



SOME MODERN FEATURES OF THE DISTRIBUTION AND TREATMENT OF CHRONIC POLYPOSIS RHINOSINUSITIS

Nuriddinov Khusniddin Noriddinovich

Khazratov Orifjon Radjabovich

Bukhara State Medical Institute, Uzbekistan, Tashkent

ABSTRACT

Chronic polypoid rhinosinusitis (ORS) is a prolonged, recurrent inflammation of the mucous membrane of the paranasal sinuses (SNP) and nasal cavity with the formation of polyps. Since these structures are a single, in the anatomical and physiological sense, complex, the use of the term “rhinosinusitis” is absolutely justified and allows you to more fully understand the mechanisms of the development of the pathological process and justify a competent, comprehensive treatment strategy. The purpose of this review is to study the prevalence and methods of treatment of chronic polypous rhinosinusitis. Thus, conclusion follows that chronic polypous rhinosinusitis is a polyetiological disease that requires a more detailed study. Treatment of this pathology should include surgery followed by the appointment of intranasal corticosteroids.

The interest of otorhinolaryngologists in the problems of diagnosis and treatment of polypous rhinosinusitis, which is the main cause of nasal obstruction, has been unremitting for many decades and is now gaining even greater medical and social significance [1,4,8,15,19,24]. This is due not so much to the increase in the incidence of polyposis rhinosinusitis in our country and abroad, but to the fact that despite the successes achieved in studying the etiopathogenesis of this disease and the introduction of the latest achievements of science and technology into practice, the increase in the incidence and recurrence of polyposis does not has a downward trend [2,6,8,13,18,20].

The purpose of this review is to study the prevalence of chronic polypous rhinosinusitis.

The material in this review was composed of scientific publications from the scientific databases PubMed, Scopus and Google Scholar over the past 5 years. Review results and discussion. According to epidemiological studies, the prevalence of polypous rhinosinusitis ranges from 4-5% [7,12]. The most common polypous rhinosinusitis occurs in patients aged 40-50 years. Women suffer from this disease more often than men [5,14]. The number of postoperative relapses remains high and





often reaches 40 - 50% [24]. Violation of nasal breathing is the main manifestation of polypous rhinosinusitis, adversely affecting the quality of life and the general condition of the patient, and underlies the pathogenesis and clinic of the pathology of the paranasal sinuses and ear [7]. Dysfunction of various organs with difficulty in nasal breathing is associated with a change in oxidative processes in the body [9]. It is known that when breathing through the mouth, ventilation of the lungs decreases by 25-30%, which accordingly affects the saturation of blood with oxygen and carbon dioxide [16]. If nasal breathing is disturbed during polyposis, changes in the activity of the heart, the morphological composition of the blood and the biochemical properties of lymph, impaired function of the gastrointestinal tract, kidneys, central nervous system, etc. [25] are revealed.

A study by Russian scientists emphasizes the role of chronic polyposis of rhinosinusitis as an unconventional risk factor for the development of primary arterial hypertension in patients with rhinosinusitis without concomitant circulatory pathology, as well as the accelerated progression of circulatory disorders in patients with rhinosinusitis in combination with primary hypertension [16]. It has been proven that intracranial pressure when breathing through the nose is subject to greater fluctuations than when breathing through the mouth or trachea, since pressure fluctuations are the only driving force in the brain for cerebrospinal fluid, from this we can draw a conclusion about the important effect of nasal breathing on the central nervous system [19]. Underestimation of hypoxia in patients with polyposis is the reason that its manifestations are attributed not to impaired nasal breathing, but to the presence of pulmonary diseases, in particular bronchial asthma [2]. Today, there are many theories of the etiology and pathogenesis of polypous rhinosinusitis, but not one of them can fully explain the formation of this disease [20].

According to Russian scientists, there is still no agreement on the issue of whether nasal polyps are an independent nosological form or is this just one of the manifestations of other diseases, for example, bronchial asthma, intolerance to aspirin, cystic fibrosis, etc. [23]. According to other authors, the predisposing moments of the development of various forms of polypous rhinosinusitis are congenital and acquired disorders of the structure of the intranasal structures, which lead to impaired aerodynamics in the nasal cavity and paranasal sinuses [11]. This leads to the development of areas of mucosal hyperplasia in places with the greatest load of the air stream with all the antigens contained in the air stream. The restoration of physiological aeration in the nasal cavity and paranasal sinuses can be considered as a measure of prevention of polypous rhinosinusitis [22].





