

**A CASE STUDY ON PNEUMONIA**

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**ABSTRACT**

Pneumonia is an infection/inflammation in one or both lungs. It can be caused by bacteria, viruses, or fungi. This is a case report of Bilateral Pneumonia of which 41 year male patient was admitted in hospital with illness of fever with chills, cough with expectoration, wheeze, and chest pain. His Past medical history was found to be COPD since 3 years. Past medication history was observed to be Inhalational therapy. Social history convey that he is an alcoholic and smoker since 10 years. On Physical examination body temperature was 102°F. Respiratory rate is 24 CPM. On systemic examination Diagnosis was done with chest x-ray detected white patches on both lungs. Treatment started by giving Antibiotics through IV that is Injection. Ceftriaxone,

Inj. Metronidazole, Inj. Amikacin. Nebulization with duolin and budesonide. And orally through Tab. Paracetamol. After continuing the same medication for 4 more days the patient symptoms of febrile and chest pain was relieved. So, the patient was recovered and discharged.

**KEYWORDS:** Bilateral pneumonia, Past medical history, Case report, Chest x-ray, Treatment, Diagnosis, Injection.

**INTRODUCTION**

Pneumonia is an inflammatory condition of the lung affecting primarily the small air sacs known as alveoli. The alveoli fill with fluid or pus, making it difficult to breathe. Pneumonia is an infection in one or both lungs. Bacterial pneumonia is the most common type in adults (Streptococcus pneumoniae).<sup>[1]</sup>

**Types of pneumonia<sup>[1]</sup>**

**Types by germs:** Pneumonia can be classified according to the organism that caused the infection.

**Bacterial pneumonia:** The most common cause of bacterial pneumonia is streptococcus pneumonia. Chlamydomphila pneumonia and Legionella pneumophila can also cause bacterial pneumonia.

**Viral pneumonia:** Respiratory viruses are often the causes of pneumonia, especially in the young children and older people. Viral pneumonia is usually not serious and lasts for a shorter time than bacterial pneumonia.

**Mycoplasmas pneumonia:** Mycoplasma organisms are not viruses or bacteria, but they have traits common to both. Mycoplasma generally observed in mild cases of pneumonia most often in older and young adults.

**Fungal pneumonia:** Fungal from soil or bird droppings can cause pneumonia in people who inhale large amount of the organisms. They can also cause pneumonia in people with chronic disease or weakened immune system.

One kind of fungal pneumonia is called pneumocystis pneumonia(PCP). This condition generally affects the people weakened immune system such as those with AIDS. In fact, PCP can be one of the first sign of infection with AIDS.

**Types by location<sup>[1]</sup>**

Pneumonia is also classified according to where it was acquired.

**Hospital acquired pneumonia(HAP):** This type of bacterial pneumonia is acquired during hospital stay. It can be more serious than other types, Because the bacteria involved may be more resistant to antibiotics.

**Community acquired pneumonia (CAP):** This refers to pneumonia that was acquired outside the of a medical or institutional setting.

**Types by how they are acquired<sup>[1]</sup>**

Pneumonia can also be classified according to how it is acquired.

**Aspiration pneumonia:** This type of pneumonia occurs when you inhale bacteria into your lungs from food, drink, or saliva. This type is more likely to occur if you have a swallowing problem or if you became too sedate from the use of medications, alcohol, or some types of illicit drugs.

**Ventilator associated pneumonia:** When people who are using a ventilator get pneumonia.

**Epidemiology:** Pneumonia in India can be fatal to all, but is especially dangerous. According to the world health organization(WHO), one in three deaths in India is caused by pneumonia.<sup>2</sup> The world health organization (WHO) estimated that about 1.6 million deaths annually are reported in adults aged over 59 years.<sup>[3]</sup> Indian Burden of Disease accounts for 23% of the global pneumonia burden and 36% of the WHO regional burden.

