PNEUMONIA

Pneumonia encompasses many different diseases that cause infection or inflammation in the lungs. It can be caused by a variety of agents, including bacteria, viruses, mycoplasmas, fungi, and others.

FACTS AND FIGURES:

Pneumonia is an important cause of morbidity and mortality in the United States, with millions of cases reported yearly. It accounts for over 1,000,000 hospitalizations and over 1,000,000 emergency room visits.

TYPES OF PNEUMONIA:

The types of pneumonia include viral pneumonia, bacterial pneumonia, and mycoplasma pneumonia. Other, less common types, include Pneumocystis carinii pneumonia, which is caused by a fungus, predominantly seen in patients with AIDS, chemical pneumonia, Legionella pneumonia, eosinophilic pneumonia, and necrotizing pneumonia. Pneumonia can also be caused by inhalation of food, liquids, gases, dust, or fungi.

VIRAL PNEUMONIA:

Approximately 50% of pneumonia cases are believed to be caused by viruses. This type of pneumonia is generally less severe than those caused by bacteria, with symptoms produced similar to those in patients that have influenza, including fever, dry cough, headache, muscle pain, weakness, and increasing breathlessness. This type of pneumonia is often seen in very young patients.

BACTERIAL PNEUMONIA:

Pneumococcus is the most common cause. This type pneumonia is commonly called lobar pneumonia, even though the infection does not usually involve an entire lobe. The lower lobes and posterior segments of the upper lobes are most commonly involved. Bacterial pneumonia can cause serious harm in otherwise healthy people, especially when the body's defenses are weakened. It is a common cause of community-acquired pneumonia. The onset varies from gradual to sudden and the symptoms include fever, shaking, chills, chest pain, fatigue, sweats, productive cough, shortness of breath, tachypnea, and tachycardia.

MYCOPLASMA PNEUMONIA:

This type of pneumonia has characteristics of both bacterial and viral pneumonia, and usually causes a mild and widespread infection. The most prominent symptom is cough, which tends to come in violent attacks. Only a small amount of sparse whitish sputum is characteristically produced. It is a common cause of community-acquired pneumonia in otherwise healthy individuals below 40 years of age, with the highest rate in patients between 5 to 20 years.
RADIOGRAPHIC FINDINGS OF PNEUMONIA

ADENOVIRAL INFECTIONS:

Severe upper respiratory symptoms are often due to adenovirus infections, and even though severe, they often produce no x-ray changes. If pneumonia does develop, typically patchy infiltrates are seen which can be mottled in the peribronchial regions or can be diffuse, homogeneous densities. In most cases, systemic adenopathy is present and hilar adenopathy is also common. In children there may be a diffuse bilateral bronchopneumonia with pronounced hyperinflation of the lungs. Chronic sequelae such as bronchiectasis and unilateral hyperlucent lung can occur (Swyer-James syndrome). This type of pneumonia is unusual in adults, and although the pulmonary involvement may be extreme as viewed on the chest x-ray, the acute illness may not be severe. Resolution usually occurs slowly. The most common infiltrates seen on the chest x-ray are widely scattered patchy or confluent densities, usually in a peribronchial distribution.

VIRAL PNEUMONIA:

A wide variety of appearances can be seen on the chest x-ray, with viral pneumonias, usually including focal alveolar infiltrates or interstitial densities. Other patterns include miliary, nodular or reticular infiltrates, or diffuse perihilar densities. Pleural reaction is rare, and in children a bilateral lower lobe predilection is common. Hilar nodes are enlarged and the chest x-ray may be normal for several days after the onset of symptoms, and when changes on the chest x-ray do occur, they may persist for days or weeks after the patient has clinically recovered.

PNEUMOCOCCAL PNEUMONIA:

This type pneumonia results in an alveolar or air space pneumonia with a predilection for basilar segments and posterior segments of the lung. The onset of symptoms is usually sudden with the infiltrate on the CXR beginning peripherally and spreading centrally. The usual appearance is a homogeneous dense consolidation of a lower lobar segment. The density commonly extends to the pleural surface. Air bronchograms are commonly seen and represent fluid or exudates in the alveoli. A mild degree of atelectasis may also be seen due to bronchial involvement and obstruction. During resolution the density becomes mottled, scattered, patchy, and irregular in contrast to its homogeneous appearance earlier in the disease process. The infiltrate usually clears completely in one to three months.

COMPLICATIONS OF PNEUMOCOCCAL PNEUMONIA:

1) Pleurisy with effusion:
   - The commonest complication.
   - Occurs in less than 10% of cases.

2) Empyema
   - Occurs in less than 2% of patients.
   - The thick empyemic fluid has a tendency to loculate, forming circumscribed densities with a convex central border.
   - Resolution is slow.
   - If persistent, pleural calcification may develop.
3) **Pulmonary Abscess:**
   Fortunately, is now a rare complication of pneumonia.
   Initially abscess appears as a circumscribed density as the pneumonia resolves.
   If abscess extends into a bronchus, air fluid levels may occur.

4) **Toxic Ileus:**
   Dilated loops of bowel can be seen along with a distended abdomen.

5) **Rarer Complications:**
   Bronchopleural fistulas, pericarditis with effusion, acute gastric dilatation, congestive heart failure.

**MYCOPLASMA PNEUMONIA:**

Mycoplasma pneumonia may cause up to 50% of all pneumonias in children less than 16 years of age. It typically occurs in young, otherwise healthy adults and, if acute, is usually mild and self limited in most cases, but may be severe with wide spread pulmonary disease. The onset of symptoms is usually gradual, and the radiographic features may be delayed for two to three days after symptoms begin.

Typically, a large variety of infiltrates may occur, with the infiltrates having no particular distinguishing features from viral or pneumococcal pneumonias. The distribution may be segmental or lobar, but can also be interstitial with a reticulonodular or mixed pattern. There is a tendency for the disease to clear in one area and spread in another area, often the opposite lung. In one half of the patients the infiltrates are bilateral and have a predilection for lower lobes. The infiltrates typically are patchy, and there may be a nodular or reticular pattern. Atelectasis may occur and hilar adenopathy is frequent. Pneumatoceles may occasionally form. Pleural reaction, which is common in children, is unusual in adults. They tend to resolve slowly, often persisting for several weeks after the clinical symptoms have disappeared.