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## MORPHOLOGICAL FEATURES OF THE MAXILLARY SINUS MUCOSA WITH INFLAMMATORY POLYCYSTIC CHANGES

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The work identifies morphological features of polycystic changes in the mucous membrane of the maxillary sinuses of viral etiology. These cysts are not similar to previously known ones in terms of morphological features, so they can be considered as a separate type of cystic lesion of the paranasal sinus mucosa. The role of fungal etiology in the development of cystic changes is underestimated and requires further study.

**Key words:** mucous membrane, maxillary sinuses, rhinosinusitis, polycystic changes.

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## МОРФОЛОГІЧНІ ОСОБЛИВОСТІ СЛИЗОВОЇ ОБОЛОНКИ МАКСИЛЯРНОЇ ПАЗУХИ ІЗ ЗАПАЛЬНИМИ ПОЛІКІСТОЗНИМИ ЗМІНАМИ

В роботі визначені морфологічні особливості полікістозних змін слизової оболонки максиллярних синусів вірусної етіології. Дані кісти за морфологічними особливостями не схожі на раніше відомі, тому їх можна розглядати як окремий вид кістозного ураження слизової оболонки приносних пазух. Роль грибкової етіології в розвитку кістозних змін недооцінена та потребує подальшого вивчення.

**Ключові слова:** слизова оболонка, максиллярні синуси, риносинусит, полікістозні зміни.

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The prevalence of fungal infections of the paranasal sinuses is constantly increasing worldwide. Pathogens can enter the sinuses through the respiratory tract, leading to colonization of microorganisms in both the lungs and paranasal sinuses as part of the normal microflora. Colonization is different from infection because not every patient develops a colony into a fungal infection [7].

Disturbances in the ventilation and transport functions of the sinus mucosa may have a significant impact on the development of fungal sinusitis, creating favorable conditions for the adhesion of fungal spores and their growth.

The presence of fungi in the nasal mucosa and paranasal sinuses is recorded in both healthy individuals and patients with chronic sinusitis. The most common species of mycotic pathogens that colonize the nasal mucosa and paranasal sinuses, causing fungal sinusitis, are *Aspergillus* spp., including *Aspergillus fumigatus* (90 %), *Aspergillus niger*, *Aspergillus flavus*, *A. terreus*, and *A. nidulans* [1, 2].

The presence of filamentous fungi in the maxillary sinus may be associated with endodontic treatment of molars that are in direct contact with the sinus, which in turn increases the risk of fungal foci in the sinus.

The active use of broad-spectrum antibacterial drugs and steroid therapy may be a certain risk factor for the development of fungal sinusitis [8].

Paranasal sinus cysts are one of the most common diseases in modern otorhinolaryngology, accounting for 4–8 % of diseases within the framework of general ENT pathology, and approximately 4–16 % of all chronic diseases of the paranasal sinuses. The significant discrepancy in this indicator is due to the diagnostic methods used in each specific case. In the general population, the prevalence of paranasal sinus cysts ranges from 1.5 % to 35.5 %. According to the frequency of lesions of the paranasal sinus mucosa, the vast majority of cases occur in the maxillary sinus (93.3 %), cysts of the sphenoid sinus (4.3 %), and frontal sinus (2.4 %) are much less common [9, 10, 11].

Recently, there has been an increase in the number of cases of multiple small cysts in the maxillary sinuses. Clinical manifestations vary from complete absence and appearing as incidental findings to a feeling of discomfort and/or pain of varying intensity in the area of the maxillary sinus projection.

The role of fungal etiology in the occurrence of polycystic changes in the mucous membrane of the maxillary sinuses is underestimated and needs to be studied. Thus, identifying the involvement of fungal flora in polycystic changes of the mucosa is the key to adequate treatment and prevention of relapses of this problem [6, 12].

The purpose of the study was to identify the morphological features of polycystic changes in the mucous membranes of the maxillary sinuses with a viral etiology.

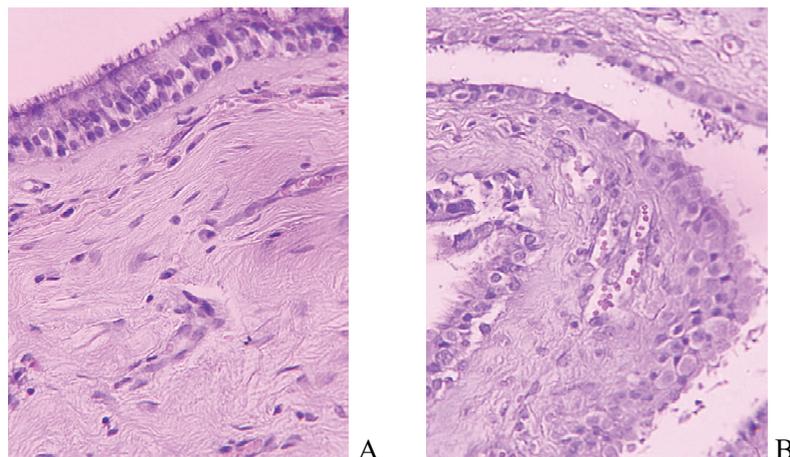


Fig. 1. Epithelial lining of the cyst wall.

