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Gamya Shree *

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Management of Community Acquired Pneumonia in a Small Setting- A Case Report

Gamya Shree[1*], K. Suresh[2]

[1]MPH Scholar, Karnataka State Rural Development & Panchayat Raj University (KSRDPRU) Gadag, Karnataka, India Pin 582102.

[2]Public Health Consultant & Visiting Professor- MPH. KSRDPRU Gadag, IIHMR and RGIPH Bengaluru, Karnataka, India

***Corresponding Author:** Gamya Shree, MPH Scholar, Karnataka State Rural Development & Panchayat Raj University (KSRDPRU) Gadag, Karnataka, India Pin 582102.

Received Date: September 09, 2022; Accepted Date: September 17, 2022; Published Date: September 23, 2022

Citation: Gamya Shree, K. Suresh. (2022). Management of Community Acquired Pneumonia in A Small Setting- A Case Report. *Clinical Oncology Case Reports*, 1(1); DOI: 10.31579/2834-5061/006

Abstract

Pneumonia is a potentially fatal infection and inflammation of the lower respiratory namely bronchioles and alveoli, usually caused by inhaled bacteria and viruses. The most common type of bacterial pneumonia in India is caused by the Streptococcus pneumoniae. The other organisms responsible for Pneumonia are, Staphylococcus aureus, Haemophilus influenzae, Pseudomonas aeruginosa, Escherichia coli and Klebsiella pneumoniae.

Pneumonia can occur at any age but is more common among young children and elderly in India. Fifty percent of world's Pneumonia cases occur in India. However, it is not rare to occur among adults. Reliable estimates of disease burden are not available particularly for the adult population. Pneumonia that develops outside the hospital settings is commonly referred to as community acquired pneumonia (CAP) and that develops 48 hours after admission to the hospital is known as hospital acquired pneumonia. CAP is suspected by acute symptoms such as dyspnoea, cough with sputum and fever and presence of new focal chest signs without other obvious cause. New pulmonary infiltrate on a chest radiograph is required for a definite diagnosis. We present a case of CAP in adult male and its management in a sub-district hospital about 90 kms away from Bengaluru the capital of Karnataka State. A 36-year male reported at a private hospital in a small town of Chintamani, in Kolar district of Karnataka with the complaints of cough with sputum, fever, vomiting, mild diarrhoea, for the last 3 days on 12/5/2021. Based on Chest Xray and other investigations he was diagnosed as a case of pneumonia. His treatment consisted of multiple antibiotics that helped recover completely in 5 days. We feel that multiple antibiotics were against the Indian standard protocol of pneumonia management.

Keywords: acquired pneumonia: staphylococcus aureus, haemophilus influenzae, pseudomonas aeruginosa, escherichia coli and klebsiella pneumoniae

Introduction

Community -acquired pneumonia (CAP) is a common and potentially serious illness that is associated with morbidity and mortality. Pneumonia can occur at any age but is more common among young children and elderly in India. Fifty percent of world's Pneumonia cases occur in India. However, it is not rare to occur among adults. In only half of the cases aetiological microorganisms are identified. Bacterial pneumonia is caused by an infection of the lungs and may present as a primary disease or secondary disease following viral upper respiratory infection such as influenza or a common cold. CAP is caused by different microorganisms, most common being streptococcus pneumonia among adults and people with chronic illness. Pneumonia is a common complication of chronic cardiopulmonary disease or an upper respiratory tract infection [1].

Treatment of CAP according to national guidelines for bacterial pneumonia: National guidelines recommend starting empirical therapy as soon as possible for all patients with pneumonia. The first step of treatment is a risk assessment to decide if the treatment be given as an outpatient or in inpatient setting. Age, cardiopulmonary conditions, and severity of symptoms are the risk factors to make such a decision for bacterial pneumonia, especially CAP.

As expanded CURB-65 OR CURB-65 Pneumonia severity score it includes (C-confusion, U-uraemia, R-respiratory rate, (> 30/min), B-

BUN greater than 20 mg/dl,) B=B.P(bp less than 90/60 mm of hg) and age greater than 65 years.one point score for each risk factors. For score 0 to1 can be treated in outpatient. If total score is 2 or more Hospitalization to medical ward and, if the score is 3 or more ICU admission is recommended.

Outpatient treatment for patient with no co-morbid condition is macrolide or doxycycline used empirically and for patient having comorbid condition (e.g., Diabetes, malignancy, etc.) the regimen is fluoroquinolone or beta-lactams + macrolide.

Case Presentation

Patient Description -A 36-year male adult was brought to private Deccan hospital Chintamaniin Kolar district of Karnataka on 12/05/2021. He presented with complaints of cough with sputum, fever, vomiting, mild diarrhoea for the last 3 days. After trying some home remedies with no relief of symptoms, he went to Deccan hospital. He is a known diabetic for 3 years and was on oral anti-diabetic medication.

