Practical Considerations and Guidelines for the Management of Community-Acquired Pneumonia

Roger G. Finch and Mark A. Woodhead

1. Department of Microbiology and Infectious Diseases, City Hospital and University of Nottingham, Nottingham, England
2. Department of General and Respiratory Medicine, Manchester Royal Infirmary, Manchester, England

Contents

Summary ........................................... 31
1. Definitions of Community-Acquired Pneumonia (CAP) .................. 32
2. Epidemiology .................................. 32
3. Aetiology ...................................... 32
4. Diagnostic Issues ................................ 34
5. Principles of Management .................................................. 35
  5.1 Severity Assessment .............................................. 35
6. Drug Management ............................................... 36
  6.1 International Guidelines ........................................... 37
  6.2 Recommendations ............................................... 39
    6.2.1 Empirical Drug Therapy ................................ 40
    6.2.2 Staphylococcus aureus Pneumonia ...................... 41
    6.2.3 Definitive Therapy of Microbiologically Confirmed CAP .... 42
7. Nondrug Management ............................................... 42
8. Response to Therapy and Subsequent Management ....................... 42
9. Failure to Respond to Initial Therapy .................................. 43
10. Conclusions ............................................. 43

Summary

Community-acquired pneumonia (CAP) is a common condition which has a significant mortality. The management of a patient with CAP is centred around assessment and correction of gas exchange and fluid balance together with administration of appropriate antibiotics. Up to 10 different pathogens regularly cause CAP, of which Streptococcus pneumoniae is the most important. These different pathogens cannot be distinguished by clinical features or simple laboratory tests. Microbiological tests are slow and insensitive, so empirical therapy is necessary, at least initially. Accurate assessment of illness severity is the most important factor determining initial management, since this assists the decision of whether to admit the patient to hospital in addition to guiding antibiotic choice and route of administration.

Two different approaches to severity assessment are outlined. Our antibiotic
recommendation for empirical therapy for the patient managed at home and the previously fit patient admitted to hospital is amoxicillin. Amoxicillin/clavulanate plus a macrolide is our choice for the severely ill previously fit patient and a third-generation cephalosporin plus a macrolide is recommended for the severely ill patient with comorbidity. Alternative pathogens and specific treatment regimens are also described. There may be several causes of treatment failure, and in patients who fail to respond to therapy, it is essential to review all the initial clinical and laboratory information, which if necessary must be repeated.

Community-acquired pneumonia (CAP) is a common condition which is caused by a variety of microbial pathogens with differing antibiotic sensitivities. It presents as a spectrum of disease ranging from a simple febrile respiratory infection to a severe and fulminating illness leading to death. It is therefore managed in a number of different settings by a variety of different physicians, including general practitioners, and those with a special interest in general (internal) medicine, chest disease, infectious disease, healthcare of the elderly, paediatrics and intensive care. Much has been learned about CAP and how it should be managed, especially from studies performed over the past 15 years. It is the purpose of this article to produce a synthesis of this information for use by those involved in the care of patients with CAP.

1. Definitions of Community-Acquired Pneumonia (CAP)

A reasonable working definition of CAP is an acute illness acquired in the community with symptoms suggestive of a lower respiratory tract infection (e.g. fever, cough, sputum – which may be purulent, chest pain, dyspnoea), together with the presence on a chest radiograph of intrapulmonary shadowing which is likely to be new and has no clear alternative cause (e.g. lung cancer, pulmonary oedema). Although chest signs are not included in the definition because the correlation with radiographic consolidation is poor,[1] in the community, where many patients will not have a chest radiograph performed, a clinical definition of CAP is necessary. Symptoms suggestive of a lower respiratory tract infection together with the presence of new focal signs on chest examination has been one definition used in clinical studies in the community.[2] Patients with known immune compromise (sufficient for a risk of opportunistic pathogens) or malignant disease and those discharged from hospital within the previous 10 days are excluded from the definitions.

2. Epidemiology

In adults, CAP occurs in 1 to 3 per 1000 of the adult population per year.[2] The incidence is higher below the age of 5 years and rises from the age of 50 upwards, being especially common in old age.[3] In addition to age, chronic disease (especially lung disease), alcoholism, smoking and institutionalisation are risk factors for CAP.[4]

About 80% of cases are managed in the community, where the mortality rate is 1 to 2%. Of those admitted to hospital 5 to 10% will die, rising to 50% in the group who are ill enough to require intensive care.[5-10] There is a seasonal variation in the frequency of CAP, which in temperate climates is more common in the winter months. Individual causative pathogens have their own unique epidemiological characteristics (table I) which may sometimes be helpful in individual patients for directing initial therapy.

3. Aetiology

The common pathogens and their frequencies in prospective studies of CAP aetiology are shown in table II.[2,5-35] Streptococcus pneumoniae is the most frequently identified pathogen in virtually every study, whether in the community, hospital or intensive care unit (ICU), accounting for up to 75%