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RESULTS OF CLINICAL AND FUNCTIONAL STUDIES IN PATIENTS WITH ACUTE BACTERIAL RHINOSINUSITIS

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ABSTRACT

The aim of this study was to study the results of clinical and functional studies in patients with acute bacterial rhinosinusitis. We examined 92 patients with acute bacterial rhinosinusitis (ABRS) who were on outpatient treatment at the Tashkent Center for Voice Rehabilitation and Rehabilitation of Hearing and Speech from 2019 to 2020. The study showed that the most common endoscopic sign of ABRS was swelling of the mucous membrane of the middle nasal passage; purulent discharge in the region of the middle nasal passage was found only 48,9%, which is explained by the complete obstruction of the anastomosis and the absence of outflow of purulent exudate from the affected maxillary sinus; ABRS was more often complicated by inflammatory diseases of the middle ear; according to the X-ray examination, with ABRS, common forms of paranasal sinuses lesions are more common - bilateral sinusitis and exudative polysinusitis.

Key words: *acute bacterial rhinosinusitis, endoscopic examination, quality of life assessment, diagnostics.*

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РЕЗУЛЬТАТЫ КЛИНИКО-ФУНКЦИОНАЛЬНЫХ ИССЛЕДОВАНИЙ У БОЛЬНЫХ ОСТРЫМ БАКТЕРИАЛЬНЫМ РИНОСИНУСИТОМ

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РЕЗЮМЕ

Целью данного исследования явилось изучение результатов клинико-функциональных исследований у больных с острым бактериальным риносинуситом. Нами были обследованы 92 больных с острым бактериальным риносинуситом (ОБРС), находившихся на амбулаторном лечении в Центре реабилитации голоса и востоновления слуха и речи города Ташкента с 2019 по 2020 года. Исследование показало, что наиболее распространенным эндоскопическим признаком ОБРС являлся отек слизистой оболочки среднего носового хода; гнойное отделяемое в области среднего носового хода обнаруживалось лишь 48,9%, что объясняется полной обструкцией соустья и отсутствием оттока гнойного экссудата из пораженных ВЧП; ОБРС чаще осложнялся воспалительными заболеваниями среднего уха; по данным рентгенологического исследования при ОБРС чаще встречаются распространенные формы поражения околоносовых пазух – двусторонний гайморит и экссудативный полисинусит.

Ключевые слова: *острый бактериальный риносинусит, эндоскопическое исследование, оценка качества жизни, диагностика.*

The treatment of inflammatory diseases of the nasal cavity and paranasal sinuses is extremely relevant for modern healthcare. In recent years, many authors have noted a steady increase in the incidence of rhinosinusitis (RS), both in absolute numbers, and their prevalence over other pathologies in the structure of requests for otorhinolaryngological care [1, 4, 9]. Thus, according to the 2012 edition of the European Agreement on Rhinosinusitis and Nasal Polyposis (EPOS), the incidence of acute rhinosinusitis (ARS) in European countries is 6-15% [2, 5, 12]. In Russia, according to the estimated data of the LFS, about 10 million people are transported annually [4, 10, 13]. High morbidity in people of working age and children, significant expenses for the purchase of drugs make ARS an economic problem on a national scale [3, 9, 15].

In the EPOS 2012 classification of MS, ARS is divided into acute viral rhinosinusitis, post-viral rhinosinusitis, and acute bacterial rhinosinusitis. These nosological forms are pathogenetically related, have a similar clinical picture, develop sequentially, being at the same time stages of acute inflammation of the nasal cavity and paranasal sinuses. Thus, the cytopathic effect of respiratory viruses leads to disruption of the self-cleaning processes of the mucous membrane of the upper respiratory tract and creates the prerequisites for the development of bacterial superinfection in the paranasal sinuses [5, 12].

The most severe form of ARS is acute bacterial rhinosinusitis (ABRS). Clinical manifestations of the disease have a significant impact on the quality of life of patients. According to results of European scientists in ABRS, the quality of life of patients suffers more than in ischemic heart disease and chronic obstructive pulmonary disease [6, 8, 14].

Despite the fact that diagnostic and treatment methods are constantly being improved, new drugs appear, currently there is a tendency towards a protracted course, recurrence and chronicity of ABRS, and resistance to therapy [2, 11, 15]. In the works of a number of domestic and foreign authors, it is noted that over the past 20 years, the level of chronicity of ABRS has increased 2 times or more [5, 7, 13].