Physical Examination - On examination he had a

Temperature 97.9^0-F (no fever), Respiratory Rate -18, SPO2 – 95% pulse rate – 110 beats /per minute, blood pressure – 130/70 mm of Hg

Investigations:

1. CBC (complete blood count),CXR (chest X ray), CBC showed that Normal range of total leukocytescount and lymphocytesneutrophils.
2. The serology report of C reactive protein had increased to 16 as compared to a normal value of 0-6.
3. Chest radiography detected a white patch on the left middle lobe to confirm pneumonia.

Diagnosis: Based on Chest X ray finding he was diagnosed having Pneumonia.

Treatment

His treatment includes injection

1. (TRIACZONE 1.125) INJ – contains ceftriaxone is a cephalosporin antibiotic that used to treat many kinds bacterial infections like pneumonia and meningitis of 1-2 gm was given twice a day (1-0-1).
2. PANTOPRAZO(PANDIFF) – contains pantoprazole is a proton pump inhibitors is used to treat stomach and esophagus problems such as acid reflux IV 40 mg is given once a day(0-0-1).
3. (RAPITUS LS) SYP – is a combination of three medicines ambroxol, levosalbutamol /guaifenesin is used to treatment of cough with mucus 10ml is given thrice a day.
4. (ZITHIUM 500 mg) TAB -contains azithromycin.is a macrolide antibiotic used for various bacterial infections such as pneumonia.is given once a day(0-0-1)
5. (FABIFLU 800mg) TAB – it contains favipiravir.is an anti-viral medicine used to treat mild to moderate covid -19 disease is an is given twice a day(1-0-1)
6. (ABIWAYS) – it contains acebrophylline 100mg+ acetylcysteine 600mg.is used to treat and prevent is asthma and symptoms of chronic obstructive pulmonary disorder like coughing and wheezing. is given twice a day(1-0-1)
7. (ALLERCET COLD TAB) -it contains levocetirizine 5mg+paracetamol 500mg+phenylephrine 10mg.is used to treat common cold. given once a day (0-01).
8. (DIAPRIDE M1) TAB.- contains glimepiride 1mg+metformin 500 mg.it helps to control blood sugar level in diabetes patient. is given twice a day(1-0-1).
9. BIPHASIC ISOPHANE INSULIN (INSUGEN30/7O 40iu)10 ml-it contains biphasic isophane insulin is belong to class of insulinsand analogues (synthetic human hormones) given once a day.

Prognosis:

The patient improved slowly and after 2 days,

His vitals such as temperature at 96^0 F(no fever),SPO2 - 96%, pulse rate - 110 beats per minute,blood pressure of 110/70 mm of Hg remained stable

On the fourth day of his admission, he was normal but for diarrhoea. He was discharged on 15/05/21 with following medication to continue

1.(MACRD) -protein pump inhibitor used to decrease gastric juice secretion. (Contains rabeprazole 40 mg) is given twice a day for 10 days.1-0-0)

2 (SEMICEF CV 325) –To treat the respiratory tract infection and prevent further growth and spread of microorganisms. (Contains cefpodoxime proxeti 200mg+clavulanic acid 125mg) is given twice a day(1-0-1) 3 days.

3. (EXAFIB 10mg) TABLET – anticoagulant it helps to prevents and treats blood clots. (Contains rivaroxaban 10mg) is given twice a day(1-0-0) for 14 days.

4. (ABIWAYS) - is used to treat and prevent asthma and symptoms of chronic obstructive pulmonary disorders like coughing and wheezing. (Contains acebrophylline 100mg+acetylcysteine 600mg is given twice a dayFollow-up:(1-0-1) for 5 days.

5.(ALLERCET COLD TAB) – is used in the treatment of common cold like runny nose. (contains levocetirizine 5mg+phenylephrine 10mg +paracetamol 500mg) is given twice a day.(1-0-1) for 5 days.

Discussions-

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

Prospective studies have identified streptococcus pneumonia as the leading cause of bacterial pneumonia among children in developing countries contributing 30 – 50% of all Pneumonia cases. India contributes to about 23% of global pneumonia burden and 36% of WHO South-eastern regional burden in patients under five years [3]. Reliable estimates of Pneumonia burden for the adult population are not available. The sparse data for adults come from tertiary care teaching hospitals using cross sectional studies [4] .

A study from Mumbai reported that severe CAP(SCAP) reached 19% of all patients and streptococcus pneumoniae and gram-negative bacteria (pseudomonas aeruginosa and Klebsiella pneumoniae) had increased occurrence in severe pneumonia [5]. A recent review underscores the importance of pneumoniae in the invasive pneumococcal diseases in India [6].

