концентрація яких у крові зростає в результаті активації симпатоадреналової системи при значних фізичних навантаженнях.

Помірні фізичні навантаження, які є більше характерними для рухової активності тварин, позитивно впливають на функціональний стан судинного ендотелію, що підтверджується збільшенням продукції NO2, вміст якого у плазмі крові зростає в 1,1 раза. Недостовірне ж збільшення концентрації ендотеліну-1 при цьому пояснюється виникненням у тварин, що перебувають певний час у незвичних умовах тредбану, легкої форми стресу.

При поєднанні ГХЕ і ФНВІ відбувається максимальне збільшення концентрації ендотеліну-1 у плазмі крові (в 3,1 раза у порівнянні з контролем). Вона є більшою, ніж при окремо взятих ГХЕ і ФНВІ відповідно у 1,1 і 1,2 раза. Поряд з цим і максимально пригнічується синтез NO2. Його вміст у плазмі крові у порівнянні з контролем зменшується в 1,8 раза, а у порівнянні з ГХЕ і ФНВІ – відповідно у 1,3 і 1,45 раза. Отже, поєднання ГХЕ і ФНВІ є найбільш небезпечним станом, який характеризується значним порушенням регуляції тонусу судин та прогресуванням їх атеросклеротичних ушкоджень.

При ГХЕ і ФНПІ, незважаючи на те, що рівень ендотеліну-1 в плазмі крові залишається високим (у порівнянні з контролем в 1,78 раза), а вміст NO2 є нижчим в 1,1 раза, все ж концентрація першого компоненту у порівнянні з ГХЕ знижується в 1,6 раза, а у порівнянні з ГХЕ у поєднанні з ФНВІ – в 1,7 раза, тоді як концентрація другого компоненту за вищезгаданих умов зростає відповідно в 1,2 раза та в 1,6 раза.

Отже, при гіперхолестеринемії та атеросклеротичному ушкодженні ендотелію судин помірні фізичні навантаження призводять до вираженого покращення ендотеліальної функції.

EXPRESSION OF DIFFERENT MARKERS IN GIANT CELL EPULIS

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Background: An model of origin macrophage tumor is giant cell epulis because it consists of osteoclasts. Osteoclasts have monocytic origin and belong to macrophage's system. The following forms of giant cell epulis are defined: peripheral and central. Microscopically it consists of two main types of tumor cells: multinucleous giant cells which take part in resorption of bone trabeculas (osteoclasts) and mononucleous giant cells which take part in rebuilding of new bone trabeculas.

Granuloma of a foreign body is a morphological manifestation of chronic inflammatory process which is caused by penetration into skin or cubdermal tissue of foreign bodies or substances. Enlargement of mesenchymal cells is the base of granulomas. Expression of the Ki-67 proliferation marker, which detects all phases of the cell cycle except G0, is known to predict disease outcome in many human malignancies [27]. At the same time, Ki-67 and p53 have been reported to be used in a parallel manner

CD68 is expressed on the surface of monocytes and is used as a indicator of macrophages and tumor cells of macrophage origin. CD68 is a glycoprotein from LAMP family. It takes part in phagocytic activity of tissue macrophages as in intracellular lysosomal metabolism so in extracellular interactions cell-cell and cell-pathogen. It gets binded with lectins and selectins which allows macrophage to get fixed in a certain part of tissue. S100 have show activity of macrophages S100 (Moore's protein) are proteins with molecular weight around 20 kDa that are possessed only by vertebrates. Proteins s100 compose the biggest subgroup of so-called "EF-hand" calcium binding proteins. Functions of s100 in cells are not fully studied but it is known that s100 activates Ca-channels in plasma membrane, modulates activity of adenylate cyclase, inhibits phosphorylation p53 by protein kinase C, participates in assembly and distruction of microtubules and microfilaments, interacts with proteins of territorial matrix.

Aim: To investigate expression of proteins s100, CD68 Ki 67, p53, OPN, CD3, CD79A, IgG, IgM, HSP90AA1 and MGMT in tumors of macrophage origin.

Materials and methods: 15 specimens of peripheral giant cell epulis were taken for investigation. 12 specimens of tumor-like giant cell mass of foreign bodies were taken for control.

