

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ  
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»**



## **МАТЕРІАЛИ**

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**Чернівці – 2023**

**Nechytailo O.Y.**  
**PROPHYLAXIS OF SHIVERING IN THE PERIOPERATIVE PERIOD OF SPINAL ANESTHESIA**

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**Introduction.** Shivering and hypothermia caused by redistribution of core body heat and impaired thermoregulation system by tonic vasodilation, leads to morbidity and mortality in high risk patients. Perioperative shivering is a common problem in anesthesia practice. If it is not properly managed and prevented, it causes discomfort and devastating problems, especially in patients with cardiorespiratory problems. Surgery, anesthesia, exposure of the skin in a cool operating theatre, and administration of not heated fluids are some of the major causes for the development of shivering among surgical patients. Currently, a variety of non-medicamental and pharmacological techniques are available to prevent and manage this problem. The available options to prevent and treat shivering include, but are not limited, pre-heating of the patient for 15 minutes before anesthesia, administration of low dose ketamine, dexamethasone, pethidine, clonidine, dexmedetomidine, tramadol, and magnesium sulfate.

**The aim of the study.** Analyse the risk factors and illustrate importance of prophylaxis during and after spinal anaesthesia.

**Materials and methods:** 35 patients of 19-72 years (mean age –  $54.7 \pm 1.3$  years, 46.0% men and 54.0% women), who underwent phlebectomy, were investigated. A lumbar intrathecal injection of 18-22mg bupivacaine, 0.5%, with 20 $\mu$ g fentanyl were given. Patients were dressed in pullover with one leg covered with sterile material but without active warming, fluids, warmed at 35-36 °C, were introduced intravenously. Clinical parameters like duration of surgery, average operating room temperature, spinal block level, blood loss were assessed.

Heart rate, respiratory rate, mean arterial blood pressure, peripheral oxygen saturation (SpO<sub>2</sub>) and skin temperature were recorded using standard non-invasive monitors (infrared thermometer) at 10 minute intervals during pre and the post-anaesthesia period. 20 mg nefopam in NaCl 0,9% solution was introduced intravenously to 20 patients for 15 minutes at the end of surgery.

**Results.** Shivering and hypothermia are the most common complications after spinal anaesthesia. In the postoperative period, shivering was fixed in 3 patients (8,6%): 2 patients had muscular activity in more than one muscle group for 5-7 minutes, 1 patient had generalized shivering for 15 minutes. In these patients, shivering was associated with age (all were young 19, 26, 30 years old) and blood loss (mean blood loss in patient with shivering was 400ml as compared to other patients with 150 ml mean blood loss). Further, spinal block was also at level of TH10-Th11 as compared to other patient with block TH12-L1 level, each incremental increase in block level decreased skin temperature by 0.15°C. The mean skin temperature before operation was  $36.8 \pm 0.5$  °C (range, 36.3-37,3 °C) and in 5 minutes after the operation it was  $36.1 \pm 0.6$  °C (range, 35.5-36.7 °C) in the group of patients without complication. In patients with shivering the mean skin temperature after operation was 35.5°C (range 34.8 - 35.2°C).

**Conclusion.** Therefore, covering of patients during operation, intravenous warmed fluids administration, drugs like nefopam, level of spinal block, less amount of blood loss help in prophylaxis of shivering and hypothermia, which has become a crucial step in reducing discomfort and complications after spinal anaesthesia.

**Petrynych V.V.**  
**LEAD ACETATE EFFECT ON THE STATE OF LIPID PEROXIDATION AND OXIDATIVE MODIFICATION OF PROTEINS IN THE BLOOD AND LIVER OF ADULT RATS WITH DIFFERENT TYPES OF ACETYLTATION**

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**Introduction.** The growing anthropogenic load on environmental objects in the form of compounds of a chemical, physical and biological nature is quite serious. Among man-made

chemical pollutants, lead and its compounds occupy a special place, which are characterized by high toxicity and a high ability to accumulate both in ecosystems and in human and animal bodies. There is an opinion that variations in the response of different individuals to environmental factors may be related to the features of the genotype to the genetically programmed system of biotransformation, degradation and removal of xenobiotics. However, the role of individual genetic predisposition as a cause of the body's sensitivity to the influence of toxic compounds, in particular heavy metals, has not been sufficiently studied to date. Therefore, the study of the toxic effect of lead acetate depending on the rate of acetylation is an urgent task, the solution of which will allow us to determine possible markers of the body's susceptibility to the action of this compound.