#### **A study of blood cultures in CAP revealed that**

Streptococcus pneumonia (35.3%) as the commonest isolate, followed by Streptococcus aureus (23.5%), Klebsiella pneumoniae (20.5%), and Haemophilus influenzae (8.8%).<sup>[4]</sup>

**Aetiology:** Pneumonia usually caused by infection with viruses or bacteria and less commonly by other micro-organisms, certain medications and conditions such as autoimmune diseases. Many different germs and other things can cause pneumonia. Main causes of pneumonia include

Bacteria

Viruses

Mycoplasma<sup>[5]</sup>

**Pathophysiology:** Pneumonia usually has an acute progression. Classically, the disease has four stages.

**Congestion:** this stage is characterized histologically by vascular obstruction, intra-alveolar fluid, small numbers of neutrophils, often numerous bacteria. It last about 24hours. During this the lung is heavy and hyperemic.

**Red hepatization or Consolidation:** Vascular congestion persists, with extravasation of red cells into vascular spaces, along with increased numbers of neutrophils and fibrin. The filling of airspaces by the exudate leads to gross appearance of solidification, or consolidation, of

the alveolar parenchyma. This appearance has been likened to that of the liver, hence the term “hepatization”.

**Grey hepatization:** Red cells disintegrate, with persistence of the neutrophil and fibrin. The alveoli still appear consolidated, but grossly the colour is paler and the cut surface is drier.

**Resolution:** the exudate is digested by enzymatic activity, and cleared by macrophages or by cough mechanism. Enzymes produced by neutrophils will liquefy exudates, and this will either be coughed up in sputum or be drained via lymph.<sup>[6]</sup>

**Signs and symptoms:** This include

- coughing that may produce phlegm,
- fever,
- sweating,
- chills,
- shortness of breath,
- chest pain.<sup>[7]</sup>

**Risk factors:** Risk factors include other lung diseases such as cystic fibrosis, COPD, asthma, diabetes, heart failure, history of smoking, weak immune system.<sup>[8]</sup>

**Diagnosis:** Pneumonia is typically diagnosed based on a combination of physical signs, chest X-ray, Sputum culture, Lung ultrasound.<sup>[9,10]</sup>

**Management:** Treatment depends on the underlying cause. Pneumonia believed to be due to bacteria is treated with antibiotics. If the pneumonia is severe, the affected person is generally hospitalized. Oxygen therapy may be used if oxygen levels are low.

Vaccination prevents against certain bacterial and viral pneumonia both in children and Adults.<sup>[9,10]</sup>

## CASE REPORT

A 41 year old male patient was admitted in Guntur government fever hospital with the chief complaints of fever with chills, cough with expectoration following non foul smelling sputum, wheeze and chest pain since 5 days.

His past medical history was found to be COPD for which he is using inhalation therapy since 3 years. His social history conveys that he is an alcoholic and smoker from past 10 years. All other body functions are normal.

His physical examination showed temperature of 102<sup>0</sup>F. Respiratory rate is 24 cycles per minute, hear rhonchi on auscultation. He weighed 55kg.

Diagnosis was done by complete blood count, CXR (chest X-Ray). CBC showed that all the values are normal, but on examination chest X-ray detected white patches on both lungs, which indicated as bilateral pneumonia.



**Fig. Chest X-Ray showing white patches on both lungs.**

**Treatment:** On confirmation, physicians started the treatment by giving antibiotics as follows; Injection Ceftriaxone 1gm intravenous BD, injection Metronidazole 500mg intravenous BD, Injection Amikacin 750 mg intravenous BD, Nebulization with Duolin & Budecort TID, Tablet Paracetamol 500m TID, IVF, Oxygen SOS. After 3 days of treatment patients was observed to be febrile and severity of chest pain also decreased. After continuing the same medication for 4 more days the patients was recovered and discharged.

## DISCUSSION

Pneumonia is a frequent and yet a serious disease for which hospital admission is necessary as the patient has to be regularly monitored by the physicians. The most common cause of pneumonia is *Streptococcus pneumoniae*. Patients with pneumonia can be detected by CBC, Chest X-Ray, Sputum culture or electrolytes. Signs and symptoms like chest pain, fever with chills, SOB, Cough with expectoration also helps in diagnosis. Mostly Pneumonia is bacterial pneumonia may be treated with antibiotics.

## CONCLUSION

Physicians followed the guidelines for the treatment, but patient would recover earlier if more antibiotics were prescribed.

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