Some scientists in the study of the etiology and pathogenesis of polypous rhinosinusitis give special importance to the genetic factor [10]. In their opinion, one of the causes of polypous rhinosinusitis is “biological defects”. The essence of this theory is the predisposition of a number of patients to the occurrence of polypous rhinosinusitis in connection with the innate features of the body. In addition, etiologically significant factors for the development of polyposis include allergic inflammation, endogenous intoxication, chronic infection of the mucous membrane of the nasal cavity and paranasal sinuses (viral, bacterial, fungal), decreased local immunity, congenital or acquired microcirculation disorders, hypoxia, impaired arachidonic acid metabolism [7, 17].

Currently existing various approaches to the treatment of polypous rhinosinusitis, both surgical and conservative, pursue a single main goal - restoration of nasal breathing, free aeration and drainage of the paranasal sinuses [21].

Despite the successes achieved in the study of the etiology and pathogenesis of polypous rhinosinusitis, the main method of treatment for this pathology is still surgical. However, this method is not only not radical and quite effective, but also did not become a guarantor of the prevention of recurrence of polyposis and associated nasal obstruction [7].

Numerous experience of both domestic and foreign researchers shows that the surgical treatment of polyposis is only symptomatic, eliminating the “final” result of the pathological process — impaired nasal breathing, does not interrupt the polyposis development chain, and therefore practically does not affect the duration of remission. The number of postoperative relapses remains high and often reaches 40 - 50% with a relapse rate of 2-3 or more times a year [9].

Drug treatment of polyposis rhinosinusitis, in contrast to surgical, is pathogenetic in nature, since there is the possibility of personifying the various pathogenetic links in the development and course of the disease [22].

Recognition of the role of inflammation and allergies underlying the pathogenesis of polypous rhinosinusitis has led to the emergence of recommendations for the use of antibiotics and glucocorticosteroids for disease control in this patient population [11]. Current standards of treatment for polypous rhinosinusitis, according to international recommendations, include the use of topical, and if necessary systemic corticosteroids [19]. However, despite the sufficient effectiveness of corticosteroids, they only temporarily suspend the growth of polyps and ensure the adequacy of nasal breathing. The recurrence rate of polyposis remains high (more than 50%), which may be due to the fact that corticosteroids do not completely stop the process of chronic infectious and allergic inflammation, which was confirmed morphologically. Inflamed tissues of



the respiratory tract continue to highlight a special group of powerful mediators of allergic inflammation - leukotrienes, which mediate their action through receptors on the surface of the cells of the respiratory epithelium and are an ideal target for therapeutic blockade of the allergic reaction from both the upper and lower respiratory tract [14].

Currently, the treatment of chronic polypous rhinosinusitis (CID) remains one of the urgent problems in practical otorhinolaryngology, as long-term nasal obstruction, lack of smell, chronic hypoxia, frequent exacerbations and relapses of this disease significantly reduce the quality of life of patients [19]. The specific gravity of polypous rhinosinusitis in the structure of the pathology of the nose and paranasal sinuses is from 5 to 20% [10].

In Russia, about 1 million 400 thousand people suffer from polypous rhinosinusitis [9]. According to the foreign consensual agreement "European Position Paper on Rhinosinusitis and Nasal Polypoidosis 2020", this disease is detected in 2-4,3% of the European population, however, the frequency of occurrence of subclinical forms of chronic kidney disease is significantly higher and is about 32% of general population [5].

According to several authors, the proportion of immediate relapses after surgical treatment of polyposis rhinosinusitis is from 19% to 60% of cases [15]. The most severe course of the polypous process, an increased risk of developing a rhinobronchial reflex, and a significant increase in the frequency of repeated surgical interventions are noted among patients suffering from chronic polypous rhinosinusitis in combination with bronchial asthma and in the presence of an asthmatic triad [12].

Short-term remission and relapses of polypous rhinosinusitis in the short term after surgical treatment are due to the absence of this method with a direct effect on the complex etiopathogenetic mechanisms underlying the development of this pathology [16].

Chronic polypous rhinosinusitis among inflammatory diseases of the nasal mucosa and paranasal sinuses takes one of the leading positions. In the general population, patients with this pathology make up 32%, and their share among patients with ENT pathology, according to various sources, is from 5 to 25% [8].

In Russia, CPRS suffers about 1,5 million people [20]. In recent years, there has been an increase in the specific gravity of this disease in the structure of the pathology of the nose and paranasal sinuses, which is associated with changes in the environmental situation, a decrease in nonspecific immunological resistance and an increase in the allergization of the body [24].





In the next protocol for the treatment of chronic rhinosinusitis, “European position paper on rhinosinusitis and nasal polyps” (EPOS 2012), the authors report that polypous rhinosinusitis occurs in 2% - 4,3% of the adult population of Europe [5]. Moreover, in earlier publications, foreign authors report the detection of polyposis changes in the paranasal sinuses during autopsy in 12% of the examined, and during endoscopic dissection, these authors found signs of a polypous process in nasoetmoid blocks in 35% of patients who died from cardiovascular and neurological diseases [5]. The described findings undoubtedly indicate a higher incidence of subclinical forms of polypous rhinosinusitis among the population.

