THE HYPERKINETIC CARDIAC SYNDROME AMONG YOUNGSTERS

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ABSTRACT

From the types of hyperkinetic dysfunctions this paper deals exclusively with idiopathic hyperkinetic syndrome (HCS) found in young people.

The symptoms included subjective complaints: palpitations, asthenia, and loss of body weight. Objectively this dysfunction shows tachycardia, disturbance in the amplitude of the heart contractions, borderline rise of blood pressure, hyperventilation. The main mechanism concerns adrenergic hyperactivity.

This study deals with the incidence of HCS in a cohort of 9,829 patients performed in the ambulatory for pediatric cardiology. The age of subjects was between 6 and 20 years, the majority belonging to the category 14-17 years. 4,090 were males and 5,739 were females.

The overall incidence of HCS was 3.82%, being higher in females (2.93%) and lower in men (0.89%). In a previous paper, dealing with a group of 4,986 youngsters involved in athletic activities, the incidence of HCS was found to be significantly lower (0.66%).

The most frequent complaints were cephalgia, vertigo, palpitations, effort related fatigue. Objective findings: tachycardia at rest (between 90 and 140 beats/minute), borderline hypertension, functional systolic murmur.

Physical training could be a useful means for the management of HCS. It would be necessary to apply specific questionnaires for HCS and to follow up the case for a longer time to reveal a putative apparition of somatic diseases.

Key words: hyperkinetic cardiac syndrome, incidence in youngsters, influence of athletic training.

9. THE 8TH INTERNATIONAL SYMPOSIUM ON METAL IONS AND MEDICINE. BUDAPEST, MAY 18-23, 2004

M Nechifor

This article presented the main topics discussed at the 8th International Symposium on Metal Ions in Biology and Medicine that took place in May in Budapest.

Romania presented as plenary lecture “Involvement of Some Cations in Major Depression” (M Nechifor, Iasi) and “The influence of Magnesium, Manganese and Copper on PGF₂ Analog-Induced Luteolysis in Female Rat” (M Nechifor, A Indrei, S Negru, Iasi; F Cocu, Bucharest), as poster. A number of papers selected by the organizers from those presented on the congress (including the above mentioned Romanian papers) were published in a large volume in prestigious John Libbey Publishing House.

This congress pointed out the growing importance of elementology not only in understanding the mechanisms of life, but also in the development of pharmacotherapy.