The starting point in the development of bacterial inflammation of paranasal sinuses is damage to the mechanism of mucociliary clearance. Violation of the transport function of the respiratory epithelium leads to stagnation of secretions and disruption of air exchange in the paranasal sinuses, prolongation of the contact time of the mucous membrane with bacterial pathogens [2, 7, 12]. In addition, frequent blowing out contributes to the development of ABRS. Blowing out creates a pressure of 60-80 mm Hg in the nasal cavity. Art., which is enough to push the infected secretion from the nasal cavity into the lumen of the sinus [7]. The maxillary sinus is most susceptible to this if it has an additional anastomosis in the posterior fontanella. With inflammation, the mucous membrane of the affected sinus, which normally has a thickness of 0,1-1 mm, thickens 20-100 times, which can lead to complete obstruction of the sinus cavity. Edema of the mucous membrane leads to obstruction of the natural sinus fistula, stagnation of secretions and a decrease in the partial pressure of oxygen, which creates optimal conditions for the development of a bacterial infection. In viral and bacterial inflammation, several sinuses are usually affected at the same time (polysinusitis); isolated damage to the maxillary sinus (monosinusitis) is characteristic of odontogenic inflammation.

According to EP3OS and EPOS 2012 data [5, 12], mucociliary transport disorders, bacterial infection,

allergies, neoplasms of the nasal cavity and paranasal sinuses, aspirin sensitization, genetic predisposition, pregnancy and endocrine disorders, biofilms, smoking, iatrogenic factors (anastomosis stenosis, recirculation syndrome), Helicobacter Pylori and gastroesophageal reflux disease, osteomyelitis of the bone walls of the paranasal sinuses, Wegener's granulomatosis, oroantral perforation. In addition, immunodeficiency states lead to the formation of CRS: X-linked agammaglobulinemia, general variable immune deficiency, deficiency of IgG subclasses, selective IgA deficiency, hyperIgM syndrome, AIDS. Another group of factors is anatomical changes in the intranasal structures: deformities of the nasal septum (C-shaped, 8-shaped, thorn, crest, pneumatization of the posterior-upper sections, concha septalis, tuberculum septi in the ostiomeatal complex), hypertrophy of the inferior turbinates (including including bullous), anomalies in the structure of the middle turbinate (bullous hypertrophy, bone hypertrophy, hypogenesis, paradoxical bending, doubling, pneumatization of the basilar plate), anomalies in the structure of the uncinate process, hypertrophy of cells of the agger nasi group, anomalies of the ethmoidal bulla, etmomaxillary cells agger nasi), additional anastomosis, Onodi cells, adenoid vegetation.

Long-term or resistant to traditional therapy, the course of inflammatory diseases of the ENT organs, including ABRS, is a marker of an imbalance of the immune system [8].

ABRS is a purulent exudative process in the paranasal sinuses, in which edema of the mucous membrane leads to a block of natural anastomoses. A prerequisite for debridement of the affected sinuses is adequate drainage. Modern foreign clinical guidelines give preference to medical drainage of the paranasal sinuses by prescribing inhaled or oral glucocorticosteroids. The ineffectiveness of conservative treatment is an indication for surgical intervention - functional endoscopic surgery or balloon sinuplasty [4, 10, 12].

The aim of this study was to study the results of clinical and functional studies in patients with acute bacterial rhinosinusitis.

Materials and research methods. We examined 92 patients with acute bacterial rhinosinusitis (ABRS) who were on outpatient treatment at the Tashkent Center for Rehabilitation of Voice, Hearing and Speech from 2019 to 2020. All patients underwent a comprehensive study, including collection of anamnesis, examination of ENT organs, functional, endoscopic, computed tomography, microbiological examination. The research results were statistically processed using Microsoft Excel 2016.

Research results and their discussion. In the studied patients, in a number of cases, concomitant diseases of the ENT organs were noted. Due to the common pathogenetic mechanisms, ABRS was more often complicated by inflammatory diseases of the middle ear (7,6%) and acute pharyngitis (4,4%). Further, in decreasing order of frequency, acute tubo-otitis (3,3%) and drug-induced rhinitis (3,3%), acute laryngotracheitis (2,2%) and exacerbation of chronic pharyngitis (1,1%) were observed.