Microphotography was performed using a digital microscope with a Levenhuk D740T digital microphoto attachment and programs adapted for these studies.

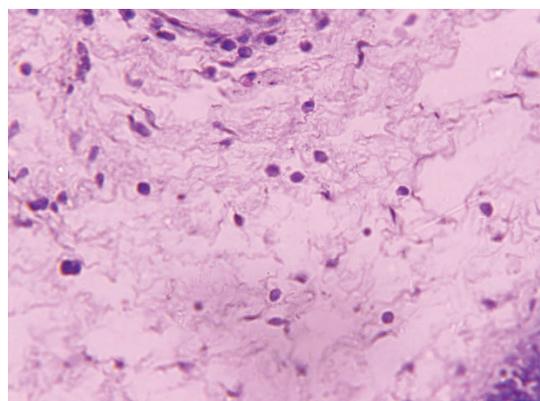


Fig. 2. Lamina propria of the connective tissue of the cyst wall.

A characteristic feature of mycotic etiology of the process (Fig. 3a). A significant amount of intraepithelial lymphocytes (IELs) was noted in the epithelial lining covering the areas of the altered lamina propria of the connective tissue (Fig. 3b).

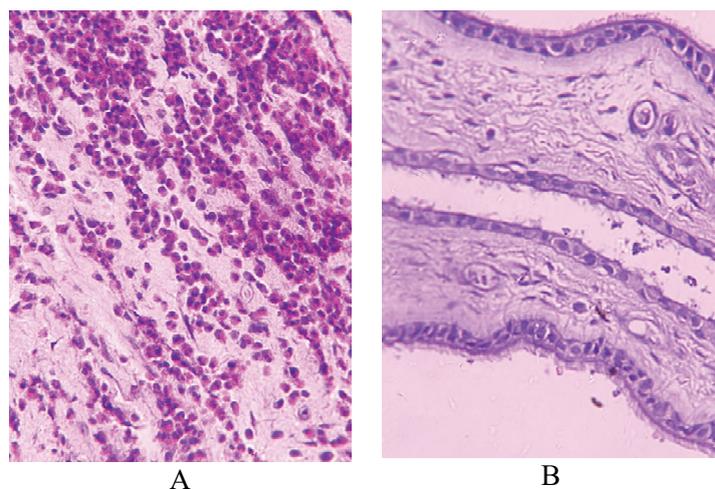


Fig. 3. Leukocytic infiltration of the cyst wall in maxillitis with polycystic changes of the nasal mucosa.

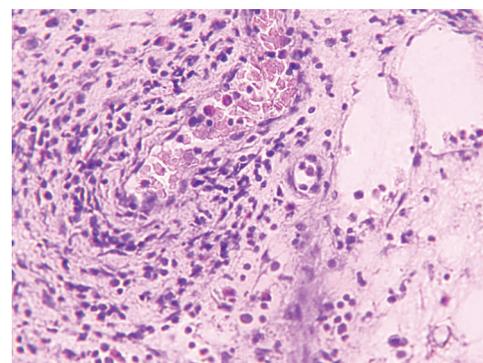


Fig. 4. Vessels of the hemomicrocirculatory bed in maxillitis with polycystic changes of the nasal mucosa.

Large cysts were locally identified, in which oxyphilic content was determined.

The vessels of the hemomicrocirculatory bed were dilated, and the wall of the capacitive link of the superficial reticular formation was thinned (Fig. 4).

The results obtained indicate that fungal flora plays a role in the occurrence of polymicrocystic changes in the nasal mucosa. The characteristic feature is the development of chronic inflammatory changes [3]. Also, the predominance of macrophages and their number in the leukocyte infiltrates in the cyst wall indicates a fungal etiology [4, 5].

### Conclusion

These cysts are not similar to previously known ones in terms of morphological features, so they can be considered as a separate type of cystic lesion of the paranasal sinus mucosa. The role of fungal etiology in the development of cystic changes is underestimated and requires further study.

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