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MORPHOFUNCTIONAL STATE OF THE NOSE IN CHILDREN AND ITS RELATIONSHIP WITH UPPER RESPIRATORY TRACT DISEASES

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Abstract. This study investigates the morphofunctional state of the nasal cavity in children and its relationship with upper respiratory tract diseases. The research is based on the clinical examination of approximately 400 children of various age groups. Special attention was given to anatomical features of the nasal cavity, including nasal septum condition, turbinate hypertrophy, mucosal status, and nasal airflow functionality. Functional assessment methods such as rhinomanometry and endoscopic examination were used to evaluate nasal breathing efficiency. The findings indicate that structural and functional abnormalities of the nasal cavity, including septal deviation, chronic rhinitis, and mucosal inflammation, are significantly associated with the increased incidence of upper respiratory tract diseases. Children with impaired nasal breathing were found to have a higher risk of recurrent infections such as sinusitis, pharyngitis, and tonsillitis. The study highlights the importance of early diagnosis and timely correction of nasal cavity disorders to prevent complications and improve respiratory health in children. Preventive measures and appropriate therapeutic strategies can significantly reduce the burden of upper respiratory tract diseases in pediatric populations.

Keywords: nasal morphology, children, respiratory diseases, morphometry

Annotatsiya. Mazkur tadqiqot bolalarda burun bo‘shlig‘ining morfofunksional holatini va uning yuqori nafas yo‘llari kasalliklari bilan o‘zaro bog‘liqligini o‘rganishga bag‘ishlangan. Tadqiqot davomida turli yosh guruhlariga mansub taxminan 400 nafar bola klinik jihatdan tekshirildi. Burun bo‘shlig‘ining anatomik xususiyatlari, jumladan burun to‘sig‘ining holati, burun chig‘anoqlarining gipertrofiyasi, shilliq qavatning holati hamda burun orqali nafas olish funksiyasi alohida e’tibor bilan baholandi. Funksional holatni aniqlash uchun rinomanometriya va endoskopik tekshiruv usullaridan foydalanildi. Tadqiqot natijalari shuni ko‘rsatdiki, burun bo‘shlig‘idagi strukturaviy va funksional o‘zgarishlar, xususan burun to‘sig‘ining qiyshayishi, surunkali rinit va shilliq qavat yallig‘lanishlari yuqori nafas yo‘llari kasalliklarining ortishi bilan chambarchas bog‘liq. Burun orqali nafas olish buzilgan bolalarda sinusit, faringit va tonzillit kabi takrorlanuvchi infeksiyalar rivojlanish xavfi yuqori ekanligi aniqlandi. Mazkur tadqiqot burun bo‘shlig‘i patologiyalarini erta aniqlash va o‘z vaqtida davolash bolalarda nafas olish tizimi salomatligini yaxshilashda muhim ahamiyatga ega ekanligini ta’kidlaydi. Profilaktik choralar va to‘g‘ri davolash usullari bolalar orasida yuqori nafas yo‘llari kasalliklari tarqalishini sezilarli darajada kamaytirishi mumkin.

Kalit so‘zlar: burun morfologiyasi, bolalar, nafas kasalliklari, morfometriya

Аннотация. Данное исследование посвящено изучению морфофункционального состояния полости носа у детей и его взаимосвязи с заболеваниями верхних дыхательных путей. В исследовании приняли участие около 400 детей различных возрастных групп. Особое внимание уделялось анатомическим особенностям полости носа, включая состояние носовой перегородки, гипертрофию носовых раковин, состояние слизистой оболочки и функцию носового дыхания. Для оценки функционального состояния применялись методы риноманометрии и эндоскопического исследования. Результаты показали, что структурные и функциональные нарушения полости носа, такие как искривление носовой перегородки,

хронический ринит и воспалительные изменения слизистой оболочки, тесно связаны с повышенной частотой заболеваний верхних дыхательных путей. У детей с нарушением носового дыхания отмечается более высокий риск развития рецидивирующих инфекций, включая синусит, фарингит и тонзиллит. Исследование подчеркивает важность ранней диагностики и своевременной коррекции нарушений полости носа для профилактики осложнений и улучшения состояния дыхательной системы у детей. Профилактические меры и адекватное лечение способны существенно снизить заболеваемость среди детского населения.