Prior to inclusion in the study, 39 patients (42,4%) did not receive treatment, 32 (34,8%) people were treated symptomatically (did not receive adequate antibiotic therapy and corticosteroids). Another 21 patients (22,8%) received antibiotic therapy.

In the course of treatment, in 31 patients out of 92 (33,7%), the prescription of a starting antibacterial drug was ineffective. In 17 cases, cephalosporins were replaced by macrolides, in 4 cases - by respiratory fluoroquinolones. In 4 patients, semisynthetic protected penicillins were replaced by macrolides, in 2 patients - by respiratory fluoroquinolones. In two patients with ABRS, fluoroquinolones were prescribed to replace macrolide antibiotics. And, finally, in two patients, neither cephalosporins nor macrolides prescribed to replace them achieved a clinical effect, which required the appointment of third-line antibiotics - fluoroquinolones.

During endoscopic examination of the nasal cavity and nasopharynx, patients showed direct signs of ABRS (purulent discharge in the middle nasal passage and sphenoethmoidal pocket, obstruction of the ostiomeatal complex by edema of the mucous membrane), as well as a number of anatomical deviations from the normal structure of the nasal cavity, predisposing to the development of diseases. At the same time, edema of the mucous membrane in the area of the middle nasal passage in 91 patients (98,9%), purulent discharge in the area of the middle nasal passage in 45 (48,9%), purulent discharge in the area of the sphenoethmoidal pocket in 16 (17, 4%), curvature of the nasal septum in 23 (25,0%), grade II adenoids in 5 (5,4%), grade I adenoids in 4 (4,4%), hypertrophy of the uncinate process in 2 (2,2%), hypertrophy of the posterior end of the middle turbinate in 1 (1.1%). The most common endoscopic sign of ABRS was swelling of the mucous membrane of the middle nasal passage, which could be observed in 98,9% of patients prior to treatment.

Among the various variants of the anatomical structure of the nasal cavity, predisposing to the development and chronicity of ABRS, curvature of the nasal septum prevailed (25,0%). In second place in terms of prevalence were adenoid vegetations of I and II degrees, which were found in 4,4% and 5,4% of patients, respectively.

X-ray examination of patients with ABRS revealed the prevalence of common forms of lesions of the paranasal sinuses over isolated sinusitis. Thus, damage to one of the maxillary sinuses was observed in 26 patients (28,3%), of which 15 patients (16,3%) had

unilateral exudative sinusitis, and 11 patients (12,0%) had total obscuration of one upper junction. In 66 patients (71,7%), according to X-ray data, several sinuses were involved in the inflammatory process: bilateral sinusitis - 31 patients (33,7%), hemisinusitis - 7 (7,6%), polysinusitis - 28 patients (30,4 %).

In order to assess the quality of life of patients with ABRS, a statistical analysis of the results of the SNOT-20 test was carried out. The answers of the subjects, expressed in points, were summed up in the scales "nose", "ear", "general state" and "psychological status". The item "cough", which did not fit any of the scales, was assessed separately. In addition, the total amount of points scored was taken into account. At the same time, in group I patients the total amount was 48,00 points, in group II patients the total amount was 50,00 points, in group III patients the total amount was 50,50 points. When assessing the baseline results of the test of the consequences of rhinosinusitis before starting treatment, the Wald-Wolfowitz series criterion showed a statistically significant difference in the treatment groups on the "nose" scale (Wald-Wolfowitz test, p = 0,0147). However, other criteria (Kruskal-Wallis test, Mann-Whitney test) showed that all patients, regardless of the group, were taken from the same general population before starting treatment, i.e. did not differ.

Thus, it follows that the most common endoscopic sign of ABRS was edema of the mucous membrane of the middle nasal passage; purulent discharge in the region of the middle nasal passage was found only 48,9%, which is explained by the complete obstruction of the anastomosis and the absence of outflow of purulent exudate from the affected maxillary sinus; ABRS was more often complicated by inflammatory diseases of the middle ear; according to the X-ray examination, with ABRS, common forms of paranasal sinuses lesions are more common - bilateral sinusitis and exudative polysinusitis.

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