

ABSTRACT

A Cross-sectional Study of the Aetiology of Selected Bacterial Pneumonia in
Humans in Trinidad.

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Bacterial causes of pneumonia include *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus*, Gram Negative Enteric Bacteria (GNEB), *Legionella pneumophila*, *Chlamydia pneumoniae* and *Mycoplasma pneumoniae*. Pneumonia is a leading cause of death in Trinidad. This project determined the frequency of these seven bacteria in patients with pneumonia, investigated the relationship between pneumonia and selected risk factors, and determined the antibiograms of pathogens isolated.

Sputum and/or serum and demographic data were collected from 151 patients, diagnosed with pneumonia. Sputum was cultured for *S. aureus*, GNEB, *H. influenzae*, *S. pneumoniae*, *L. pneumophila* and *M. pneumoniae*. Sera were tested for *L. pneumophila* Ig M, *M. pneumoniae* Ig M; and *C. pneumoniae* Ig M by enzyme immunoassay (EIA). *Chlamydia pneumoniae* Ig M and acute Ig G were tested by microimmunofluorescence (MIF). Antimicrobial resistance of isolates was determined using the disc diffusion method. All analyses were done using the Statistical Package for Social Sciences (SPSS), version 9.

Of a total of 124 sputum samples tested, 8 (6.5%) were positive for *S. aureus*, 20 (16.1%) for GNEB, 2 (1.6%) for *S. pneumoniae* and 1 (0.8%) for *H. influenzae*. By using serum samples, the prevalences of antibodies were: 28.8%

(36 of 125) for *M. pneumoniae* Ig M, 34.4% (43 of 123) for *C. pneumoniae* Ig M/acute IgG and 1.6% (2 of 128) for *L. pneumophila*.

Hospitals, gender and ethnicity did not significantly ($P>0.05$; χ^2) affect the prevalence of the bacteria assayed for. However, *C. pneumoniae* had statistically significantly ($p=0.043$; χ^2) higher prevalence (23.3%) in patients under 21 years compared with other age groups. Also, the prevalence of GNEB was higher (46.7%) in patients over 70 years. The difference was not statistically significant ($p=0.116$; χ^2). Overall, the prevalence of various bacteria assayed was not statistically significantly ($p>0.05$, χ^2) affected by co-morbidities and signs/symptoms, nor was the difference in prevalence of bacteria across co-morbidities and symptoms.

Twenty-five percent (2 of 8) of the *S. aureus* isolated were methicillin-resistant strains.

It is concluded that the prevalence of *C. pneumoniae* infection was high in pneumonia cases in Trinidad with highest prevalences detected in patients under 21 years. GNEB infection was most prevalent amongst patients over 70 years. Generally, signs/symptoms and co-morbidities were not significantly associated with bacterial infections. Gentamicin and levofloxacin seemed to work well against pneumonia due to gram-negative and gram-positive bacteria.

Keywords: Nabeetha Aarti Nagalingam; Pneumonia; Bacteria; Trinidad; Antimicrobial Agents