Minimal essential text

(Key findings + graphics)

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Efficacy and Safety of Immunization with Pneumococcal Polysaccharide Vaccine in Children With Juvenile Idiopathic Arthritis: Preliminary Results of a Prospective Open-Label Study

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Background*. Juvenile idiopathic arthritis (JIA) is one of the most frequent and most disabling rheumatic diseases in children. Children with JIA receiving immunosuppressive and genetically engineered biologic drugs belong to the high-risk group for the development of bacterial and viral infections, including those administered by preventive vaccines.* ***Objective****: Our aim was to evaluate the efficacy and safety of 13-valent pneumococcal polysaccharide vaccine (PPV) in children with JIA.* ***Methods****. In a prospective open-label comparative study, the efficacy of vaccination was determined by the level of specific anti-pneumococcal antibodies (anti-SPP)IgG to Streptococcus pneumonia in the blood serum in patients with JIA. The safety of vaccination was assessed by determining a high-sensitivity C-reactive protein and S-100 protein as well as by the number of adverse events, by recording the number of infections of the upper respiratory tract and pneumonias, by the number of joints with active arthritis. Vaccination with 13-valent PPV was performed subcutaneously with one dose of 0.5 ml during therapy of the main disease with methotrexate or etanercept or 3 weeks before the appointment of methotrexate or etanercept. Patients were followed up for 1 year.* ***Results****. The study included 42 children with JIA: 21 with JIA in the active phase of the disease, 21 in remission of the disease. As a result of vaccination, the level of anti-pneumococcal antibodies (anti-SPP)IgG increased in the group of children with JIA in the active phase from 26.1 (14.3; 52.1) to 73.0 (52.5; 156.0) mg/l (p = 0.001), with JIA in remission — from 27.4 (18.2; 59.1) to 54.6 (35.3; 96.0) mg/l (p = 0.029). The concentration of the predictor of S-100 protein high activity after vaccination was not increased (p = 0.192). JIA aggravation episodes were not fixed in any patient. Serious adverse events were not observed during the trial.* ***Conclusion****. The vaccination of children with JIA with 13-valent PPV is highly effective, not accompanied by exacerbation/increase in the activity of the disease and the development of serious adverse events.*
Key words*: juvenile idiopathic arthritis, vaccination, antibodies to pneumococcus, pneumococcal vaccine, children.*
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RESULTS

Table 1. Characteristics of patients with JIA

Indicator	JIA in remission, *n* = 21	Active JIA, *n* = 21
Girls, abs.	16	14
Age, years	6 (3; 9)	4 (3; 10)
Remission duration, months	12 (6; 18)	-
Therapy duration, months	15 (6; 25)	-
Diagnosis, abs. (%)		
Oligoarticular JIA	11 (52)	16 (76)
Polyarticular JIA	10 (48)	5 (24)

Note. JIA — juvenile idiopathic arthritis

Fig. 1. Dynamic pattern of the content of anti-SPP IgG in patients with JIA in the acute phase

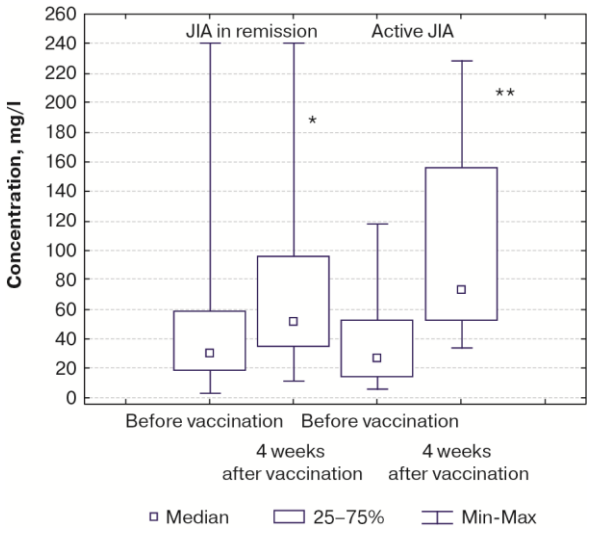


Fig. 2. The content of anti-SPP IgG during therapy with immunosuppressive drugs in patients with JIA in remission

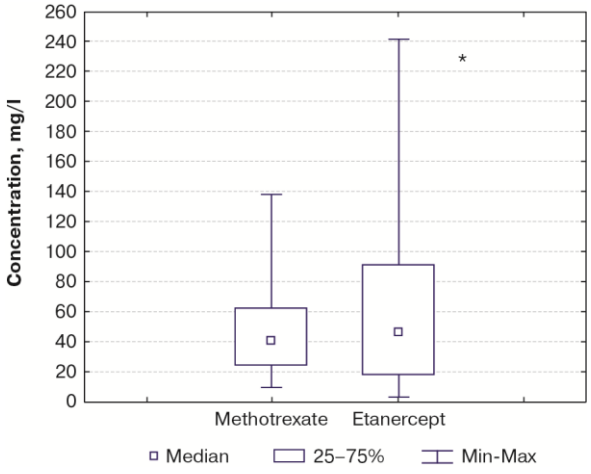
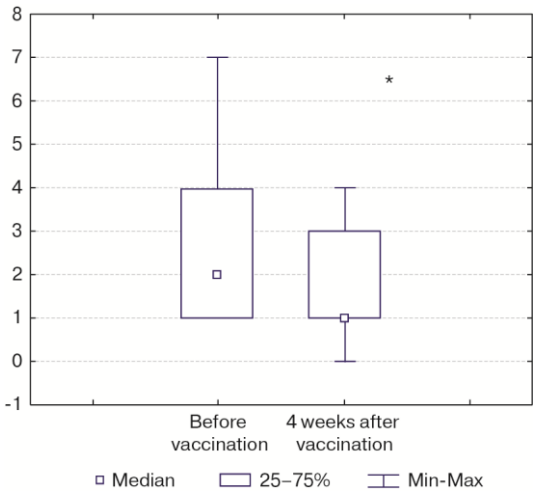


Table 2. Markers of inflammation levels

Indicator	JIA in remission, *n* = 21		*p*	Active JIA, *n* = 21		*p*
	Before vaccination	After 4 weeks		Before vaccination	After 4 weeks	
High-sensitivity CRP, mg/l	0.11 (0.10; 0.13)	0.10 (0.10; 0.19)	0.671	4.0 (1.0; 7.0)	0.1 (0.1; 2.0)	0.019
Protein S100, μg/l	2.6 (1.3; 9.6)	1.7 (0.9; 2.9)	0.192	3.2 (2.5; 4.6)	2.0 (1.3; 4.5)	0.213

Note. JIA — juvenile idiopathic arthritis

Fig. 3. The number of joints with active arthritis in patients with JIA in remission (before vaccination)



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CONFLICT OF INTERESTS
Ekaterina I. Alekseeva — obtaining research grants from pharmaceutical companies Roche, Pfizer, Centocor, Novartis.
Tatiana M. Dvoryakovskaya — obtaining research grants from pharmaceutical companies Roche, Pfizer.
Rina V. Denisova — obtaining research grants from pharmaceutical companies Roche, Centocor, Novartis.
Margarita A. Soloshenko, Olga L. Lomakina, Kseniya B. Isaeva, Anna V. Karasyova confirmed the absence of a reportable conflict of interests.

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