

complements the classical cytochemical laboratory and immunological studies to identify cell surface markers and functional state of the organelles of blood cells in acute destructive pancreatitis.

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#### **ENDOTHELIAL DYSFUNCTIONS IN PATIENTS WITH DIABETIC ENCEPHALOPATHY**

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Vascular endothelium damage is known as one of the major mechanisms in pathogenesis of chronic complications diabetes mellitus (DM). Encephalopathies of various genesis tend to be the most important problem of present medicine. Diabetic encephalopathy (DE) is commonly considered to be a variant of dyscirculatory encephalopathy. The indices of circulating desquamated endotheliocytes and endothelium-dependent vasodilatation (EDVD) of brachial artery were studied to detect the degree of endothelial dysfunction in patients with DE in comparison with patients that suffer from dyscirculatory encephalopathy of non-diabetic genesis. The aim of our study was to study differential peculiarities of EDVD in patients with diabetic and non-diabetic encephalopathy. EDVD was evaluated according to Celermayer-Sorensen's test. The study demonstrated, that dyscirculatory encephalopathy was followed by reliably significant ( $P < 0,001$ ) decrease of EDVD rate ( $5,6 \pm 0,21\%$ ) as compared with controls ( $10,8 \pm 0,51\%$ ). In case of DE the rate of EDVD was more than two times decreased ( $4,9 \pm 0,23\%$ ) as compared with control rate ( $P < 0,001$ ). EDVD was more affected in type 2 DM ( $4,5 \pm 0,29\%$ ,  $P < 0,05$ ), than in type 1 ( $5,5 \pm 0,31\%$ ), that indicated more severe damage of vascular endothelium in case of non-insulin-dependent DM. It is necessary to mention, that changes of EDVD in DE were reliably more evident as compared with patients suffering from non-diabetic dyscirculatory encephalopathy ( $6,4 \pm 0,29\%$ ). This is explained, as we concluded, by the direct toxic influence of increased glucose concentration on vascular endothelial cells. This toxicity may lower the endothelium-dependent vasodilatation, elevate the vasoconstriction, and stimulate the hyperplasia of smooth muscles cells, lead to vascular remodeling and development of atherosclerosis. Endothelial cells line the entire circulatory system, from the heart to the smallest capillary. These cells reduce friction of the flow of blood allowing the fluid to be pumped further. Circulating endothelial cells might be used as a surrogate non-invasive marker for the study of vascular alterations. findings demonstrated,

that endothelial desquamation was observed in the group of healthy individuals as well as in the group of patients, suffering from DE. In healthy individuals blood level of desquamated endotheliocytes accounted  $3,2 \pm 0,36 \cdot 10^4/l$ . In patients with stage I DE this index reached  $12,8 \pm 0,64 \cdot 10^4/l$ , stage II DE –  $16,5 \pm 0,58 \cdot 10^4/l$ , stage III DE –  $19,2 \pm 0,71 \cdot 10^4/l$ . Statistically significant changes were found between groups of patients with stage I and stage I DE ( $P < 0,001$ ), and with stage II and stage III DE ( $p < 0,01$ ). Consequently, the progression of DE was followed by proportional augmentation of the blood concentration of desquamated endotheliocytes. The index of endotheliocytemia was reliably higher in type 2 DM as compared with type 1 diabetics ( $P < 0,05$ ), that indicated more significant implication of vascular endothelium damages in the pathogenesis of non-insulin-dependent DM. The role of endothelial dysfunction in type 2 diabetes is more complicated than that for type 1. The effects of aging, hyperlipidemia, hypertension, and other factors add to the complexity of the problem.

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#### **APPLICATION OF ENZYMES IN COMPLEX TREATMENT ODONTOGENIC INFECTIONS**

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Despite improvements in treatment of inflammatory diseases of the maxillofacial region, the problem of purulent infection continues to actual. Reduced effectiveness of antibiotics, delayed clearance of necrotic purulent cavities of the masses, which are a kind of barrier to the penetration of drugs into the inflammatory focus, dictate the necessity of finding new treatments for odontogenic inflammatory diseases. Of surgeons for a long time drew attention of idea of ability to influence a course of rebellious processes with biologically active pharmaceutical enzymes. The aim of the work was to study the histomorphological changes of the skin from underlying dermis using the drug «Wobenzym» and its influence on the healing of the wound. The material of our observations was the 35 patients with acute odontogenic purulent processes of the soft tissues of the maxillofacial area in age from 20 to 60 years (12 women, 23 men). Admission and in the dynamics of the disease were carried out clinical and laboratory research. Morphological study of skin exposed to the underlying dermis. In the initial period, sides and bottom of the wounds were presented purulent-necrotic masses, the thickness of which depended on the extent of tissue damage. Detritus was closely associated with develop-

