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A Case Study: Pneumonia

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Abstract

Pneumonia (from the Greek pneuma, "breath") is a potentially fatal infection and inflammation of the lower respiratory tract (i.e., bronchioles and alveoli) usually caused by inhaled bacteria and viruses has both properties (*Streptococcus pneumoniae*, aka pneumococcus). The illness is frequently characterized by high fever, shortness of breath, rapid breathing, sharp chest pain, and a productive cough with thick phlegm. Pneumonia that develops outside the hospital setting is commonly referred to as community-acquired pneumonia. Pneumonia that develops 48 hours or later after admission to the hospital is known as nosocomial or hospital acquired pneumonia. In this case report we review the presentation and management of pneumonia involving the respiratory system. The aim of this report is to alert the clinicians to the potential diagnosis of pneumonia treatment. This is the case report of 3 months old boy with Pneumonia. He was diagnosed with pneumonia. His treatment was starting and after 7 days, he became completely recovered. For his disease diagnosis different tests are also performed.

Keywords: Community-acquired pneumonia (CAP); Pneumonia; Diagnosis; Drug uses; Doctors treatment; Respiratory disorders

Introduction

Community-acquired pneumonia (CAP) is a common and potentially serious illness that is associated with morbidity and mortality. Only half of the cases had an etiology microorganism identified.

Dozens of types of bacteria can cause pneumonia. Bacterial pneumonia is caused by an infection of the lungs and may present as a primary disease or as secondary disease in a debilitated individual or following a viral upper respiratory infection, such as influenza or the common cold.

Community-acquired pneumonia tends to be caused by different microorganisms than those infections acquired in the hospital.

Pneumonia caused by *Streptococcus pneumonia* remains the most common cause of all bacterial pneumonias. High-risk groups include older adults and people with a chronic illness or compromised immune system. This type of pneumonia is a common complication of chronic cardiopulmonary disease (e.g., heart failure) or an upper respiratory tract infection [1].

The knowledge of etiology of pneumonia in low and middle income countries is based on two types of studies: prospective, microbiology-based studies and vaccine trial studies, where indirect evidence of vaccine efficacy for the prevention of pneumonia can be used to estimate the disease burden of each pathogen.

Prospective studies have identified *Streptococcus pneumonia* as the leading cause of bacterial pneumonia among children in developing countries, responsible for 30-50% of pneumonia cases.

The second most common is *Haemophilus influenza* type b followed by *Staphylococcus aureus* and *Klebsiella pneumonia* Other bacteria are *Mycoplasma pneumonia* and *Chlamydia pneumonia*, causing atypical pneumonia non-typable *H. influenza* (NTHI) and

non-typhoid *Salmonella* spp. Furthermore, studies of lung aspirate have identified *Mycobacterium tuberculosis* as an important cause of pneumonia.

Case Presentation

A 3 months old boy was brought to the DHQ hospital Gujranwala, Pakistan. He presenting complains are cough, fever, dyspnea, vomiting and diarrhea from the period of last 5 days.

He ate contaminated food and drinks few days ago so, that is the main cause of this. Before to come here they also went in Ahsan hospital Daska, Pakistan, but he did not understand a disease, he gave him Amoxicilline 125 mg/5 ml and Dimenhydrinate 12.5 mg/4 ml syrups.

After 3 days of treatment, they came into DHQ hospital Gujranwala. Other chief complaints by the patient include problem in breathing may be due to cold feeling.

His physical examination showed temperature 102°F. Respiratory rate is 28 beats/min, hear crept on auscultation, he weighed 5 kg. His caused of fever may be some cold exposure.

He was treated with Cefixime 100 mg/5 ml, Ibuprofen 100 mg/5 ml, pseudoephedrine 15 mg/5 ml and Dimenhydrinate 12.5 mg/5 ml in DHQ hospital. Doctor advised him for laboratory tests and admitted him in a Hospital.

Diagnosis

CBC (Complete blood count), CXR (Chest X-Ray), Electrolyte count tests are performed. CBC showed that his TLC Total leukocytes count) and lymphocytes concentrations had increased, neutrophils decreased.

His neutrophils concentration now 22% whose normal value is 45 to 75% and lymphocytes concentration increased whose normal value is 20 to 45% (Table 1).

Test	Value	Units	Expected value
Hb%	12.1	g/dl	14 to 24
WBC	12100	mm ³ new born	5500 to 18000/cm
Platelet count	616000	mm ³	150000 to 400000
Different Leucocyte count (DLC)			
Neutrophils	22	%	45 to 75%
Lymphocytes	70	%	20 to 45%
Eosinophils	4	%	02 to 06%
Monocytes	4	%	02 to 10%
RBC	5.57	10 ¹² /litre	3.5 to 5.5
MCV	79.2	F1	75 to 100
HCT	36.2	%	35 to 55
MCH	26.5	Pg	25 to 35
MCHC	33.4	g/dl	31 to 38

Table 1: Complete Blood Count test (CBC): It's a hamatology report in which values of different cells of patient's blood compared with their normal values.

