

R707

Publication Only

Vaccines: Immunology, host defences, immunotherapy

Features of local immunity to diphtheria in children with allergic diseases

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Introduction. Strains of *Corynebacterium diphtheriae* with changed genetic structure still continue to circulate in the population in spite of vaccination. That's why diphtheria is still dangerous. The task of our investigation was to study of antiphtheriae local immunity factors at children with allergic diseases vaccinated by antiphtheria medicines.

Methods. Saliva was chosen at 50 children of 1-15 years with allergic diseases (bronchial asthma, asthmatic bronchitis, pollinosis) and 131 healthy children vaccinated by DPT-vaccine and EDT-vaccine as material for our investigation, where the level of sIgA, antiphtheria antitoxic and antibacterial sIgA, IgE, IL-4 and INF-gamma were examined by ELISA.

Results. At children with allergic diseases the average level of sIgA was the same as in comparative group that corresponds with age norm levels. Level of antiphtheria antibacterial sIgA in saliva of children of both groups was 48.0-114.7 mcg/ml. Children with allergic diseases at 1-9 years have lower level of antiphtheriae antibacterial sIgA in compare with healthy children. With age level of antibacterial sIgA in saliva of both groups staged increase and to 10-15 years there was no difference in its concentration. The level of antitoxic sIgA at all examined groups was significantly lower than antibacterial sIgA (0.7-5.5 mcg/ml). The average level of antitoxic sIgA at children with allergic diseases (1.5 ± 0.3 mcg/ml) was lower ($p \leq 0.001$) then at healthy children (4.1 ± 0.4 mcg/ml). At patients with allergic diseases of different ages (before 9 years) the level of antitoxic sIgA was lower than in group of compare at the same age, at 10-15 years all differences are disappear. The level of INF-gamma was the same in both groups at the age before 9 years. Only children with allergic diseases at 10-15 years had significantly ($p \leq 0.05$) lower level of INF-gamma (25.5 ± 5.7 mcg/ml) in compare with healthy children (53.3 ± 7.6 pcg/ml). The level of IL-4 in saliva of children with allergic diseases starting from 6 year was higher in compare with healthy children. Expressed humoral trend of immune response detected on the levels of INF-gamma and IL-4 in saliva was found out at children with allergic diseases only at the age of 10-15 years that correlates with higher levels of IgE.

Conclusions. Local immunity at children with allergic diseases associated with antiphtheriae vaccinations characterized by forming to 10-15 years precedence of humoral immune reactions. Increased level of IgE (competitive with sIgA for antigen) may be a predisposing cause to diphtheriae bacteria carrying and worsening of infection process. The level of antiphtheriae antibacterial and antitoxic sIgA in saliva was lower in this group. sIgA play an important role in resistance to colonization which prevent invasion of bacterial agents into the body, that testify about less resistance to adhesion of *C. diphtheriae* of children with allergic diseases in compare with healthy children.