

SEROPREVALENCE OF DIPHTHERIA TOXOID IgG ANTIBODIES IN CHILDREN IN MARANHÃO, BRAZIL

Nunes M.A.S.¹, Sousa E.M.¹, Monteiro S.G.¹, Firmo W.C.A.¹, Alves E.S.¹, Coutinho G.G.¹, Souza N.G.A.¹, Speranza F.A.B.², Borges L.L.G.¹, Hirata Jr R.², Mattos-Guaraldi A.L.³, Sabbadini P.S.¹

¹Universidade Ceuma (R. Josué Montello, nº 1. Renascença II. São Luís-MA); ²Instituto de Biologia do Exército (R. Francisco Manoel, nº 102. Benfica. Rio de Janeiro-RJ); ³Universidade do Estado do Rio de Janeiro (Av. 28 de setembro, nº 77. Vila Isabel. Rio de Janeiro-RJ)

Diphtheria is a disease caused by the bacterium *Corynebacterium diphtheriae* and its highly potent toxin which is associated with high case fatality. Diphtheria remains endemic in Brazil, despite the Immunization Program established by the Ministry of Health in the 90's. A diphtheria outbreak occurred in Maranhão, Brazil in 2010. The majority of the confirmed cases occurred in partially or completely immunized children. The aim of this study was to assess antibody levels against diphtheria toxin among children living in São Luis-MA. The survey was carried out on 312 serum samples collected from children (aged 3-7 and 10-12 years) of Municipal Health Unit from November 2011 to April 2012. Diphtheria toxin IgG-specific antibody titres were determined by means of an enzyme-linked immunosorbent assay using the ELISA commercial kit. The titers were classified into three groups: < 0.1 IU/ml, between 0.1 IU/ml and 1.0 IU/ml and > 1.0 IU/ml indicating unprotected, partially protected, and fully protected individuals, respectively. Majority of the children (63.1%) showed inadequate immunity to diphtheria and need immediate booster. However, 26.3% of the patients were seronegative and require basic immunization. Only 10.6% of the children were highly protected. The highest proportion of persons fully protected was found in persons aged 6 (26.9%) and 5 (23.5%) years. However, absence of protective antibodies was more often found in children aged 10 (45.6%), 12 (37.8%) and 11 (37.5%) years. There were no statistically significant differences in results in relation to gender. The diphtheria immunity gap among children in Maranhão, Brazil is especially worrying, as it indicates the lack of population protection by herd immunity among children and suggests high risk of outbreaks. This work indicates a need to conduct a broad based study, and to address the problem to prevent eventuality of an epidemic.

Keywords: *Corynebacterium diphtheriae*, diphtheria, immunization, diphtheria antitoxin