

Bacterial Pneumonia in Older Adults



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KEYWORDS

• Pneumonia • Community-acquired • Elderly • Risk factors • Treatment • Etiology

KEY POINTS

- The incidence of pneumonia increases with increasing age.
- Risk factors for pneumonia include age, male sex, presence of chronic obstructive lung disease, congestive heart failure, smoking, and preceding viral infection. Use of inhaled corticosteroids, antipsychotic drugs, and anticholinergics seem to increase the risk of pneumonia, whereas angiotensin-converting enzyme inhibitors or angiotensin receptor blocking agents seem to be protective.
- Silent aspiration is common in elderly patients with pneumonia.
- Recent studies using multiplex polymerase chain reaction show a predominance of viruses, including rhinovirus, in studies of the cause of pneumonia. Bacterial and viral coinfection is frequent in elderly patients with pneumonia.
- Elderly persons with pneumonia, especially those who are residents of nursing homes, are less likely to report various symptoms of pneumonia as compared with younger patients. The presence of dementia, aphasia, or cognitive impairment contributes to such under reporting.
- In a patient with symptoms and signs of pneumonia, the absence of an opacity on chest radiography should not be construed to mean the patient does not have pneumonia. Instead the chest radiograph should be repeated in 24 hours or a computed tomography scan of the chest can be carried out. For elderly persons who are immobile, ultrasonography of the chest is probably the best diagnostic modality to determine if pneumonia is present.
- Severity-of-illness scoring systems and the use of biomarkers may help in deciding on the site of care, but there is no substitute for clinical judgment.
- Although dated, the guidelines from the Infectious Diseases Society of America and the American Thoracic Society are still used to determine empirical antimicrobial treatment of pneumonia.
- The use of glucocorticoids in severe pneumonia is an evolving area with little to no data in elderly patients.

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- Physiologic stability should be achieved before discharge.
- Pneumococcal pneumonia is often complicated by one or more cardiac events likely because of the ability of *Streptococcus pneumoniae* to damage the myocardium. Long-term mortality due to pneumonia may be more pronounced in young adults.

INTRODUCTION

Bacterial pneumonia is one of the most common infections in the elderly adult. Pneumonia is a disease of the alveoli and respiratory bronchioles caused by an infectious agent.¹ Pathologically, it is characterized by increased weight and replacement of the normal lung sponginess by induration (consolidation). This consolidation may involve most or all of a lobe or it may be patchy and localized around bronchi (bronchopneumonia). On microscopic examination, pneumonia caused by bacterial agents shows dense alveolar infiltration with polymorphonuclear leukocytes. Clinically, however, pneumonia is usually defined as a new opacity on chest radiograph and the presence of at least 2 of the following: fever, cough, sputum, pleurisy, temperature greater than 38°C, crackles, consolidation (dullness on percussion, bronchial breathing, egophony).¹

The cause of the pneumonia is usually classified as definite, probable, or possible as modified from Marston and colleagues.² The pathogen is said to be the definite cause of pneumonia when it is isolated from blood or pleural fluid; there is a 4-fold increase in antibody titer to *Legionella pneumophila*, *Mycoplasma pneumoniae*, or *Chlamydomphila pneumoniae*; it is probable when *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Haemophilus influenzae*, or *Pseudomonas aeruginosa* is isolated from purulent sputum (sputum that has moderate or many neutrophils seen on gram stain) and possible when a pneumonia pathogen other than *Legionella* is isolated from purulent sputum in the absence of a compatible gram stain. We have now moved into the era of molecular diagnostics with multiplex polymerase chain reaction (PCR) as discussed later.

The pneumonia is also characterized as to the site of acquisition: community, nursing home, or hospital. The discussion in this article is confined to community-acquired pneumonia (CAP). Emphasis is placed on bacterial pneumonia in the elderly population.

EPIDEMIOLOGY

A considerable amount of data on the epidemiology of pneumonia has emerged in the last 3 decades. In Halifax County, Nova Scotia in the late 1980s, the rate of pneumonia requiring admission to the hospital was 1 per 1000 overall, for those 75 years of age or older it was 12 per 1000, and for the nursing home residents it was 33 per 1000.³ In another study, the overall rate of pneumonia was low until 65 years of age when an abrupt increase occurred from 1 per 1000 to 60 per 1000 for those aged 90 years and older.⁴ The percentage of patients presenting to the emergency department with pneumonia who were admitted to the hospital increased with increasing age from about 20% for those aged 20 to 24 years to 80% for those aged 80 years and older. The percentage of patients admitted to intensive care decreased with increasing age from 20% for those aged 20 years to 10% for those 80 years and older.⁴ Rates of admission were higher for men than women from 70 years of age onward. There was a seasonal effect, with the overall rate of pneumonia doubling in the winter months.⁴

Jackson and colleagues⁵ studied 46,237 seniors enrolled in Group Health in Seattle and followed them for 3 years. The overall rate of CAP was 18.2 per 1000 for those

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