Seroprevalence of Antibody Against Diphtheria Among The Population in Khon Kaen Province, Thailand

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Abstract

To assess diphtheria immunity in the northeastern region of Thailand, a seroepidemiological survey was undertaken in 2011 from 516 healthy individuals (age range 2-87 years) in Khon Kaen province. Diphtheria antitoxin levels were measured by enzyme-linked immunosorbent assay and titers of ≥0.1 IU/mL were considered to be protective antitoxin levels. Among the studied population, 94.8% have fully protective levels. The younger population (age range 2-19 years) has higher diphtheria immunity with seroprotection rates of 96.8% to 97.9%, compared with the adult population. The proportion of protective diphtheria antitoxin levels declines to 88.3% to 91.9% in the middle-aged group (20-50 years), and appeared to be higher again in the older age-group(50-70 years). To avoid epidemic spreading, promoting immunization booster programs will be helpful, especially among the adult population (20-50 years). Finally, this study may serve as a valuable guide in deciding exactly which age-groups should be targeted by such an effort.

Keywords
diphtheria, diphtheria antitoxin, serological survey, Thailand

Introduction

Diphtheria is an acute toxin-mediated disease, caused by Corynebacterium diphtheria, which contributes to various complications, including death. The most common morbidities are myocarditis, neuritis, and respiratory suffocation due to airway obstruction. The overall case fatality rate for diphtheria is 5% to 10%, with high death rates (up to 20%) among children younger than 5 years and adults older than 40 years. Immunity against diphtheria is antibody mediated (primarily of the immunoglobulin G [IgG] type) and induced by diphtheria toxin, produced by