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# Pathogenetic Therapy of Acute Rhinosininitis in Children

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**SUMMARY.** On the occurrence and course of acute sinusitis, significant allergic rhinitis. A stepwise method of therapy was carried out, irrigation of the nasal cavity with saline solutions, after which the introduction of a topical intranasal corticosteroid and the next application of a nasal topical antibacterial spray influence stage. The clinical effect was achieved in 92% of patients.

**KEYWORDS:** acute sinusitis, allergic rhinitis, nasalsprays.

## I. INTRODUCTION

One of the most common ENT diseases in childhood is acute sinusitis. The largest number of patients falls on the age from 4 to 15 years and over the past 10 years the incidence of the disease was 35% - 37% among all diseases of the upper respiratory tract. Every year the number of such patients increases by 1.5% - 2%. In otorhinolaryngology hospitals, the number of children hospitalized for diseases of the paranasal sinuses in two years increased from 27.6% to 29.5%, despite all this, at present, the issues of prevention of diseases and their complications have not been fully developed (1,2, 4,5,7).

The onset and course of acute sinusitis is significantly influenced by various endogenous and exogenous factors, such as allergens, environmental irritants. Allergic rhinitis (AR) is one of the first predisposing factors for the development of acute sinusitis. In 10% -12% of cases, sinusitis has an allergic etiology (1,2).

According to a number of authors (3,4,6,7,8), 12% -15% of children have allergic rhinitis and diseases do not develop separately, but are often combined with sinusitis.

According to V.A. Gorbатов, et al. (2014) when examining sick children with hay fever aged 5 to 15 years, acute sinusitis of allergic genesis was established in 30% of cases. Against the background of allergies, infectious and purulent-inflammatory processes proceed rapidly and often give serious complications.

Currently, for the treatment of children with acute sinusitis against the background of AR, there are various effective methods of therapy (1,5,6,8), however, despite the success achieved, the frequency of transition to the chronic form does not decrease and often there are a large number of severe complications, which in eventually lead to disability.

The main reason for this phenomenon is the peculiarity of the structure of the nose and paranasal sinuses, the weakness of the body's immunological defense and the presence of an allergic background in children.

Naturally, otorhinolaryngologists are faced with the problem of the need for a more in-depth study of the features of the course of acute sinusitis in children with AR and the development of the most effective methods of pathogenetic therapy.

## II. OBJECTIVE OF THE STUDY

To develop new approaches to pathogenetic therapy and predicting the chronicity of acute sinusitis in children with allergic rhinitis.

Material and research methods. We examined and treated 46 patients with acute sinusitis with AR at the age from 5 to 18 years. When diagnosing, the ICD-10 and the WHO classification were adhered to.

Of 46 patients, 29 (63%) were diagnosed with acute sinusitis, 14 (30.4%) with maxillary ethmoiditis and 3 (6.6%) with hemisinusitis. The complex of examination of patients included the collection of anamnesis, endoscopic methods of examination of the ENT organs and X-ray of the paranasal sinuses.

When assessing the clinical manifestations of the disease, we used the European position paper on rhinosinusitis and nasal polyps EPOS. The severity of the disease was determined by a visual analogue 10-point scale.

In the first group, 29 (63%) patients with mild course (up to 3 points on a scale) complained of mild headache, weakness, hyposmia, nasal congestion, mucopurulent discharge from the nose and nasopharynx, body temperature within 37 C. radiographs of parietal thickening of the sinus mucosa.



Moderately severe course in 14 (30.4%) patients (average 5 points), headaches were more intense, painfulness was noted on palpation in the projection of the affected sinus. Constant nasal congestion, purulent nasal discharge, weakness, hyposmia and body temperature in the range of 37-38 C. Radiographs show complete darkening of the sinus, and some of them even had a fluid level in the projection of the affected sinus.

In severe cases in 3 (6.5%) patients (10 points on a scale), constant headache and pain in the projection of the affected sinus, purulent discharge from the nose and nasopharynx were constant, body temperature 38 C and higher, general weakness, anosmia. Radiographs show total darkening of more than two sinuses. At the same time, these patients had orbital complications in the form of reactive orbital edema. In blood tests, leukocytosis, accelerated ESR. When treating patients, the severity of the course of the disease was taken into account. A stepwise method of therapy was carried out. At the beginning, irrigation of the nasal cavity with saline solutions, followed by the introduction of a topical intranasal corticosteroid (ICS) and, at the next stage, the use of a nasal topical antibacterial spray.