In the United States, 30-35 million people suffer from chronic polyposis sinusitis. According to statistics, every year about 20 million patients seek medical help in connection with the debut or exacerbation of ORS [5]. In the UK, 37,000 new cases of this paranasal sinus pathology are diagnosed each year [5]. Manifested forms of the polypous process in the nasal cavity and paranasal sinuses in an industrial city in Russia in accordance with the indicator of circulation to various clinics range from 1,3 to 13,1 per 10.000 people [9].

In the foreign and domestic literature, the heterogeneity of groups of patients suffering from chronic kidney disease is repeatedly emphasized, both in age categories and in the nature of the course of the polypous process. According to Russian scientists, polypous rhinosinusitis occurs 2 times more often among men than among women. Moreover, this disease is observed in all age groups, however, with age, the incidence of chronic kidney disease increases [4].

A comprehensive assessment of the epidemiological aspects of CPRS shows a high prevalence of this disease among the population, an increase in its subclinical forms in the structure of the general ENT pathology, which determines the relevance and social significance of the problem under discussion.

According to the data of almost all scientific works of recent years, rhinosinusitis is the dominant pathology both in the outpatient and in the stationary unit [19]. However, official statistics maintained by the Ministry of Health either don't want to admit this, or by some mistake, these diseases are simply not included in the list by which HCIs report. Given the fact that the trends of recent years in the development of domestic science are increasingly aimed at integration into the international community, it will be interesting to consider what the problem of rhinosinusitis abroad is, for example, in the USA. In addition, of all foreign countries, the United States is most similar to Russia in climatic conditions and therefore may be of the greatest interest.





Interesting observations made by Russian scientists in their work indicate that according to the United States National Health Interview Survey, rhinosinusitis is the most common chronic disease that affects 14,7% of Americans [5]. Every year, 13 million prescriptions for antibiotics are prescribed for rhinosinusitis. The total cost of treatment, which includes diagnostic tests and surgical care, is \$ 6 billion per year.

At the same time, the importance of this pathology is determined not only by its economic component, but also to a greater extent by its social significance. According to a number of authors [4] rhinosinusitis significantly reduce the quality of life of people. The authors report that difficulty or lack of nasal breathing, nasal discharge, headache, poor general condition individually or in total do not lead to the death of the patient, but make his life quite complicated. Foreign authors report that the quality of life of patients with rhinosinusitis in terms of pain sensitivity and social activity is worse than in patients with coronary insufficiency and chronic obstructive pulmonary diseases [15].

In accordance with numerous clinical observations and studies of both the past and the current century, chronic rhinitis and chronic rhinosinusitis is defined as a pathology that is accompanied by both private and general suffering for the individual - difficulty in nasal breathing, impaired sense of smell (ability to perceive odors), facial pain and uncomfortable sensations, excessive departments from the nasal cavity, secondary accompanying manifestations - apathy, decreased mood and working capacity, sexually th activity [24].

Currently, rhinology (rhinosurgery) has become the main focus of the work of otorhinolaryngologists of outpatient and inpatient units, and the problems of preventing and stopping inflammation of the mucous membrane of the nasal cavity and paranasal sinuses is one of the important problems of the specialty [10].

Chronic rhinosinusitis (CRS), as one of the 10 most common diagnoses in clinical practice, is a multifactorial pathology that includes a diverse group of diseases in which the mucous membrane of the nasal cavity and paranasal sinuses are affected, comprehensive immune and antiinflammatory mechanisms are involved, often leading to the formation of chronic inflammatory process. According to the international classification, CRS can be divided into two groups: CRSwNP - chronic polyposis rhinosinusitis and CRSsNP - chronic non-polyposis rhinosinusitis [5].

Among the complex and numerous problems of modern otorhinolaryngology, the diagnosis and treatment of diseases of the upper respiratory tract, their complications and consequences is one of the relevant [9].





In accordance with the opinion of the authors cited, one of the urgent problems for modern rhinology is the problem of early diagnosis, effective treatment and prevention of diseases of the nose and paranasal sinuses and their complications [23]. In terms of the problem under consideration, relevance is determined by the fact that diseases of the nose and paranasal sinuses have a significant share in the overall structure of the pathology of the upper respiratory tract, and stability of the level of both acute and chronic pathology is noted from year to year, despite an increase in the knowledge in relation to etiology and pathogenesis, despite the use of more and more pharmacological agents for the correction of local and general disorders. Moreover, according to many authors, in the general structure of the pathology of the ears, throat, and nose, diseases of the nasal cavity range from 30 to 40% [18].

