Guidelines for antimicrobial treatment of community acquired pneumonia in adults

This issue of the *Canadian Journal of Infectious Diseases* contains the report of a conference convened to develop guidelines for the empirical antimicrobial treatment of community acquired pneumonia in adults (page 25).

The first question that one might ask is why is there a need for such guidelines? About half the cases of community acquired pneumonia are of unknown etiology, even in the setting of research studies designed to determine the etiology of such cases of pneumonia. In the usual clinical setting an etiological diagnosis of pneumonia is made much less frequently. Often information obtained from routine clinical tests such as sputum Gram stain and culture can be misleading.

This is particularly so in the case of elderly patients especially those from nursing homes who have colonization of the upper airway with aerobic Gram-negative bacilli. Isolation of these organisms from sputum is often interpreted as evidence that this organism(s) is causing the pneumonia. In our hospital over half the patients who are admitted with nursing home acquired pneumonia receive aminoglycoside therapy. Indeed erythromycin, penicillin, second generation cephalosporin and aminoglycoside are the antibiotics used most commonly to treat patients with community acquired pneumonia requiring admission to hospital (1). Many patients receive two or more antibiotics during their hospital stay. Pneumonia is a serious illness with a mortality rate of up to 20% (1). There is marked variation in almost all facets of the diagnosis and treatment of pneumonia from area to area even within the same province. Consider the rate of hospitalization for pneumonia, the number of chest radiographs, arterial blood gas analyses and length of stay.

For these reasons it is appropriate to develop guidelines to assist the practitioner in making the best possible choice of antibiotic. The next step should be to develop criteria to aid in the admission and discharge decisions and to provide care maps for all aspects of the management of pneumonia.

The next question to ask is, are the proposed guidelines useful? In the absence of data from randomized controlled clinical trials it is impossible to answer this question. Such studies are urgently needed. Massaro et al (2), in a retrospective study of the treatment of community acquired pneumonia at the New England Medical Center from 1988-91, found that patients who received ceftriaxone as the only parental antibiotic had a significantly shorter length of stay (median seven days) compared with patients who received any other antibiotic regimen (median nine days).

The guidelines are based on four key elements:

- The severity of the pneumonic illness
- The site of acquisition of the pneumonia
- The presence of comorbid illnesses
- The place at which therapy will be given, i.e., at home, hospital or nursing home.

Recognition of the severity of the pneumonic illness is a key factor in whether the patient should be admitted to hospital. These guidelines do indicate features that have been validated in prospective studies as indicating the severity of the pneumonia; however, no guidelines are given as to who should be admitted to hospital. Undoubtedly patients who have severe pneumonia will be admitted to hospital, but we know from studies that many patients with mild pneumonia are admitted to hospital. What is needed is a severity of illness scaling system for pneumonia that has been validated in prospective studies.

The guidelines categorize patients who will be treated as outpatients, those who will be treated in hospital and those who will be treated in a nursing home.
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home. Each category is further subdivided, for example the outpatients are divided into those who were previously well and are younger than 65 years, and those who have comorbid illness and are older than 65. It is unlikely that there will be any disagreement about the choice of empiric therapy for the patients who were previously well. Some clinicians still prefer to categorize those with comorbid illness into typical and atypical pneumonia based on a number of clinical features. These features are neither sensitive nor specific. If sputum is available, a Gram stain is a useful tool for predicting the likely infecting organism and therapy can be altered appropriately.

For patients who are admitted to hospital and who are not ill enough to be treated in an intensive care unit the guidelines are to initiate treatment with a second or third generation cephalosporin plus or minus a macrolide with or without rifampin. This leaves a lot of room for judgement on the part of the physician.

For patients who are admitted to an intensive care unit and need empiric therapy it is appropriate to initiate therapy with a macrolide plus rifampin and a third generation cephalosporin that has antipseudomonal activity. These patients are so ill that they often require endotracheal intubation and bronchoscopy is carried out. This subgroup of patients usually has an etiological diagnosis made (about 80% of the time) and therapy can be modified within 48 to 72 h when culture results are available.

The guideline that is likely to cause most debate is that for the nursing home acquired pneumonia. Published studies of patients with nursing home acquired pneumonia do not provide data enabling us to be definitive in our recommendations for treatment. There are also major philosophical and ethical issues in the treatment of nursing home acquired pneumonia. Is pneumonia the old man's friend or is it the old man's friend only after transfer to a hospital, and after days or weeks of antibiotics and diagnostic tests?

What is urgently needed is a study of nursing home patients in which samples of respiratory secretion free from upper airway contamination are obtained for culture. In order to do this bronchoscopy with a protected bronchial brush sample is necessary. I consider trans-tracheal aspiration too risky as a routine procedure in this group of patients. The mortality rate among patients with nursing home acquired pneumonia who require admission to hospital is high - up to 40% in our studies. Given this high mortality rate it is critical that we define the causes of pneumonia in this population. It is my opinion that aerobic Gram-negative rods are overestimated as a cause of pneumonia among nursing home patients.

These guidelines represent a good start and they should be modified as data from prospective studies already in progress become available. It is also critical to provide guidelines about the many other facets of the management of pneumonia – admission, discharge, duration of parenteral antibiotic therapy, number and type of laboratory investigations.

REFERENCES

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