

Pneumonia in the elderly: diagnosis and management

Pneumonia is more likely to be fatal or cause more profound disease in elderly patients than in younger age groups because of the increased incidence of comorbidities in this population. The diagnosis and management of pneumonia is also likely to be more complicated in this patient group because of these factors. **Dr Antony Crockett** looks at the potential causes of this condition and discusses the management options.

DR ANTONY CROCKETT is a General Practitioner and a Hospital Practitioner at the Chest Clinic, Great Western Hospital in Swindon

Pneumonia is common in the elderly population. It is more likely to be fatal, or cause more profound and longer illness, in older patients compared with younger ones because of the increased incidence of comorbidities (e.g. diabetes or chronic obstructive pulmonary disease (COPD)) in the elderly; this patient group are also likely to be more vulnerable to pneumonia because they tend to be less mobile and well nourished than their younger counterparts. The diagnosis and management of pneumonia may be complicated by these factors, and there is often a dilemma of whether home or hospital treatment is best for the patient.

Definition

Pneumonia is an infection or inflammation of the lungs and includes bronchopneumonia and lobar pneumonia. In practice, the diagnosis and management of pneumonia in the community is less dependent on the anatomical site of the infection than on its severity and effect on the individual patient.

Epidemiology

In the UK, a general practitioner (GP) will see an average of 10 cases of pneumonia annually. Incidence rates are about five to 11 per 1000

patients¹, rising to 34 per 1000 patients in those aged over 75 years². Hospital admission rates in the elderly vary from 10 to 50 per cent³. Most cases occur in the winter months.

Causes

One of the most common bacterial causes is streptococcus pneumoniae, which accounts for 75 per cent of cases. Other common bacterial causes include haemophilus influenzae (H.influenzae) and moraxella catarrhalis. H.influenzae, as a cause of pneumonia, is more common in older patients; mycoplasma pneumoniae is more common cause of infection in younger patients⁴.

COPD predisposes some patients to pneumonia, which is usually bacterial (especially H.influenzae or moraxella catarrhalis), viral or a combination of both⁵. In terms of viruses, influenza A or B, and parainfluenza are all potential causes of pneumonia. However despite the causes listed here, in many cases of pneumonia, no causative organism can be identified.

Diagnosis

One of primary symptoms and signs is a cough. This is often with coloured sputum, but it is usually

unproductive initially. Another sign of infection is fever, although this is often absent in the elderly.

Other signs/symptoms include:

- > Pleuritic chest pains
- > Tachypnoea and tachycardia
- > Dyspnoea
- > Confusion
- > Drowsiness
- > Focal crackles and diminished breath are the sounds made if there is lobar consolidation; widespread crackles, often shifting with coughing are the sounds if there is bronchopneumonia
- > Abdominal pain may be the dominant symptom in lower lobe pneumonia.

Hypotension indicates septicaemia or dehydration, or both. There may also be signs of a pleural effusion, which may occur as a complication in up to 40 per cent of cases (especially in lobar pneumonia)⁶. Elderly patients may present with only minimal symptoms, such as mild confusion or fever, and both respiratory and non respiratory symptoms are less commonly reported by elderly patients. Haemoptysis is not a usual feature of pneumonia and its presence should always prompt consideration of lung cancer or tuberculosis (TB).

Differential Diagnosis

COPD

In cases where there is an exacerbation of COPD symptoms, there will be history of COPD; consider adding inhaled bronchodilators and oral steroids in this instance.

Pulmonary embolus

It can be very difficult to distinguish pulmonary embolus from pneumonia without imaging and investigations. However, this diagnosis should be considered if the patient is not responding to therapy.

Pulmonary oedema

Pulmonary oedema is usually secondary to coronary heart disease or dysrhythmia. Heart disease or dysrhythmia can cause acute dyspnoea and cough. However, there is often orthopnoea as well and the characteristic signs of a raised jugulovenous pulse; tachycardia and basal crepitations are usually present with pulmonary oedema.

Tuberculosis

When the differential diagnosis is made, TB can often be overlooked. Pulmonary TB may present with a productive cough, but there are often systemic symptoms such as night sweats and weight loss. The symptoms may be a slow insidious onset over a period of weeks. Pulmonary TB can be primary or secondary; the latter may occur in patients who are unaware of previous infections or who have forgotten the episode. A chest X-ray usually distinguishes pulmonary TB from acute pneumonia.

Aspiration pneumonia

This is common in elderly – especially if there is additional dementia, alcoholism or swallowing problems (such as following a stroke).