The significance of the relative weight of inflammatory diseases of the nose and paranasal sinuses in childhood is consistently from 18 to 42%. Purulent and polypous forms make up from 20 to 30% [14]. In older age groups (the adult component of the population), one or another form of rhinosinusitis suffers from 10 to 15% [6]. Moreover, up to 80% of the total number of newly diagnosed pathologies of the nasal cavity and paranasal sinuses is over the age of 40 years - the most able-bodied, which indicates the great social significance of the problem, especially since in many cases inpatient and surgical treatment is required [21].

According to researchers of the 20th century, the proportion of inpatients treated for diseases of the nasal mucosa and paranasal sinuses increases annually by 1.5 - 2%. Patients with this pathology make up almost a third of the total number of patients hospitalized in ENT hospitals, but this proportion can reach up to 45% of patients [15].

One of the most widespread forms of pathology of the nasal cavity to date remain exudative sinusitis [13]. So in the United States at the beginning of the XXI century, up to 20 million cases of acute inflammatory rhinosinusitis were noted annually, and the cost of its treatment amounted to more than \$ 3 million [20].

At the same time, against the background of an increase in the frequency of diseases with acute rhinosinusitis, the number of transitions to various chronic forms has also increased, and the level of pathology with various forms of chronic sinusitis has doubled over the past eight years [11].

Polypous changes in the mucous membrane are currently one of the common forms of pathology of the mucous membrane of the nasal cavity and paranasal sinuses. The prevalence rate due to this disease is from 3,7 to 5,8 per 10,000 people [8]. In the structure of ENT pathology, the disease ranges from 5 to 25% and there is a tendency to both an increase in the incidence rate and a relapse of the process [12]. A study of





the results of numerous studies shows that the relevance of the problem is reflected not only in the high level of acute and chronic pathology of the mucous membrane of the paranasal sinuses, but also in the fact that, often, areas of inflammation and dystrophy of the mucous membrane of the nasal cavity and paranasal sinuses can be a source of infectious sensitization of all organism, to be the cause of tissue pathological reflex impulse, a causal factor in the development of autonomic dysregulation at the local level [7], develop a source of infectious dysregulated lower respiratory tract, ophthalmic complex etiology and intracranial complications [13]. It has been established that up to 75% of causal cases, visual and intracranial complications develop against the background of exacerbation of chronic inflammation of the mucous membrane of the paranasal sinuses [14]. In epidemiological studies (as part of evidence-based medicine) it was found that a large number of patients with polyposis rhinosinusitis have a concomitant somatic pathology (42,5% of patients have chronic pathology of the ears, pharynx and nose, 12,5% of patients have tumor diseases of other organs, 15% - chronic diseases of the lower respiratory tract, 35% - allergic diseases). Particularly acute and chronic inflammatory processes in the mucous membrane of the nasal cavity and paranasal sinuses suggest the development of severe pathology of the lower respiratory tract, chronic non-specific lung diseases, which occupy third place as the cause of disability and mortality in the population, after cardiovascular and oncological diseases [18]. Many researchers note an increase in the number of patients with complicated sinusitis, these patients later turn to the doctor for medical help, including in connection with certain social circumstances. As a result, the level of need for already surgical treatment (surgical interventions) in the paranasal sinuses is growing [3]. As recorded in numerous studies, an increase in the incidence of rhinogenic complications has many factors. This is a change in the reactivity of the body, and a difficult environmental situation, and the drift of the virulence of microflora under the influence of irrational use of antibiotics. Another reason is associated with an increase in rhinosinusogenic orbital and intracranial (meningitis, meningoencephalitis, cavernous sinus thrombosis, sepsis) complications (6.6% - 12,4% of all cases of inflammatory pathology of the paranasal sinuses) with the fact that the number of anatomical and topographic defects of the nose and paranasal sinuses [25]. The main cause of complications, first of all, is the penetration of the inflammatory process from the cells of the ethmoid labyrinth, frontal sinuses, and less commonly the maxillary [6].



Moreover, rhinogenic complications have a more severe course than otogenic complications [15]. The spread of the inflammatory process into the space of the skull from the nasal cavity and paranasal sinuses can be carried out, as is known, by contact, hematogenous, lymphogenous route, less often - through nerve trunks passing from the cranium to the soft tissues of the face, orbit, nasal cavity through the bone structures of the cranial and facial skeleton [19].

Thus, conclusion follows that chronic polypous rhinosinusitis is a polyetiological disease that requires a more detailed study. Treatment of this pathology should include surgery followed by the appointment of intranasal corticosteroids.

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