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THE PRIMARY IMMUNODEFICIENCY IN PATIENT WITH BRONCHIAL ASTHMA

ABSTRACT
The article is devoted to an actual problem of primary immunodeficiencies. Primary immunodeficiencies are rare diseases, and awareness of this pathological condition is not enough. Itleads to late diagnosis and inadequate treatment of patients suffering from primary immunodeficiency. Allergic diseases often dominate clinical picture of immunodeficiency states. There is a case's descriptionof primary immunodeficiency in a child with asthma.

Keywords: bronchialasthma, primary immunodeficiency, clinical case.

INTRODUCTION

Primary immunodeficiency is the congenital disorder of the immune system associated with genetic defects in one or more host defense mechanisms, namely cellular and humoral immunity, phagocytosis, complement system. Despite the achievements in diagnostics, more than 70% of patients with immune deficiencies are not diagnosed, and their typical manifestations are severe bacterial, viral and fungal infections, autoimmune and allergic diseases. Primary immunodeficiency is diagnosed in children most times, commonly in early childhood [2].

We can identify common features characteristic of all primary immunodeficiency's forms despiteexpressed inhomogeneity of both clinical and immunological manifestations.

Primary immunodeficiency has a main feature – inadequate susceptibility to infections, while other manifestations of immunodeficiency are overfrequency of allergies and autoimmune manifestations, as well as propensity to neoplasia, which is relatively small and highly irregular.

Allergic manifestations occur in 17% of patients on average. Allergic diseases are obligated for Wiskott-Aldrich syndrome and hyper- IgE-syndrome and hurried in the selective deficiency (atopic dermatitis, bronchial asthma) – occurs in 40% with usual character of the course [3]. Observation is very important to understand the nature of allergic reactions. According to it, allergic diseases in the majority of primary immunodeficiency's more severe form absent together with the loss of ability to produce IgE and to develop a delayed type hypersensitivity reaction pseudoallergic (parallergic) reactions (toxicodermia,exanthema in drug and food intolerance) are possible for any form of immunodeficiency. Autoimmune diseases are diagnosed in 6% of patients, which is much higher than in normal pediatric population. However, their frequency is very irregular. The same goes for malignant diseases, which occur with overfrequency only in some forms of primary immunodeficiency [1, 4].

The aim of our study was demonstration of clinical case about primary immunodeficiency in a child with asthma.

MATERIALS AND METHODS

Clinical observation's data of primary immunodeficiency in a child with asthma.

RESULTS

Patient P., 6 years old, resident of Yakutsk, was repeatedly hospitalized in pediatric pulmonology department of the Republican hospital №1 with a diagnosis "bronchial asthma, atopic form, moderate-to-severe condition, uncontrolled; allergic rhinitis, persistent; atopic dermatitis; dysplasiaof connective tissue, undifferentiated".

From anamnesis we know that the child from a family with anamnesis record: mother - pollinosis, paternal grandfather – bronchial asthma, elder brother – pimary immunodeficiency, unspecified, bronchial asthma. Girl is from the second pregnancy that occurred with toxemia, threat of interruption, chronic pyelonephritis, from operative delivery at 35-36 weeks of pregnancy. Birth weight is 2995g, length is 49 cm, Apgar score - 8/8 points. Diagnosis in the first month: perinatal affection of CNS hypoxic genesis. Conjugationalhyperbilirubinemia. The child was breast-fed from birth until 4 months. BCG vaccination was in maternity hospital.

Allergic anamnesis: redness ofthe cheeks on fish, semolina, syrups.

Anamnesis of the disease: shortness of breath and rhythmic paroxysmal cough, recrudescing at night and during physical exertion, are marked from 4 months.The girl was repeatedly hospitalized and examined according to the place of residence.Also pains in stomach and legs, upregulation of AST in blood are periodically observed from an early age. Past medical history: frequent ARVI (10-12 times annually), bronchitis, chronic sinusitis, acute bilateral multisegmentalpneumonia (3 years).

In 2010, she was sent to the Institute of Medical Genetics in Tomsk, where cystic fibrosis was excluded.

In 2012, the diagnosis was found in the pulmonary department of the Republican hospital №1 for the first time: bronchial asthma, atopic form, mild disease; allergic rhinitis, persistent; atopic dermatitis; undifferentiated dysplasia of connective tissue; facial dysmorphia. Background therapy was assigned, strokes were observed once in every 2 months. According to computer assisted tomography, nothing abnormal was detected. Immunoassay: IgG 10,66 g/l, IgA 1,93 g/l, IgM 4,28 g/l, Ig E 8,3 g/l; immunophenotyping of lymphocytes CD3- 70 %, CD4 – 52, CD8 – 26, CD16 - 11, CD19 - 10, CD3/HLA – 8%, Immunoregulatory index - 2; ά1-antitrypsin - 271 mg/dL. In 2013,

Seretide 25/125 mcg in 1 dose x 2 times, singular, was assigned as basic therapy. On the top of already administered therapy, according to her mother, strokes of cough were constantly persisted.

In January 2014, the girl was hospitalized inImmunology Department of the Federal Research Center of Pediatric Hematology, Oncology and Immunology named after D. Rogacheva with suspected primary immunodeficiency for the first time. Adenoiditis and chronic tonsillitis were detected on admission. Dextral catarrhal otitis. Antibacterial symptomatic therapy was assigned.In the course of the treatment, ENT specialists said that state with positive dynamics. Bronchoscopy was conducted for diagnostic purposes, diffuse catarrhal endobronchitis was detected. The child's condition remained stable during her time in department. At the time of hospitalization, diagnosis "primary immunodeficiency" is not confirmed.

