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ТОПОГРАФИЯ И КЛИНИЧЕСКОЕ ЗНАЧЕНИЕ РЕШЕТЧАТО-ВЕРХНЕЧЕЛЮСТНОЙ ПАЗУХИ

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ETHMOMAXILLARY SINUS: ITS FEATURES AND CLINICAL SIGNIFICANCE

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Резюме. Проанализированы литературные данные о частоте, топографии и клиническом значении задней решетчатой ячейки, распространяющейся в верхнечелюстную пазуху. Такой анатомический вариант встречается у 0,7–13,8% пациентов, преимущественно с двух сторон.

Ключевые слова: решетчато-верхнечелюстная пазуха, верхнечелюстная пазуха, конусно-лучевая компьютерная томография.

Resume. Literature data were analyzed on the prevalence, topography, and clinical relevance of posterior ethmoidal air cells extending toward the maxillary sinus. This anatomical variant occurs in 0.7–13.8% of patients, predominantly bilaterally.

Keywords: ethmomaxillary sinus, maxillary sinus, cone beam computed tomography.

Relevance. Whyte and Boeddinghaus describe four paranasal sinuses: maxillary, ethmoid, frontal, and sphenoid. These air-filled cavities, lined with mucosa, are crucial for respiratory functions, filtering, warming, and humidifying air. The interconnectedness of upper and lower respiratory diseases, such as asthma and chronic rhinosinusitis, highlights their importance. The maxillary sinus, the largest, and the ethmoid sinus, formed by ethmoidal air cells, also influence drainage paths of surrounding sinuses [1]. A significant variation is the ethmomaxillary sinus (EMS), resulting from excessive pneumatization of posterior ethmoid cells into the maxillary sinus (Figure 1).

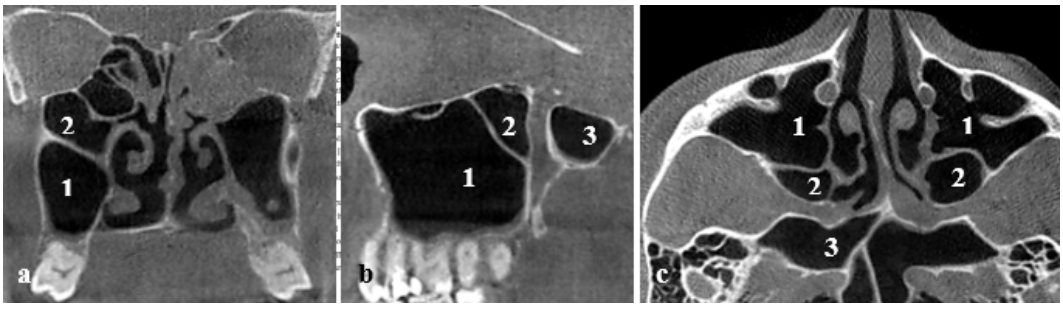

Fig. 1 – CBCT, coronal (a), sagittal (b) and axial (c) scans demonstrating ethmomaxillary sinus: 1 – maxillary sinus; 2 – ethmomaxillary sinus; 3 – sphenoid sinus

Ozcan et al. [2] note that EMS drains into the superior nasal meatus and is occasionally observed in CT scans.

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Aim: to analyze current literature on the prevalence and clinical significance of the ethmomaxillary sinus.

Materials and methods. A literature search was conducted in PubMed and Google Scholar using specific terms related to the maxillary and ethmoid sinuses. Systematic reviews and case reports were excluded, focusing on studies published between 1991 and July 2024.

Results and their discussion. From 24 identified articles, 17 met the criteria for EMS. Prevalence varied by population and demographics. Studies showed unilateral EMS in 20%-65.4% of cases, while bilateral EMS was more common, at 34.6%-80%. Melnichenko et al. [3] measured EMS, finding sizes from 6.8 to 41.6 mm. Şirikçi et al. [4] reported the lowest incidence at 0.7% among 1450 patients, with symptoms like nasal obstruction. In one-third of cases, EMS was unilateral and often coexisted with anatomical variations such as concha bullosa (50% of cases).

Patients with chronic rhinosinusitis (CRS) often had EMS obstructing maxillary drainage. Gruszka et al. [5] found a prevalence of 13.8% in a Polish population. Understanding EMS is vital for differentiating it from other sinus variations, as it may contribute to chronic sinus disease and complicate endoscopic surgeries. Recognizing EMS can prevent complications and help maintain surgical orientation.

The proximity of EMS to the roots of the third molars (Figure 2) raises the risk of odontogenic ethmoiditis, especially during dental procedures. Damage to ethmoid cells may occur due to inflammatory processes originating from EMS.

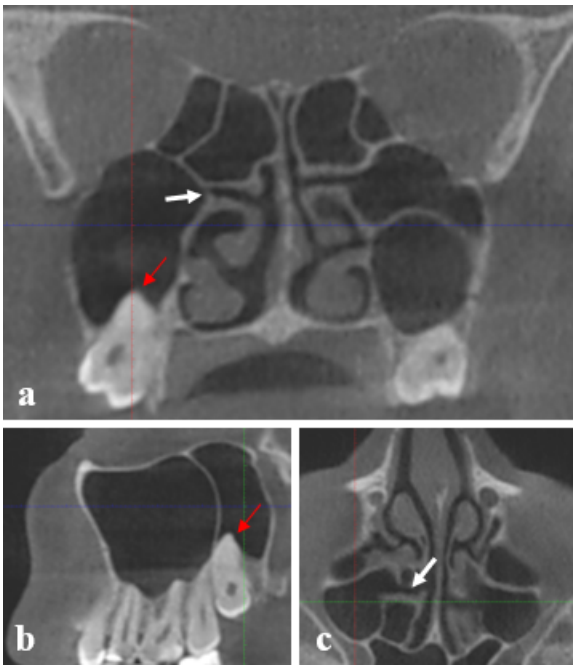

Fig. 2 – CBCT, coronal (a), sagittal (b) and axial (c) scans demonstrating right ethmomaxillary sinus extending to the alveolar process. White arrow shows drainage to superior nasal meatus, red arrow shows the root of third upper molar protruding into ethmomaxillary sinus

Conclusions:

1. EMS arises from the extension of posterior ethmoid cells into the maxillary sinus.
2. Its prevalence ranges from 0.7% to 13.8%.

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3. Recognizing EMS is crucial for successful sinus-related surgeries, enhancing surgical orientation and preventing complications.

Информация о внедрении результатов исследования. По результатам настоящего исследования опубликована 1 статья в сборниках материалов, 2 тезиса докладов, получено 4 актов внедрения в образовательный процесс (кафедра морфологии человека БГМУ, кафедра нормальной анатомии БГМУ, кафедра челюстно-лицевой хирургии и пластической хирургии лица с курсом повышения квалификации и переподготовки БГМУ, кафедра хирургической стоматологии БГМУ). Участие в 78-й научно-практической конференции студентов и молодых учёных «Актуальные проблемы современной медицины и фармации–2024» с научной работой «Ethmomaxillary sinus: its features and clinical significance» – БГМУ, Минск, 25 апреля 2024 г. В X Белорусском международном стоматологическом конгрессе, выступив в секционном заседание «Студенческая наука–достижения и перспективы» с научной работой «Ethmomaxillary sinus: its features and clinical significance» – Минск, 14 ноября 2024 г.

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