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EFFECTIVENESS OF TREATMENT CHRONIC SINUSITIS IN CHILDREN WITH THE PARISINUS 2 INHALER

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Chronic sinusitis in children is one of the complex inflammatory processes that affects not only the respiratory system, but also the functional state of the whole organism. Currently, this disease is widespread among respiratory pathologies, and various sources indicate that its prevalence in the child population reaches 15-25%. Chronic sinusitis is especially common in children aged 6-14 years, when the immune system is not fully formed and the anatomical features of the respiratory tract are more susceptible to infection. The high prevalence of this pathology requires the improvement of its treatment strategy. Sinusitis often occurs in conjunction with rhinitis or adenoids, and in sick children it is manifested by such symptoms as prolonged nasal congestion, chronic rhinorrhea, headaches, susceptibility to illness, and decreased school performance. These conditions not only reduce the quality of life of the child, but also negatively affect his physical and intellectual development. The pathogenesis of chronic sinusitis is multifactorial, based on impaired ventilation and drainage function in the paranasal sinuses, impaired mucociliary clearance, activation of pathogenic microflora, and increased inflammatory mediators. At the same time, allergic reactions, viral infections, unhealthy environmental conditions, asymmetrical facial bone shape, and decreased immunity also play an important role. In recent years, local aerosol therapy methods, especially treatment with the Parisinus 2 inhaler, have shown high effectiveness in chronic sinusitis.

The main advantage of this method is that it delivers the drug directly to the inflamed sinus area, limiting systemic effects and helping to achieve rapid clinical improvement. Aerosol particles (3-5 μm in diameter) delivered through the Parisinus 2 inhaler penetrate deep into the sinus cavity, accumulate in the focus of inflammation, and enhance the effect of the drug. This not only quickly reduces inflammation, but also helps restore mucociliary transport, accelerates exudate resorption, and reduces the number of relapses. Therefore, the use of the Parisinus inhaler as an adjunct to traditional methods in the treatment of chronic sinusitis in children is considered a physiologically acceptable and scientifically sound method. The relevance of this study is that it aims to scientifically assess the effectiveness of local aerosol therapy in children through clinical and functional indicators.

The purpose of the study: To study the effectiveness of local aerosol therapy using the Parisinus 2 inhaler in the complex treatment of chronic sinusitis in children and compare it with traditional therapy.

Materials and methods

The study was conducted at the Alfraganus Clinic in Tashkent. It involved 60 children aged 7-14 years with a diagnosis of chronic sinusitis. All patients were divided into groups based on clinical and instrumental diagnostics (Tab.1).

Parisinus 2 inhalation method: drugs: ceftriaxone and pulmicort 0.25 mg 2.0 (gluco-

corticosteroid) physio solution. Inhalation duration: 7-10 minutes. Course: 10-12 sessions. Using an inhaler, the drug was directed in an aerosol form directly into the paranasal sinuses.

Evaluation criteria:

- Nasal discharge, amount of exudate, pain level (on a visual analog scale).
- Rhinoscopic indications.
- Radiological dynamics.
- Period of remission and frequency of disease recurrence.

Table 1

Distribution of sick children into groups

Indicators	Group I (traditional medicine)	Group II (traditional+ Parisinus 2 therapy)	Total sick children
Number of patients	30	30	60
Age range (in years)	7-14	7-14	7-14
Average age	10.2±1.5	10.1±1.4	-
Number of boys	17	16	33
Number of girls	13	14	27
Duration of illness (in months)	8.4±1.2	8.6±1.1	-
Adenoid hypertrophy (%)	36.7%	33.3%	35%
Occurrence against the background of allergic rhinitis (%)	23.3%	26.7%	25%
Cases associated with allergic rhinitis (%)	60%	63%	61.5%

Note: The groups did not differ statistically in terms of age, gender, and disease duration ($p>0.05$).

Table 2

Before and after treatment (with average scores)

Indicators	Group I (before)	Group I (later)	Group II (before)	Group II (later)
Nasal discharge level (0-3 points)	2.8±0.2	1.6±0.3	2.9±0.1	0.6±0.2
Rhinorrhea level (0-3 points)	2.5±0.2	1.2±0.3	2.6±0.2	0.5±0.1
Headache intensity (0-3 points)	2.2±0.3	1.1±0.2	2.3±0.2	0.4±0.1
Swelling and hyperemia sign (0-3 points)	2.4±0.3	1.3±0.2	2.5±0.2	0.5±0.1
Mucociliary clearance time (min)	27.5±1.2	20.3±1.1	27.8±1.4	14.9±1.0

The differences were considered significant based on statistical analysis ($p<0.05$).

