

Analysis of Post-vaccination Immunity in Children with Severe Chronic Diseases Receiving Immunosuppressive Therapy by Specific IgG Antibodies Definition Method

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Abstract : Children on medication-induced immunosuppression are at high risk of developing severe course infectious diseases. Therefore, preventive vaccination is especially important for these children. However, due to the immunosuppressive effects of treatment for the underlying disease, the effectiveness of vaccination may decrease below the protective level. In a multidisciplinary children's medical center, post-vaccination immunity was studied in 79 children aged 4-17 years. The children were divided into 2 groups: Group 1 (38 children) with kidney pathology (Nephrotic Syndrome) and Group 2 (41 children) with inflammatory bowel diseases (Ulcerative Colitis, Crohn's Disease). Both groups of children were vaccinated according to the national vaccination calendar and received immunosuppressive therapy (prednisolone, methotrexate, cyclosporine, and other drugs) for at least 1 year. Using the enzyme-linked immunosorbent assay method, specific IgG antibodies to vaccine-preventable infections were determined: measles, rubella, mumps, diphtheria, pertussis, tetanus, and hepatitis B. The study showed the percentage of children with positive IgG values for vaccine-preventable infections. The highest percentage of children had protective antibody levels to measles (84.2% in children with nephrotic syndrome and 92.6% in those with inflammatory bowel disease) and rubella (71% and 80.4%, respectively). The lowest percentage of children with protective antibodies was for hepatitis B (5.2% and 29.2% respectively). Antibodies to mumps, diphtheria, pertussis, and tetanus were found not in all children (from 39,4% to 82,9%). The remaining percentage of children did not have detectable IgG antibodies to vaccine-preventable infections. Not all children, despite the previous vaccination, preserved antibodies to vaccine-controlled infections and remained unprotected by specific IgG antibodies. The issue of a booster vaccine dose should be considered in children without contraindications to vaccination. Children receiving long-term immunosuppressive therapy require an individual vaccination approach, including a specific definition of the performed vaccination.

Keywords : immunosuppressive therapy, inflammatory bowel diseases, nephrotic syndrome, post-vaccination immunity, specific antibodies, vaccine-preventable infections.

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