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CLINICAL AND IMMUNOLOGICAL FEATURES OF ALLERGIC RHINITIS IN CHILDREN

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Abstract:

Study of clinical and immunological features of allergic rhinitis in children

INTRODUCTION. Over the past decades, there has been an increase in the frequency and prevalence of allergic respiratory diseases, especially allergic rhinitis (AR) all over the world [3,7].

The most alarming are the data on the growth of allergic diseases of the respiratory tract in children [1,5]. In a large percentage of cases, children have combined manifestations of allergic respiratory diseases [4,6,8]. A number of authors consider allergic rhinitis as the initial stage in the development of atopic bronchial asthma [9,2,]. Studies conducted at various medical centers indicate that upper respiratory dysfunction is an important factor in the development of subsequent lower respiratory tract diseases. Based on the principles of evidence-based medicine, the WHO document "Allergic rhinitis and it's impact on asthma" (ARIA) is devoted to this topical issue [10].

OBJECTIVE. Study of clinical and immunological features of allergic rhinitis in children.

MATERIALS AND METHODS. 64 children with allergic rhinitis aged from 4 to 15 years were examined. Of these, 27 girls and 37 boys. 60.9% of children had year-round allergic rhinitis (CAR) and 39.1% of patients had seasonal allergic rhinitis (SAR). The comparison group consisted of 30 practically healthy children.

Diagnosis of allergic rhinitis was carried out in accordance with the recommendations of the European Academy of Allergology and Clinical Immunology (2000) and WHO (ARIA, 2001). All patients underwent mandatory examinations: laboratory, X-ray, allergological, consultations of specialists: an allergist, an otorhinolaryngologist, a pulmonologist.

The main classes of lymphocytes and their subpopulations (CD3, CD4, CD8) were counted, and the functional activity of leukocytes was determined. The functional activity of B-lymphocytes was determined by the concentration of circulating immune complexes according to E. I. Sokolova (1998); the level of serum immunoglobulins (A, M, G) according to G. Mancini et al. (1999); immunoglobulin E by ELISA.

Research results. In a comprehensive study of children with allergic rhinitis, a positive allergic history was found in 63.5% of children with seasonal allergic rhinitis and in 55.6% of children with PAR. Family history of SAD on the mother's side was noted in 37.5% of patients, father - in 35%, close relatives - in 27.5%. In year-round allergic rhinitis, familial morbidity was detected significantly more often in the mother's line - 55% than in the father's line or close relatives (26% and 20%, respectively).

Analysis of the structure of allergic rhinitis by severity showed the prevalence of moderate and severe degrees of the process (65.6% and 18.8%, respectively).

The main symptoms of allergic rhinitis were sneezing, rhinorrhea, itching and nasal congestion. In children with a combination of rhinitis and asthma, the full symptom complex of the disease was detected in 80% of cases.

When studying diseases associated with allergic rhinitis, it was found that lesions of the ENT organs, such as pharyngitis, otitis media, impaired patency of the auditory tubes, rhinosinusitis, adenoid vegetations II-III degree were present in 98.4% of children. In addition, allergic eye lesions were observed, in the form of allergic conjunctivitis (26.6%), often associated with seasonal allergic rhinitis, skin lesions - in the form of atopic dermatitis (20.3%) and tracheobronchial tree - in the form of tracheobronchitis (34.4%). When analyzing the course of atopic bronchial asthma, only 10 children had a mild form. The majority of patients with allergic rhinitis (65.6%) had a moderate form of atopic bronchial asthma, a severe course was diagnosed in 12 patients.

In order to study the immune status, all patients were divided into 2 groups. Group 1 included children suffering from SAD - 25 people, group 2 - children with CAR - 39 people (30.9%).

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Comparative determination of indicators of cellular immunity revealed a significant ($p<0.05$) decrease in CD3-lymphocytes and their fractions relative to the control in patients of all groups, however, lymphocytopenia was more pronounced in seasonal allergic rhinitis (Table1).

Table 1. Content of CD3, CD4, CD8 and CD20 lymphocytes

Indicators * 10^9/л	SAP n=25	KAR n=39	control n=30
CD3	0,95±0,07*	1,04±0,06*	1,48±0,08
CD4	0,69±0,07*	0,68±0,05*	0,92±0,08
CD8	0,25±0,02*	0,35±0,04*	0,57±0,05
CD4/CD8	2,76±0,18*	2,37±0,24	1,68±0,06
CD20	0,30±0,03	0,29±0,05	0,33±0,03

*- significant difference with the control index ($p<0.05$).

The study of the quantitative content of CD20-lymphocytes did not reveal significant changes in any group of patients.

In order to identify the functional state of the B-system, the level of serum Ig A, Ig M, Ig G, Ig E was determined (Table 2).

Table 2. Content of serum immunoglobulins A, M, G and E

Indicators of the level of immunoglobulins in children with AR	Immunoglobulins			
	A (г/л)	M (г/л)	G (г/л)	E (МЕ/мл)
SAR	1,56±0,09	1,13±0,11	10,5±0,49	577±32,2*
KAP	1,64±0,07	1,13±0,012	10,5±0,47	519,6±52,4*
Control	1,95±0,12	1,12±0,07	10,8±0,99	82,1±8,69

*- significant difference with the control index ($p<0.05$).

Studies have shown that fluctuations in the parameters of these immunoglobulins were insignificant, only the content of Ig E in patients of all groups was significantly increased and reached a maximum in children with SAD.

Conclusions. Thus, the conducted studies showed that the clinical features of allergic rhinitis in combination with atopic bronchial asthma were a more severe course of both diseases, a large number of concomitant complications.

It was established that morphological and functional disorders of cellular and humoral immunity were observed in allergic rhinitis, more pronounced in the year-round form of allergic rhinitis.

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