**The aim of the study.** To determine the possible role of the phenotype of acetylation speed in the formation of the lead acetate toxic effect on indices of lipid peroxidation (LPO), antioxidant protection (AOP) and oxidative modification of proteins (OMP) in the blood and liver of rats.

**Material and methods.** Experimental studies were conducted on white conventional outbred mature male rats, divided according to aminodopyrin test, into two groups: with «rapid» and «slow» type of acetylation. Subacute intoxication was modeled by intraperitoneal injection of lead acetate to experimental animals at doses of 2,5 mg/kg (1/100 DL50) and 15,5 mg/kg (1/16 DL50) for 28 days. Control groups of animals were administered isotonic solution of sodium chloride (intraperitoneally) instead of lead acetate.

**Results.** The introduction of lead acetate at a dose of 2,5 mg / kg (1/100 DL50) and 15,5 mg / kg (1/16 DL50) into the blood of adult rats with «slow» and «rapid» types of acetylation is accompanied by increase parameters of LPO, OMP, opposite changes of AOP, and in the liver – reducing of lipid peroxidation, OMP and the AOP. It has been established that the introduction of lead acetate at a dose of 2,5 mg / kg (1/100 DL50) and 15,5 mg / kg (1/16 DL50) is accompanied by clearly increase of OMP and LPO with a decrease in the activity of glutathione peroxidase, more significant reduction in the level of total protein in the blood, OMP indices and catalase activity in the liver, and increased content of  $\delta$ -aminolevulinic acid in urine was observed in animals with «rapid» type of acetylation.

**Conclusion.** Animals with «rapid» type of acetylation can be considered to be more susceptible to lead acetate toxic effects.

**Tkachuk O. V.**

## **POSTPANCREATIC INSULIN EXPRESSION IN ACUTE DISTURBANCES OF THE CEREBRAL BLOOD FLOW AGAINST A BACKGROUND OF DIABETES MELLITUS**

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**Introduction.** It is known that there is a close relationship between acute pathological processes of the central nervous system (impaired cerebral circulation, injuries) and carbohydrate metabolism disorders. We tried to investigate how the expression of insulin by the thymus affects these relationships (and whether it affects at all).

**The aim of the study.** To study indices of insulin thymus expression in animals with experimental diabetes mellitus under conditions of its complication with acute disturbance of the cerebral blood flow.

**Materials and methods.** Incomplete global brain ischemia was modelled in 6month intact rats with experimental diabetes by means of the duplex clipping of the common carotid arteries during 20 minutes. Animals were taken out from the experiment on the 12<sup>th</sup> day by decapitation under narcosis. Diabetes mellitus (DM) was reproduced by a single intraperitoneal streptozotocyn (Sigma, USA, 60mg/kg of the body weight) introduction to the white non-linear female rats at the age of 2 months. The duration of diabetes – 4 months. Insulin-positive cells of the thymus were detected by indirect immunofluorescence method. Statistical significance of discrepancies was estimated according to the Student t-criterion for independent selection.

**Results.** On the 12<sup>th</sup> day of ischemic-reperfusion period the density of the location of the thymus insulin immuno-positive macrophages and non-identified cells reliably decreased in the control rats, the percentage of macrophages decreased, and in dendrite and non-identified cells – increased. In animals with diabetes mellitus the density of macrophages location decreased after ischemia-reperfusion of the brain, density of the dendrite cells remained invariable, but in