Ключевые Слова: морфология носа, дети, заболевания дыхательных путей, морфометрия

Introduction. Upper respiratory tract diseases are among the most common health problems in children and represent a significant concern in pediatric practice. The nasal cavity plays a crucial role in respiration, serving as the primary pathway for airflow, as well as in protecting the organism from harmful environmental factors. It performs important functions such as air filtration, humidification, and warming, which are essential for maintaining the health of the lower respiratory tract.In children, the anatomical and functional characteristics of the nasal cavity are still developing, making them more susceptible to various pathological conditions. Structural abnormalities, mucosal inflammation, and functional impairments of the nasal cavity can lead to disturbances in nasal breathing and contribute to the development of upper respiratory tract diseases. Understanding the morphofunctional state of the nasal cavity in children is essential for early diagnosis, prevention, and effective treatment of respiratory disorders. This study aims to explore these aspects and determine their relationship with the prevalence of upper respiratory tract diseases in pediatric populations.

Literature Review. Numerous studies have demonstrated that structural abnormalities of the nasal cavity play a significant role in the development and progression of upper respiratory tract diseases. Deviations of the nasal septum, hypertrophy of the nasal turbinates, and congenital or acquired deformities can impair normal nasal airflow and disrupt mucociliary clearance, which is essential for protecting the respiratory system from pathogens. Research findings indicate that children with nasal structural abnormalities are more prone to recurrent infections such as rhinitis, sinusitis, adenoiditis, and tonsillitis. Impaired nasal breathing often leads to mouth breathing, which reduces the natural filtration and humidification functions of the nasal cavity, thereby increasing susceptibility to infections. In addition, chronic inflammation of the nasal mucosa has been shown to exacerbate functional disturbances, creating a cycle that further contributes to disease development. Several authors emphasize the importance of early identification and correction of nasal abnormalities to reduce the frequency and severity of upper respiratory tract diseases in children. Overall, the literature highlights a strong association between the morphofunctional condition of the nasal cavity and respiratory health, underlining the need for comprehensive clinical assessment in pediatric patients.

Research Methodology. This study was conducted on a sample of 400 children aged between 5 and 15 years. The participants were selected from different age groups to ensure a comprehensive assessment of the morphofunctional state of the nasal cavity during childhood development. Clinical examination included a detailed medical history, assessment of nasal breathing, and identification of symptoms related to upper respiratory tract diseases. Special attention was given to complaints such as nasal obstruction, recurrent infections, and breathing difficulties. Morphometric methods were applied to evaluate the anatomical features of the nasal cavity. These included measurements of nasal septum deviation, size and condition of nasal turbinates, and overall nasal passage dimensions. In addition, instrumental diagnostic techniques such as anterior rhinoscopy and, where necessary, endoscopic examination were used to obtain more accurate data. The collected data were analyzed to determine the relationship between structural and functional characteristics of the nasal cavity and the prevalence of upper respiratory tract diseases. Statistical methods were applied to ensure the reliability and validity of the study results.

Analysis and Results. The analysis of the collected data revealed a significant relationship between the morphofunctional characteristics of the nasal cavity and the frequency of upper respiratory tract diseases in children. In particular, children with narrower nasal passages were found to have a higher incidence of respiratory conditions compared to those with normal nasal anatomy. It was observed that reduced nasal cavity width negatively affects airflow, leading to impaired nasal breathing and decreased efficiency of air filtration and humidification. As a result, these children were more susceptible to recurrent infections such as rhinitis, sinusitis, and pharyngitis. Additionally, structural abnormalities such as nasal septum deviation and turbinate hypertrophy were frequently associated with increased disease rates. Functional impairments, including partial nasal obstruction, contributed to mouth breathing, which further increased the risk of respiratory infections. Statistical analysis confirmed that children with compromised nasal structure and function had significantly higher rates of upper respiratory tract diseases, highlighting the importance of early detection and appropriate medical intervention.

Conclusion and Recommendations. The findings of this study confirm that the morphofunctional state of the nasal cavity plays a significant role in the development of upper respiratory tract diseases in children. Structural and functional abnormalities, particularly those affecting nasal airflow, contribute to an increased risk of recurrent respiratory infections. Early diagnosis of nasal abnormalities is essential for preventing the progression of these conditions and reducing the overall disease burden in pediatric populations. Timely identification allows for effective treatment and helps to avoid potential complications. Preventive screening programs are strongly recommended, especially for children presenting with symptoms such as nasal obstruction, mouth breathing, and frequent respiratory illnesses. Regular clinical examinations, combined with appropriate diagnostic methods, can help identify at-risk individuals at an early stage. The implementation of targeted preventive measures and timely therapeutic interventions can significantly improve respiratory health, enhance quality of life, and reduce the incidence of upper respiratory tract diseases in children.

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