Bacterial Aetiology of Pneumonia in Children with Special Reference to the Prevalence of *Staphylococcus aureus*

By

Maduwe Arachchillage Dayawansa Bandara Navaratna

M.B.B.S (Sri Lanka)

Department of Microbiology

Faculty of Medicine

Peradeniya

A Thesis Submitted for the

Degree of Master of Philosophy

in

The Faculty of Medicine

University of Peradeniya

June 1994

Abstract

Acute lower respiratory tract infection (ALRI) is a major cause of morbidity and mortality in children in developing countries. However, it's aetiology in Sri Lanka has not been studied widely. In the absence of aetiological data, clinicians in Sri Lanka manage patients with pneumonia only on empirical grounds.

From May 1990 to February 1992, 148 children admitted to the General Hospital Peradeniya were studied to define the clinical presentation, course, and response to treatment and to determine the likely aetiological agents.

Cough, refusal of feeds, fever and rapid breathing were the common symptoms. Tachypnoea, crepitations, increased respiratory effort and diminished breath sounds were the common signs observed in these patients.

The results of this study demonstrate that the clinical diagnosis of pneumonia could be significantly improved at a tertiary hospital level if the WHO criteria for diagnosis of pneumonia are used accurately.

33 blood cultures, 8 pleural effusions, 29 sputum and 89 nasopharyngeal aspiration (NPA) were cultured and examined for known bacterial pathogens including Streptococcus pneumoniae, Haemophilus influenzae and Staphylococcus aureus. Of the specimens cultured, 47 were positive for Str.pneumoniae, 11 for H.influenzae and 2 for Staph. aureus.

These results suggest that pleural fluid culture is the most sensitive method in patients with pleural effusion and the use of NPA as a method of diagnosing bacterial aetiology of pneumonia. The most common treatment used in the patients was penicillin with cloxacillin. Nearly 50% of patients received both drugs. The use of antistaphylococcal drugs in the initial treatment regime of ALRI in children needs reappraisal in view of the low isolation rate of Staph. aureus in this group of patients.

To diagnose staphylococcal infections, antigen detection using CIE was tried. Preparation of rabbit antiserum for Staph. aureus cell wall antigen was successfully carried out by using disintegrated cell walls and Freunds complete adjuvant. It was possible to demonstrate the presence of cell wall antigen by CIE using this antiserum in 6 of 8 (75%) sera of patient's with staphylococcal bacteraemia. All sera tested from patients with pneumonia gave negative results. The present study revealed the possibility of detecting cell wall antigen in diagnosis of staphylococcal infections.