Pneumococcal Disease

Clinical Features of Pneumococcal Disease

Health Care Providers

FEBRUARY 6, 2024

KEY POINTS

- *Streptococcus pneumoniae* can cause infections ranging from mild to serious, even deadly.
- Serious clinical syndromes can result in long-term sequalae or death.
- Complications from mild clinical syndromes are not common.

Clinical presentation

The **more serious** clinical syndromes of pneumococcal disease include:

- Bacteremia
- Meningitis
- Pneumonia

Less serious, but more common syndromes, include acute otitis media and sinusitis.

Variations by age

Pneumonia is the most common clinical presentation of pneumococcal disease in adults.

Acute otitis media is the most common clinical presentation of pneumococcal disease in young children.

Common symptoms

Bacteremia

Bacteremia may present as fever ≥39°C in otherwise well-appearing children.

Clinical features of bacteremia without focus depend on the primary site of infection.

Meningitis

The clinical symptoms, cerebrospinal fluid (CSF) profile, and neurologic complications are similar to other forms of purulent bacterial meningitis.

Symptoms may include:

- Fever
- Headache
- Irritability
- Lethargy

- Nuchal rigidity, cranial nerve signs, or seizures
- Vomiting

Pneumonia

The incubation period of pneumococcal pneumonia is short, about 1 to 3 days.

Symptoms generally include an **abrupt onset** of fever and chills or rigors.

Other common symptoms include:

- Cough productive of mucopurulent sputum
- Dyspnea
- Hypoxia
- Malaise or weakness
- Pleuritic chest pain
- Rusty sputum
- Tachypnea or tachycardia

Headaches, nausea, and vomiting occur less frequently.

Acute otitis media

Clinical manifestations may depend on the age of the patient.

In young children, ear pain may be shown as

- Change in sleeping or eating habits
- Holding or tugging at the ear
- Irritability

Ear drainage, fever, and hearing loss may be present.

Sinusitis

Together with fluid accumulation in paranasal sinus cavities, acute bacterial sinusitis is often triggered by

- Allergens in the atmosphere
- Obstruction of orifices by viral infection
- Pollutants

Compared to viral sinusitis, bacterial sinusitis tends to have

- Longer duration of symptoms (e.g., ≥10 days)
- More severe clinical manifestations (e.g., fever ≥39 °C, purulent discharge, pain ≥3 days)

Complications

Bacteremia

The overall case-fatality rate for bacteremia is about 20%. It may be as high as 60% among patients who are older adults.

Patients with asplenia who develop bacteremia may experience a fulminant clinical course.

Meningitis

Systemic complications can occur:

- Disseminated intravascular coagulation
- Organ failure

- Septic shock

The case-fatality rate of pneumococcal meningitis is about 8% among children and 22% among adults.

Neurologic sequelae can happen in as many as 50% of pneumococcal meningitis survivors. These sequelae include:

- Behavioral disabilities
- Hearing loss
- Motor deficits
- Seizures

Pneumonia

Complications of pneumococcal pneumonia include:

- Empyema
- Pericarditis
- Respiratory failure

The case-fatality rate of pneumococcal pneumonia is 5–7%. It may be much higher among older adults or people with underlying medical conditions.

Acute otitis media

Complications of pneumococcal otitis media may include mastoiditis and meningitis.

Sinusitis

Sinusitis can rarely spread beyond the paranasal sinuses and nasal cavity into surrounding structures such as the

- Central nervous system
- Orbit
- Surrounding tissue

Resources

Pneumococcal disease chapter of the Pinkbook

SOURCES

CONTENT SOURCE:
National Center for Immunization and Respiratory Diseases; Division of Bacterial Diseases