The second most common is Haemophilus influenzae type B followed by staphylococcus aureus and klebsiella pneumonia other bacteria are mycoplasma pneumoniae and chlamydia pneumoniae causing atypical pneumonia non typable, H, influenza and non-typhoid salmonella spp.

Studies of lung aspirates have identified mycobacterium tuberculosis as an important cause of pneumonia

The most common cause of community acquired bacterial pneumonia is streptococcus pneumoniae.The findings of gram-positive diplococci in the blood are consistent with pneumococcal disease. Approximately 25% to 30% of patients with pneumococcal pneumonia will have positive blood cultures. Only 13.5 per cent samples were satisfactory for analysis and aetiological agents were detected only in one thirds of the samples [5]. Group A streptococcus is another causes bacteraemia pneumonia. However, no blood culture was done in this case and the doctor prescribed multiple antibiotics on empirical basis.

The main treatment for pneumonia is antibiotics, along with rest and drinking plenty of water. For chest pain if any, one can take pain killer - paracetamol. Treatment depends on how severe your pneumonia is. Treatment with antibiotics should be started as soon as possible after diagnosis. In India, due to the high overall prevalence of Gram-negative bacterial infections including pneumonia, the CAP national guidelines suggest empirical therapy with β-lactam-β-lactamase inhibitor combinations along with macrolide in hospitalized CAP. The duration of treatment of CAP has gained attention in the era of AMR. International guidelines recommend a minimum five days of therapy and early discontinuation based on clinical stability criteria. The information regarding the real clinical practice is minimal in the literature. Though our client was treated for 5 days only, treatment with multiple antibiotics was in contravention of treatment protocol recommended by Physicians Association of India. Inappropriate initial antimicrobial therapy (IIAT) in patients with CAP is associated with longer hospital stays, increased hospital costs and mortality. Prediction of likely pathogen and knowledge of local susceptibility patterns is the key to initiate appropriate therapy (IAT). Adherence to guidelines has shown better outcomes in few Indian studies. Guidelines tailored to national and regional contexts are essential considering the differences in socio-economic factors, healthcare systems, local healthcare access, variations in pathogen occurrence and susceptibility.

Determination of precise aetiology of pneumonia is difficult due to the lack of sensitive and specific tests. Many clinicians treat pneumonia empirically on radiographic evaluation and resulting in 80% of bacterial pneumonia treated with multiple antibiotics as was done in our case [3].

Pneumonia accounts for 20- 40% of viral lower respiratory tract infections in children. In adults, influenza is the most frequent cause of viral pneumonia, although respiratory syncytial virus (RSV) is also seen [2].

However, viral respiratory pathogens are increasingly being identified as frequent etiologists of CAP. The most common viral pathogens recovered from hospitalized patients admitted with CAP.

Conclusions:

Pneumonia is most common infectious source of adults, though it significant disease burden among elderly >65years. Commonly applied exclusion criteria (e.g., persons with HCAP or immunocompromised condition) or restrictive case definitions (e.g., only including pneumonia coded in the primary diagnosis position) have led to underestimation of CAP incidence. CAP carries the highest risk for morbidity and mortality. Streptococcus pneumoniae remains the most frequent pathogen of CAP and this is true for all treatment settings. The results of systemic reviews in India show that pneumococcus and haemophilus dominate as the bacterial causes of CAP, followed by staphylococcus aureus and Enterobacteriaceae. Studies that were confirmed to patient who provided good-quality of sputum reported substantially higher yields of bacterial causes. In about 30% of all CAP cases bacterial/viral coinfection is relatively common. The results appear to support the 2019 guidelines for the initial empiric management of CAP that recommend ceftriaxone and azithromycin as therapy for hospitalized patients because of efficacy against pneumococcus, haemophilus, staphylococcus aureus and enterobacteria as well as atypical organisms. Careful sputum gram stain and culture results will improve outcome in patients. The findings of virus by PCR does not eliminate the need to treat empirically for bacteria because coinfections are common.

Home messages:

Empirical treatment with antibiotics for 5 days as recommended by Physicians Association of India is the mainstay of management of Pneumonia in smaller settings. Paracetamol will relieve fever and headache

The patient's prognosis needs to be monitored by parameters like pulse, respiratory rate, Pulse, BP and SpO_2 using Pulse Oximeter adds a value

Mild pneumonia can be treated at home with rest, antibiotics hydration by drinking plenty of fluids helps body to recover fast.

Cough medicines are not recommended. a warm honey and lemon drink can help relieve discomfort caused by coughing.

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