On electrolyte counting test showed that calcium concentration decreased which is 7.8 now its normal value is 8.5 to 10.5 (Table 2).

Test	Value	Unit	Expected value
Sodium	136	mEq/L	135.....145
Potassium	4.4	mEq/L	3.8.....5.0
Calcium	7.8	mEq/L	8.5.....10.5

Table 2: Serum Electrolyte Test: In this, values of patient serum elements compared with normal value. Here we conclude that Calcium concentration decreased in body.

On Chest X-Ray detected a white patch on left side upper lobe, which indicated that pneumonia is confirmed. So when the pneumonia is confirmed then Doctor started his actual treatment (Figure 1).

Treatment

His treatment include injection Cefotaxime 250 mg intravenous B.D, injection Ampicillin 125 mg intravenous after 6 hours, given Nebolization with ventoline, and Oxygen now SOS, and a Panadol drops, 10 drops. His vitals were checked.

The patient recovered slowly and after 2 days treatment Doctor again checked him and gave him another treatment claritex drops 1/2 drops and Calcium 2/2.

At the third day of his admission in hospital Doctor checked him, his physical examination showed now that temperature reached at 100°F, diarrhea and vomiting are also decreased. Doctor advised his mother to continue this medication, care and feed properly.

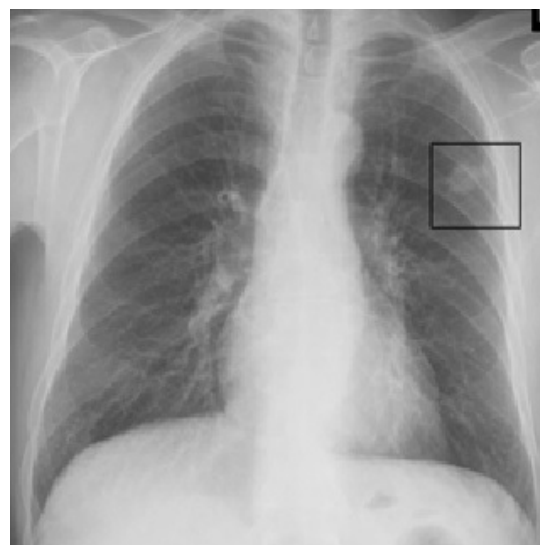


Figure 1: Chest X-Ray: In this a white patch seen on left side upper lobe of lung which indicated pneumonia.

At the fifth day continuously five days treatment child become completely recovered and doctor discharged them at 5/10/2014.

Discussion

Community-acquired pneumonia (CAP) is a frequent cause of hospital admission and mortality in elderly patients worldwide. The clinical presentation, etiology, and outcome of community acquired pneumonia in elderly differs from that of other population [2,3].

This patient had community-acquired bacterial pneumonia on the basis of his physical examination and chest radiograph.

The most common cause of community-acquired bacterial pneumonia is *Streptococcus pneumoniae*. The finding of gram-positive diplococci in the blood is consistent with pneumococcal disease as well. Approximately 25 to 30% of patients with pneumococcal pneumonia will have positive blood cultures. Group A streptococcus is another possible organism because it can cause bacteremic pneumonia and can possibly appear as a gram-positive diplococcus. However, in a blood culture, group A streptococci are much more likely to be present as gram-positive cocci in chains. The two streptococci are easily distinguished by the fact that *S. pneumoniae* is alpha-hemolytic and bile soluble whereas group A streptococcus is beta-hemolytic and bile insoluble but bacitracin susceptible.

Determination of precise etiology of pneumonia is difficult due to the lack of sensitive and specific tests. Many clinicians treat pneumonia empirically with minimal laboratory or radiographic evaluation and thus up to 80% of non-bacterial pneumonia may be treated with antibiotics. This approach is satisfactory when clinical risk is deemed to be low [4].

Conclusion

Our main findings and conclusion were:

Community-acquired pneumonia in elderly patients is a common and serious problem encountered in clinical practice. Elderly patients with community-acquired pneumonia have different clinical presentation and higher mortality.

From this case study we conclude that main causes for pneumonia and what are these treatments.

As we read that here patient is not cured after its first treatment because disease was not identified our main purpose is to first diagnose a disease and then to start rational treatment.

Acknowledgment

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Recommendations

Increase caretakers' recognition of pneumonia signs through extensive health communication activities by strengthening the third component of IMCI (improving family and community practices).

Antibiotics improve outcomes in those with bacterial pneumonia. Antibiotic choice depends initially on the characteristics of the person affected, such as age, underlying health, and the location the infection was acquired.

Stay away from people who have colds, the flu, or other respiratory tract infections.

If you haven't had measles or chickenpox or if you didn't get vaccines against these diseases, avoid people who have them.

Preventive measures are under observations i.e., avoid contaminated food, drinks purified water etc.

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