Recurrent pneumonia

If there is recurrent pneumonia affecting the same lobe, exacerbation of bronchiectasis should be considered. Lung cancer should be considered when the pneumonia is recurrent or fails to respond to therapy. In patients who are smokers or ex-smokers, lung cancer should be considered even after a single episode of pneumonia.

Confounding factors

Comorbid disease (such as COPD, bronchiectasis, and diabetes) and other disorders (such as immobility, poor nutrition and alcohol excess) can exacerbate the infection. There are also ‘situation factors’, e.g. poor living conditions – especially damp houses with solid fuel heating, which make the pneumonia worse⁷.

Management

In primary care, the first decision is to whether to treat at home or admit to hospital. The patient should be examined and an assessment should be made about the severity of the infection and of the current social situation. Patients in residential or nursing homes should be diagnosed and managed as those in their own homes, as the causative pathogens are likely to be the same⁸.

The confusion, respiratory rate and blood pressure score in patients over 65 years (CRB-65) is a useful scoring system, endorsed by the British

Thoracic Society (BTS)⁹, which helps make the decision about where to treat the patient. The system is an assessment of the following:

- > Confusion
- > Respiratory rate >30
- > Systolic blood pressure <90
- > Diastolic blood pressure <60.

Score each criterion 0 for not present or one for present. An overall score of 0 indicates that home management is appropriate, while an overall score of one to two indicates admission to hospital should be considered. A score of three to four suggests admission is probably needed¹⁰.

Treatment

If a decision has been made, with the patient and their carers or family when appropriate, to manage the patient at home, treatment is usually antibiotics. These are given empirically if there is sufficient symptoms and signs to diagnose pneumonia.

With most patients that have an infection with no confounding factors, there is no indication to send sputum cultures to be tested as the result is unlikely to affect the initial management¹¹. Amoxicillin 500mg three times a day is recommended first line therapy (erythromycin 500mg four times a day if the patient is allergic to

penicillin). There is no advantage in giving quinolones or cephalosporins as first line therapy⁴. The patient should also be told to rest, have plenty of fluids and be given analgesia and antipyretics as needed. If managing a patient at home, a follow-up visit 48 hours later is recommended¹². Vaccinations against influenza¹³ and pneumococcus are advised – the latter vaccine reduced mortality from pneumococcal pneumonia in elderly patients by 32 per cent¹⁴.

Prognosis

The following features are associated with a poor prognosis in the elderly¹⁵:

- > Absence of fever
- > Tachypnoea
- > Confusion
- > Shock.

Pulse oximetry should be used if possible, as levels below 92 per cent indicate the risk of more severe disease and may indicate that admission to hospital is advisable¹⁶. Overall mortality rates are about one per cent, but the rates rise with increasing age and may reach 12 per cent in patients aged 75 years or more³. In patients aged 65 years or more, six per cent of deaths are caused by pneumonia, but many other patients develop pneumonia in the terminal phase of other illnesses¹⁷.

Key points

- > Pneumonia in the elderly is common and is not infrequently fatal.
- > Its clinical presentation may differ from the typical presentation in younger patients, with less dramatic or specific symptoms and signs. Confusion or drowsiness may be the only symptom or sign.
- > The presentation, clinical course and prognosis may be altered in elderly patients, either because of concomitant diseases or disorders, or because of environmental factors such as poor quality housing.
- > The decision to manage an elderly patient with pneumonia in their own home or in hospital must be carefully weighed for each individual – taking into account not only the clinical severity of the infection but confounding medical and environmental factors, and the available social support. A scoring system such as the CRB-65 score may help in making this decision.
- > Follow-up to resolution is recommended, as elderly patients with pneumonia may relapse or fail to respond to therapy.
- > Reasons for the infection should be sought, especially if the infection is recurrent, and the possibilities of (especially) lung cancer, TB, bronchiectasis and COPD should be considered.

Conclusion

Pneumonia is a common disease in elderly patients, and frequently results in hospital admission, with a mortality rate of up to 12 per cent. Diagnosis and management is often straightforward, but confounding environmental or medical factors often complicate the clinical presentation and will determine the necessary management. Primary care teams are well placed to decide where each patient is most appropriately managed, and to provide that care for patients managed at home.

Conflict of interest: Dr Crockett has received honoraria for lecture fees and received expenses for hospitality and travel costs to international conferences, and has participated in research sponsored by various companies. These are: AstraZeneca, GlaxoSmithKline, 3M, Viatris, Boehringer Ingelheim, IVAX, Schering Plough, Novartis and MSD.

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