In 2015, the patient was hospitalized in the Federal Research Center of Pediatric Hematology, Oncology and Immunology named after D. Rogachevaagain with complaints of periodic febrile (monthly), chronic sinusitis, pains in joints and abdomen. Exacerbations of asthma were observed each month against the background of infectious manifestations.

She was in the department from 24.03.15 to 10.04.15, at which the following research was conducted:

Measurement	Findings	Standard
CD3%	77,6	66-76
CD3+	0,598	1,4-2
CD3+/ CD4+%	38	33-41
CD3+/ CD4+	0,293	0,9-2,86
CD3+/ CD8+%	35,6	22-38
CD3+/ CD8+	0,2745	0,63-1,91
CD3+/CD16+/ CD56+%	3	0-10
CD3+/ CD16+/ CD56+	0,0231	0-0
CD3+/ HLADR+%	7,2	3-13
CD3+/ HLADR+	0,0555	0-0
CD3+/ CD25+%	5,7	0-0
CD3+/ CD25+	0,034	0-0
CD19+%	9,7	21-28
CD19+	0,075	0,7-1,3
CD3-/CD16+/ CD56+%	11,8	10,6-22,4
CD3-/ CD16+/ CD56+	0,091	0,276-0,896
CD3-/ HLADR+%	16,1	5-20
CD3-/ HLADR+	0,124	0,06-0,6
WBC	5,04	4,8-9
Lym %	15,3	36-43
lym	0,771	2,4-5,81
Mon %	8,2	4-8
Mon	0,413	0,285-0,5
Gra %	76,5	34-56
Gra	3,856	2,074-5,6
Ratio CD4:CD8	1,067	1,1-1,4

Complete blood count: hemoglobin 117 g/l, erythrocytes 4.2 x 10^{12}, leukocytes 2.7 x 109, segmented neutrophil-38.0, 4.0 eosinophils, lymphocytes - 52.0, monocytes - 6.0 ESR - 8 mm/h.

Immunological analysis: IgG 7,1 g/l, IgA 1,3 g/l, IgM 0,893 g/l, IgE 24,8 g/l, CRP 1.4 mg/L, RF 10.7 13 ASO.

Immunophenotyping findings are shown in Table 1.

Culture analysis: streptococcus salivarius10*3cfu/ml, sensitivity of linezolid.

Conclusion of bronchoscopy: double interfacialendobronchitis.

Conclusion of computer tomography: focal and infiltrative abnormalities in lungs, enlarged lymph nodes of mediastinum, lung roots and axillary areas weren't detected.

Conclusion of respiratory function: baseline measurements of spirometry - within normal limits, test with ventolin - negative.

MSCT of the sinuses from 03/04/2015. Conclusion: minimal thickening of right department's basic sinus mucous membrane.

Conclusion of ECG: The vertical position of Electric axis of the heart. The rest ofpacemaker's migration is from sinus node to right atrium myocardium, moderate bradycardia, acute arrhythmia. Migration of pacemaker sinus node to the myocardium of the right atrium is stored in the tilt test, heart rate increase amounted to 19%.

Following experts are consulted in the department:

- Cardiologist: sinus node dysfunction, pacemaker migration. Dysplasia of connective tissue.

- Neurologist: dysplasia of connective tissue. Dysarthria, coordination violations.

- Endocrinologist: height 114 cm, weight 19 kg. Body mass index - 14 kg / m2. Conclusion: Height and weight figures correspond to the average age norm border.

- Otolaryngologist: acute rhinitis, residual effects.

She received basic therapy with Seretide 25/125, also antimicrobial (cefepime, sumamed), symptomatic therapy in the department.

CONCLUSION

Considering complaint, personal history, physical examination and results of examination (family history, infectious medical history, laboratory lymphopenia, transient neutropenia, marked reduction of CD3+, CD4+ CD19+ lymphocytes, the level of serum immunoglobulins within lower limit of the age norm - IgG - 7 1 g/l, IgM - 0,89 g/l, IgA - 1,3 g/l), the child is diagnosed: primary immunodeficiency, unspecified.

Thus, the clinical diagnosis of the patient was worded as follows: primary immunodeficiency, unspecified. Bronchial asthma, moderate, persistent, preventable. Allergic rhinitis, persistent. Sinus node dysfunction: migration pacemaker. Dysplasia of connective tissue. Dysarthria, coordination violations.Considering that primary immunodeficiency is a genetically determined disease with irreversible dysfunction of the immune system including high risk of severe life-threatening bacterial infections, and autoimmune processes, the girl was shown holding constant prophylactic antimicrobial and regular life-long replacement therapy with immunoglobulin preparations for intravenous immunoglobulin Octagam - dose of 0.4 g/kg for health reasons. Broad-spectrum intravenous antibiotic treatment (cephalosporin 3-4 generations, aminoglycosides, fluoroquinolones, macrolides) is shown during development of infectious process. Seretide is designated as the basic treatment of 25/125 mcgin a 1 dose for 2 times a day, singular 5 mg/day.

Prognosis of disease depends on timely diagnostics of bacterial infections and complex therapy.

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