

PECULIARITIES OF THE MICROVESSELS OF HUMAN OLFACTORY BULBS UNDER THE COVID-19-ASSOCIATED PNEUMONIA

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Introduction. The COVID-19 pandemic started in 2020 noted the attention of clinicians to the state of the olfactory system. The most important factor of research interest was the development of anosmia as one of the important diagnostic symptoms of the disease. Existing studies indicate vascular changes and neuroimaging signs of olfactory bulb (OB) atrophy in patients with COVID-19, but microvascular changes in this pathology remains poorly understood.

Aim. The aim of the study is to evaluate the morphometric parameters of the vessels of the microcirculatory tract of the olfactory bulbs under the COVID-19-associated pneumonia.

Materials and methods. The study included 22 pairs of OBs of males and females obtained by autopsy. Group 1 consisted of OB of nine individuals with COVID-19-associated pneumonia. Group 2 included eleven peoples OB who died of other causes. After fixation in 10% neutral formalin, the material was dehydrated and embedded in paraffin according to conventional methods. Histological sections were stained with hematoxylin and eosin. The study of micropreparations and morphometric studies were performed using an Olympus VH-41 light microscope with a set of appropriate licensing programs. In order to objectify the obtained data, the outer and inner diameters of blood microvessels and the Kernogan's index were determined with describing the main morphological characteristics. The obtained data were subjected to statistical analysis using IBM SPSS Statistics 26.0.

Results. Examining of the material with small magnifications of a light microscope indicate that micropreparations of OB have showed cell-free zones with signs of neurocytolysis without significant differences between groups and the features of interstitial and perivascular edema mainly in patients of group 1. It was found that in group 1 outer diameter of microvessels, vascular thickness walls and Kernogan's index in human OB are statistically significantly higher in group 1. No statistically significant differences between groups in the inner diameter of microvessels were found.

Conclusions. The obtained results indicate an increase in the thickness of the vascular wall of the OB's capillaries due to perivascular edema, which may play a role in the development of edema of the OB and anosmia in patients suffering from COVID-19-associated pneumonia.

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