Histological sections were colored by hematoxylin and eosin according to standard methodics. Also immunohistochemical method was used according to protocols of Pathology Department of Sumy State University. It lies in usage of primary antibodies against proteins s100 and CD68, Ki 67, p53, OPN, CD3, CD79A, IgG, IgM, HSP90AA1and MGMT.

Results: the contraction of giant cell epulis doesn't depend on sex of a patient; from the total amount there are 37% of centrally placed giant cell epulis and 63% of peripherically placed one.

According to morphological characteristics giant cell epulis is divided into cellular, lytic and cystous forms. Cellular form is characterized by weak osteoclastic resorption of cortical substance of bone. Lytic form is characterized by quick aggressive growth and significant resorption of bone. Cystous form is characterized by subperiosteal excrescence with resorption of basal bone substance.

Conclusions: Giant cell epulis have expressed markers p53, Ki 67, OPN, CD3, CD79A, IgG, IgM, HSP90AA1and MGMT in different quantity. As a result of the fulfilled investigations we determined that peripherical giant cell epulis is a tumor of macrophage origin because expression of CD68 was observed in 100% of cases. There was no activity of giant cells in peripherical giant cell epulis because expression of protein s100 was not observed. In the controlled group of lump with giant cell foreign bodies expression of CD68 and s100 was observed in 100% of cases which testifies activity of these giant cells.

PHYSIOLOGICAL FEATURES OF ENDOTHELIAL NITRIC OXIDE SYNTHASE EXPRESSION IN NUCLEI OF MEDIOBASAL HYPOTHALAMUS

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Background. It is known, that hypothalamus is the major integrative center of autonomic nervous system. Thus the violation of its cellular regulatory enzymes' activity, such as endothelial nitric oxide synthase (NOS3), may lead to formation of discoordinative pathology of its nuclear structures.

The **purpose** was to define the physiological features of NOS3 expression in supraoptic (SON) and suprachiasmatic (SCN) nuclei, and in magnocellular (mcPVH) and parvocellular (pcPVH) parts of paraventicular nucleus of hypothalamus in intact male Wistar rats.

Materials and methods. The study was carried out in 10 male Wistar rats. Serial sections of the hypothalamus were obtained after common histological processing, then they were incubated with NOS3 antibodies. During the analysis of immunofluorescence reaction, we have measured the statistically significant area of fluorescence, its special area and concentration of immunoreactive material (IRM) to NOS3.

Results. The IRM was conditionally allocated in two components: neuronal one, presented by neurons' bodies, and vascular one, that was mainly due to small capillaries.

We have seen, the distribution of IRM in vascular component had a certain uniformity: predominantly single capillaries in hypothalamic nuclei were observed, however in SCN there were vessels of higher caliber. Among magnocellular nuclei the specific area of vascular component in SON was by 65,9% ($p<0,01$) higher than in mcPVH, and fluorescence content in SON compared with mcPVH also were by 22,31% ($p<0,001$) higher. In parvocellular nuclei the specific area of vascular component in SCN was more than in 3,8 fold ($p<0,001$) higher than respective index in pcPVH, and the enzyme content and concentration were significantly higher by 59,2% ($p<0,001$) and 14,25% ($p<0,001$) in SCN compared with respective indices in pcPVH.

The distribution of fluorescence in neuronal component also had a certain uniformity. Like in magnocellular mcPVH and SON, as well as in parvocellular SCN and pcPVH, the immunofluorescence to NOS2 was observed mainly at the periphery of cytoplasm. Specific area and maximal content of IRM and its concentration among magnocellular nuclei was by 65,47% ($p<0,001$) and 6,9% ($p<0,005$) and 13,6% ($p<0,01$) respectively higher in mcPVH compared with indices of SON. Specific area, concentration and maximal content of IRM in SCN was by 16,56% ($p<0,04$) and 9,76 ($p<0,005$) and 2,4% ($p<0,05$) respectively higher compared with pcPVH.

Conclusions. IRM to NOS3 in mediobasal hypothalamus is associated both with neuronal and vascular component. The distribution of IRM to NOS3 in neuronal component is characterized by its predominant submembranal localization.