Tetanus-diphtheria and pertussis serology and immunization status among children and adolescents with inherited metabolic disorders

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**Introduction:** The aim of the study was to assess age-appropriate immunization coverage in 169 children with inherited metabolic disorders such as phenylketonuria, biotinidase deficiency, lysosomal diseases, organic acidemias, cystic fibrosis and myochondrial diseases (IMD; 88 girls and 81 boys, ages 6 to 240 months) as well as serological tests for tetanus, diphtheria, and pertussis.

**Methods:** Antibodies against Corynebacterium diphtheriae, Clostridium tetani, and Bordatella pertussis, were examined by ELISA.

**Results:** 94.0% of all children with had received age-appropriate vaccinations according to the actual National Immunization Program. 10 children (6%) had not received vaccines; parents of two refused to vaccinate their children. Antibody levels were positive in all the studied children. 15 children (8.8%) have low/no antibodies against C. diphtheriae, two out of them are vaccine refusal, 10 children received 5 doses of diphtheria contained vaccine. Among all subjects, 91.7% had protective antibody levels against C. tetani. An analysis of pertussis infection in 169 children with IMD showed that the antibody titers were lower than those required for the prevention of pertussis infection in 33.7% of the children and the values also suggested acute pertussis infection in 11.8% of the patients. Approximately 34% of children were susceptible to pertussis, and some had a recent history of acute infection.

**Conclusion:** On the basis of all these data, infants with IMD have similar risks for healthy children as they grow older to pertussis, and should also be taken into account in vaccination strategies for pertussis infection, such as a Tdap vaccine that includes pertussis, tetanus and diphtheria. Vaccine hesitancy/refusal is an emerging issue worldwide, physicians who follow children with IMD should also regularly follow up their patient’s vaccination status.