Recently, rhinosinusitis treatment in many European, American and Russian clinics has included rinsing the nasal cavity with saline solutions. With irrigation, the nasal cavity is cleared of pathological contents. For this purpose, we used the Dolphin saline solution. At the beginning, the Dolphin saline solution was injected into one half of the nose, and from the other half it was pumped out using an electric suction. The manipulation was carried out 2 times a day, 6-8 procedures were required for the course of treatment.

To eliminate edema of the nasal mucosa and improve the evacuation of sinus contents in patients with rhinosinusitis, it is recommended to use topical intranasal corticosteroids (ICS). Based on this, the next stage of our treatment after irrigation, we used Forinex nasal spray. The drug has a pronounced anti-inflammatory and antiallergic effect as a result of the swelling of the nasal mucosa rapidly decreases, the patency of the lumen of the anastomosis of the paranasal sinuses is restored. Unlike other ICS, we did not observe undesirable manifestations when using Forinex (headache, dry nose, nosebleeds) during treatment. Forinex spray was injected into each nostril once a day for 4-6 days.

Recently, the literature has repeatedly discussed the issues of systemic and, especially, local use of antibiotics in acute sinusitis. It is strongly not recommended to introduce antibiotic solutions into the paranasal sinuses, after their puncture, since the side effects are many times greater than the effects of such treatment.

Currently, in world practice, there is a tendency to use antibacterial drugs locally in the form of an endonasal spray. With this method of administration, drugs penetrate into the hard-to-reach antibacterial topical spray "Neladex", which has anti-inflammatory, antibacterial and vasoconstrictor effects. The preparation contains antibiotics neomycin and polymyxin. Spray "Neladex" was injected into each nasal passage 3 times a day for 6 days.

In the group of sick children with a severe course (reactive edema of the eyes, high body temperature) of the disease, in addition to the above treatment, an additional oral suspension of Amoclan, 10 ml, was used. 2 times a day for 5 days.

Amoclan is a combined antibacterial drug, consisting of amoxicillin and clavulanic acid, which has a broad spectrum of antibacterial action. The drug is well absorbed from the gastrointestinal tract and is recommended for use in children of any age.

### III. RESULTS AND THEIR DISCUSSION

To assess the effectiveness of the therapy, we used the indices of the scale of subjective sensations, first of all, the dynamics of the main symptoms of sinusitis (headache and pain in the projection of the affected sinus, nasal discharge, difficulty in nasal breathing, body temperature), object data (edema and hyperemia of the mucous membrane nose, the presence of purulent discharge from the nose) and the general condition of the patient.

In the course of treatment, already on the 4th day of the therapy, nasal congestion and discharge from the nose disappeared in all patients with mild and moderate severity. Only 2 sick children with severe course still had occasional nasal congestion and mucous discharge. By the end of the course of treatment (6th day of treatment), a clear positive dynamics of objective data was noted: hyperemia and edema of the nasal mucosa decreased, the nature of the detachable nasal cavity changed. Only in 3 patients of moderate severity and in 3 patients with a severe course, there was still a slight swelling of the nasal mucosa, periodic mucous discharge from the nose, although they had purulent discharge before treatment.

After treatment in 44 patients, the general condition significantly improved: headaches, weakness and hyposmia completely disappeared, breathing through the nose was restored, discharge from the nose and nasopharynx stopped, and body temperature returned to normal. When rhinoscopy: the mucous membrane of the nasal cavity is pink, the nasal passages are clean. An improvement in the condition was achieved in 2 patients, they also disappeared the above symptoms, but periodically mucous discharge from the nose was observed, at times nasal congestion worried.



#### IV. CONCLUSIONS

1. Allergic manifestations in the nasal cavity in children have a significant impact on the onset and course of acute sinusitis.

2. Against the background of allergies, swelling of the nasal mucosa occurs, with impaired ventilation and mucociliary function of the mucous membrane, which leads to the accumulation of secretions in the sinuses, which contributes to secondary infection.

3. The main direction of treatment of acute sinusitis against the background of AR is to eliminate the manifestations of allergies, achieve a stable bactericidal concentration of antibiotics in the nose and paranasal sinuses, and improve the drainage and ventilation functions of the paranasal sinuses.

4. In severe cases of the disease with complications, a good and lasting effect can be achieved by additional use of Amoclan in the form of a suspension.

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