ing granulation tissue. Lumen of blood vessels, the underlying tissues was extended, indicating that the congestion in the area of the inflammatory process, a constant output of neutrophils, macrophages, and fibrin. Along with an inflammatory erythema resulting at mikrotromboz due to the progression of inflammation, foci of necrosis were observed. In the area of diffusely infiltrated by neutrophils subcutaneous noted the presence of microabscesses and microphlegmon, which were isolated from the main defect of the wound and remained incomplete after surgical treatment. The use of «Vobenzim» led to the sequestration of necrotic foci of active soft tissue dissection and readjustment of micro abscesses and micro phlegmon, reducing infiltration and edema of the border areas and the elimination of secondary necrosis of soft tissues. According to pathological studies in the treatment of wounds shortened the period of purification for 2-3 days, compared with the control group. The use of «Vobenzim» eliminated major manifestations of acute inflammation in the wound at the time of its purification from necrotic masses and led to the wound cavity filled with granulation tissue at 4-5 days of treatment. Analysis of the individual dynamics of wound healing process with abscesses and purulent processes and comparison of these data show that regardless of the stage of wound healing, in which treatment is started, inflammation subsided under the influence «Vobenzim» is an average of 5 days of starting treatment, whereas in the comparison group to the same result occurs in 7-9 days or more. Filling the wound defect was carried out by young granulation, to be emanating from a more mature granulation tissue, which appeared in populations secreting glikozaminoglikanes fibroblasts. Thus, the results indicate a high efficacy of systemic enzyme therapy.

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**EAR OF THE RAT AS A MODEL  
IN INVESTIGATION OF INFLUENCE  
OF DIFFERENT DRUGS (PRO UNGUENTA)  
UPON THE SKIN IN BIOLOGY  
AND MEDICINE**

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In many studies of medicinal activity of preparations on biological models a skin is used as an indicator for intradermal introduction of a medication. Thereby a skin from an animal's back or stomach is used. Such impact often requires a careful shaving of a local skin area that disturbs skin and stresses an animal. As an alternative model of studying intra-

dermal impacts of medical and cosmetic agents we suggest studying ear skin of small laboratory rodents (rats, mice) that do not have that much hair on ears, compared to their back or stomach. Ear skin is relatively thin and is located over two surfaces that allows us to use one of them as a control. Besides, as an animal has two ears, we can receive another control organ or use it for another dose of the same agent as well as to study an impact of another preparation. In our work we used grown mature male rats of weight 250 grammes. The preparation was introduced as an ointment over one side of an ear. An animal was slaughtered under Nembutal narcosis, then an ear was removed and placed into 4% paraformaldehyde for no less than a day under the temperature of 4°C. Spirituous conducting of material and its placing into epoxide gum Araldite was carried out as in our previous publication [Pavlovich, 2008]. A cutting of mid-thin cuts (thickness of 1 mkm) of a rat's ear perpendicularly to its surface. Cuts were colored by a water solution of toluidine blue. It was shown that in the control an ear consisted of two skin plates that were separated by a thin layer of fat. The skin was represented by a multilayer flat cornific epithelium and nearby connective tissue that was relatively undeveloped, compared to human skin. The skin had a lot of hair that was differently directed in relation to the ear surface. Cornific skin layer was displayed unevenly along the epidermis. Hair follicles were found in hypoderm and cut on different levels, and fat glands. Microvascular channel in the studied material was presented moderately. Possibilities to use ear skin of small rodents as an object of impact of medical preparations in pharmacology and toxicology (as ointments or solutions for cutaneous and intradermal introduction), and also in cosmetology are discussed. The model allows us to reveal and remove possible allergic reactions and pathological impact of some preparations over skin. Thereby, animals of different sex and age can be used that allows us to carry out correct pre-clinical studies of preparations and cosmetic agents.

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**THE NECROTIZING ENTEROCOLITIS  
TREATMENT EXPERIENCE  
OF NEW-BORNERS  
WITH THE INCREASED  
INTRA-ABDOMINAL PRESSURE**

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Measuring of intraperitoneal pressure (IPP) among babies with necrotizing enterocolitis (NEC) in carried out in the clinic of children's surgery since 2007. Pressure monitoring was carried out