Results

The following positive changes were noted in the group receiving Parisinus 2 inhaler therapy:

- Nasal congestion resolved in 3-4 days (6-7 days in the control group).

- The amount of exudate decreased dramatically in 2-3 days.

- Rhinoscopy showed disappearance of hyperemia and edema on day 5.

- Inflammation completely regressed in 85% of patients (60% in controls).

- The remission period was prolonged to 4-6 months (2-3 months in control).

- The recurrence rate decreased by 2 times.

Table 3

Treatment effectiveness and long-term results

Indicators	Group I	Group II
Complete disappearance of symptoms (%)	63%	85%
Recurrence of symptoms (within 3 months) m9%)	28%	12%
Duration of remission (in months)	3.5±0.5	5.3±0.7
Cases requiring antibiotic therapy (%)	80%	45%
Overall satisfaction level after treatment (0-5 points)	3.9±0.5	4.8±0.3
Number of complications (%)	10%	3%

Discussion

The effectiveness of the Parisinus 2 inhaler is explained by its physical mechanism. The size of the aerosol particles released from the inhaler is less than 5 microns, which completely reach the upper respiratory tract and sinuses. The drug penetrates deep into the inflamed sinus mucosa and has a direct effect on the focus of inflammation. As a result of these physiological processes:

- the permeability of the capillary wall decreases;
- exudate resorption is accelerated;
- the level of inflammatory mediators (histamine, prostaglandins) decreases;
- mucociliary transport is restored.

Another advantage of the Parisinus 2 inhaler method is the possibility of avoiding the puncture of the maxillary sinuses. This prevents complications that may arise from the puncture of the maxillary sinus in children, and

allows children to treat sinusitis with this method without resorting to invasive methods and preserving immunoprotective functions. The results of the study are consistent with international experience [2-4], Parisinus 2 aerosol therapy has also been proven to quickly eliminate inflammation.

Conclusion

1. Impaired mucociliary clearance and limited drainage function play a key role in the pathogenesis of chronic sinusitis in children.

2. Local aerosol therapy using the Parisinus 2 inhaler directly affects the focus of inflammation, quickly eliminating clinical symptoms.

3. This method works faster than traditional therapy and doubles the remission period.

4. Parisinus 2 inhaler is recommended as part of the complex therapy of chronic sinusitis in children.

Conflict of interest

The authors declare no conflict of interest.

Use of Generative Artificial Intelligence

The authors of the manuscript hereby certify that in the process of conducting the study and preparing this manuscript, no generative artificial intelligence tools or services were used for any of the tasks listed in the Genera-

tive AI Delegation Taxonomy (GAIDeT, 2025). All stages of the work from conceptualization to final editing were performed solely by the authors without the involvement of generative artificial intelligence.

Data availability statement

The authors of the manuscript hereby confirm that the study is based on their own clinical research, the results of which were

systematized and analyzed by the authors. The primary data include aggregated patient indicators, laboratory results, protocols, and examination findings. All materials are stored in the

archive of the research group and may be provided upon a justified request to the corresponding author, in accordance with confidentiality requirements and ethical standards.

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A b s t r a c t

The clinical features, pathogenesis, and efficacy of local aerosol therapy using the Parisinus 2 inhaler for chronic sinusitis in children are discussed. The results of a clinical study involving 60 pediatric patients aged 7-14 years showed that therapy using the Parisinus 2 inhaler rapidly alleviated symptoms of inflammation, restored mucociliary clearance, and prolonged remission. This method was found to be safe, effective, and physiologically acceptable in children.

Keywords: chronic sinusitis, children, Parisinus 2 inhaler, aerosol therapy, inflammation, mucociliary clearance, physiotherapy.

ЕФЕКТИВНІСТЬ ЛІКУВАННЯ ХРОНІЧНОГО СИНУСИТУ У ДІТЕЙ ЗА ДОПОМОГОЮ ІНГАЛЯТОРА PARISINUS 2

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А н о т а ц і я

У статті обговорюються клінічні особливості, патогенез та ефективність місцевої аерозольної терапії з інгалятором Parisinus 2 при хронічному синуситі у дітей. Результати клінічного дослідження за участю 60 дітей віком 7-14 років показали, що терапія з використанням інгалятора Parisinus 2 швидко полегшує симптоми запалення, відновлює мукоциліарний кліренс та продовжує ремісію. Цей метод був визнаний безпечним, ефективним та фізіологічно прийнятним для дітей.

Ключові слова: хронічний синусит, діти, інгалятор Parisinus 2, аерозольна терапія, запалення, мукоциліарний кліренс, фізіотерапія.