Case Report – Editorial Comment

Is Sri Lanka ready to deal with a potential diphtheria outbreak? A possibility in countries with high immunization coverage

Jennifer Perera[1]

Sri Lankan Journal of Infectious Diseases 2011 Vol.1 (1); 32-33

DOI: http://dx.doi.org/10.4038/sljid.v1i1.3214

Keywords : Diphtheria, Immunization

Humans are the only natural host for *C. diphtheriae,* and transmission occurs through droplets and close physical contact. In most cases, transmission of *C. diphtheriae* to susceptible individuals results in transient pharyngeal carriage rather than disease. Contamination of skin lesions may result in cutaneous diphtheria. Morbidity and mortality resulting from diphtheria is due to the bacterial toxin that may cause obstructive pseudo-membranes in the upper respiratory tract or toxic myocarditis. Devastating diphtheria epidemics affecting mainly children have disappeared due to good immunization coverage. Additionally, antitoxin, tracheostomy and modern intensive care facilities have dramatically reduced case-fatality rates in diphtheria.

Diphtheria toxoid combined with tetanus and pertussis vaccines (DTwP) has been responsible for reduction of diphtheria cases by>90%[1]. Following the primary immunization series, the average duration of protection is about 10 years. Protective immunity may be boosted through exposure to circulating strains of toxigenic *C. diphtheriae*. Where natural boosting does not occur, booster doses of diphtheria toxoid beyond infancy and early school age are required to maintain protectiveimmunity.[2]

In Sri Lanka the immunization coverage among infants is high (>98% throughout the past decade)[3] and natural boosting is expected to be low. Thus a proportion of the adult population is expected to be susceptible to diphtheria. Revaccination of adults against diphtheria (and tetanus) every 10 years may be necessary to sustain immunity. Currently school children receive a dose of the aTd vaccine at 10 – 15 years of age. To further promote immunity against diphtheria, combined diphtheria toxoid and tetanus toxoid (rather than tetanus toxoid alone) should be used when tetanus prophylaxis is needed following injuries.[1] Unfortunately, diphtheria infection does not always confer protective immunity. Thus it is correct practice to immunize patients with diphtheria toxoid during convalescence. The recommended schedule for primary immunizations

[1] Faculty of Medicine, University of Colombo, Sri Lanka

Address for correspondence : Jennifer Perera , Department of Microbiology, Faculty of Medicine, University of Colombo, Sri Lanka email: *jennifer_perera55@yahoo.com*

of older children, adolescents and adults using the aTd (d=lower potency diphtheria toxoid) combination is 2 doses 1–2 months apart and a third dose after 6– 12 months. Thereafter a booster dose is recommended every 10 years.

There have been several reports on diphtheria outbreaks in countries where childhood immunization coverage has been high[4]. Thus epidemiological surveillance ensuring early detection of diphtheria cases should be in place for optimal treatment and more importantly, for timely detection of outbreaks. The clinicians should have access to laboratory facilities for reliable identification of toxigenic *C. diphtheriae*. A state laboratory, preferably Medical Research Institute (MRI) should have in place facilities for quick diagnosis of suspected cases. Although laboratory investigation of suspected cases is strongly recommended, treatment should not be delayed while waiting for the laboratory results.

Urgent treatment of diphtheria is mandatory to reduce complications and mortality. The mainstay of treatment is intramuscular or intravenous administration of diphtheria antitoxin. Before the introduction of antitoxin in the 1890s, case-fatality rates from some diphtheria outbreaks reached or exceeded 50%. Antibiotics (penicillin or erythromycin) have no impact on established disease but limit further bacterial growth and the duration of corynebacterial carriage that often persists even after clinical recovery. Thus adequate quantities of diphtheria antitoxin should be available at a designated centre for timely management of cases in the island.

References:

1. World Health Organisation. *Weekly Epidemiological Report* 2006;3(81): 21–32
2. Kjeldsen K, Simonsen O, Heron I. Immunity against diphtheria 25-30 years after primary vaccination in childhood. *Lancet* 1985; 1(8434):900-2.
3. EPI Fact sheet, Sri Lanka, July 2011, Regional Office of South East Asia, World Health Organisation.
4. GalazkaA. Implications of the diphtheria epidemic in the former Soviet Union for Immunization programs. *Journal of InfectiousDiseases*2000; 181[Suppl1]:S244–8.