

Clinical and Bacteriological Profile of Hospitalised Community Acquired Pneumonia (CAP)

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Abstract

Community acquired pneumonia [CAP] occurring in a hospital or long term care facilities remains a common and serious illness, despite the availability of potent new antimicrobials and effective vaccines. **Objectives:** To find out the most common bacteria causing CAP in hospitalized patients and to study the clinical profile of CAP. **Methodology:** The present study was carried out in 50 patients of community acquired pneumonia admitted to Civil Hospital, Ahmedabad, from March 1998 to Nov 2000. The diagnosis was based on acute illness of fever and cough with clinical signs of crepitation and/or bronchial breathing along with radiological evidence of pulmonary consolidation. **Results:** After studying the 50 cases of adult community acquired pneumonia following conclusions were drawn. Streptococcus pneumoniae is still the most common cause of community acquired pneumonia (22%) Next common cause in the present study is Gram-negative bacilli (22%) and Staphylococcus aureus (12%). Among Gram-negative bacilli Klebsiella and E-coli were common (8% each). In spite of all possible diagnostic methods like sputum gram-stain, culture, blood culture and invasive procedure like bronchoscopic aspirate, no organism was detected in 44% of cases. Pleural effusion was noted in 7 cases i.e. 14%. Streptococcus pneumoniae is the causative agent in 3 cases out of 7 i.e. 42.8%. Conclusion- The mortality in the present study was 8%. The decrease in mortality is due to early hospitalization and vigorous therapy with broad spectrum antibiotics. 80% of the patients were improved. 8% were expired and 12% had slow resolving pneumonias.

Key Words: Bacteriological profile, clinical Profile, Community Acquired Pneumonia

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Introduction

Community acquired pneumonia [CAP] occurring in a hospital or long term care facilities remains a common and serious illness, despite the availability of potent new antimicrobials and effective vaccines¹. This study aims to identify the most common bacterial organisms associated with CAP and to study about the clinical profile. Basheer ahmed in his study at srinagar has concluded that pseudomonas aeruginosa was the most common pathogen involved, followed by staphylococcus aureus. The most common predisposing factors were smoking, COPD (chronic obstructive pulmonary disease), old age respiratory failure¹. W.Slim and P. Saikku conducted their study on 309 patients; aetiological agents could be identified in 199 patients. Out of that streptococcus pneumoniae was identified as the most common pathogen involved followed by haemophilus influenzae⁵.

Fung and Monteagudo, on the basis of their 43 patients studies on CAP, have concluded that pneumonia in the elderly lack the typical acute symptoms observed in younger adults and should be suspected in all elderly patients who have fever, altered mental status or a sudden decline in

functional status, with or without lower respiratory tract symptoms such as cough, purulent sputum, and dyspnea².

Cilioniz conducted her studies on 1463 patients, out of this 257 died. Mortality rates according to aetiology and severity showed increasing mortality rates for all pathogens except atypical pathogens. Streptococcus pneumoniae had the highest number of deaths while gram negative bacilli, pseudomonas aeruginosa, staphylococcus aureus and mixed etiologies had the highest mortality rates³.

Objectives: To find out the most common bacteria causing CAP in hospitalized patients and to study the clinical profile of CAP.

Materials and Method:

The present study was carried out in 50 patients of community acquired pneumonia admitted to Civil Hospital, Ahmedabad, from March 1998 to Nov 2000. The diagnosis was based on an acute illness of fever and cough with clinical signs of crepitation and / or bronchial breathing along with radiological evidence of pulmonary consolidation. All patients above 12 years of age were included in the study. However those patients with underlying pulmonary tuberculosis were excluded from the study.

A detailed history, physical examination and other epidemiological details were recorded in a preplanned proforma. A complete haemogram, urinalysis, x-ray chest PA and Lateral view, sputum and blood culture and sensitivity for pyogenic organism as well as direct smear examination of the sputum for AFB and sputum for gram staining were done in all cases. X-ray chest was repeated after 7 days and at the time of discharge to see the radiological improvement. Liver function test (S.Bil.,SGPT) and Renal function test (Bl. urea, S. Cr.) were done in all cases. Pleural aspiration for biochemical and microbiological evaluation was done in all cases with pleural effusion.

Six patients of the present study were undergone Fiberoptic bronchoscopy and broncho-alveolar lavage was sent for culture and sensitivity for pyogenic organism. 35 patients of the present study were administered ampicillin empirically after sputum and blood culture sample has been obtained whereas in 15 patients ampicillin plus ciprofloxacin was administered. Antibiotic therapy was continued for 7 days in all uncomplicated cases and the chest skiagram was then taken. In complicated cases antibiotics were continued for 14-21 days.

Observation and results:

After the study of 50 consecutive cases of pneumonias the following observations were made, most of which are given.

Age and Gender Distribution: That maximum incidence of pneumonia (46%) occurred in patients of 2nd and 3rd decades. Patients above 60 years of age were only few (2%). out of 50 cases 18%, 24%, 22%, 20%, 14%, 2% belongs to <20, 21-30, 31-40, 41-50, 51-60 and 61-70 age groups respectively. That 84% patients were males and 16% patients were females, therefore Male : Female ration 5.25 :1

Distribution Of Predisposing Factors: That out of 50 cases 36% had UTRI, 48% had habit of smoking, 14% had habit of drinking alcohol, 2% had drug addiction, 28% are malnourished, 10% had COPD, 2% had Bronchial asthma, 4 % had Diabetes mellitus, 6% had HIV and 6% had congestive heart failure.

Distribution Of Symptoms In Patients Of Community Acquired Pneumonias : That Out of 50 cases 96% had fever, 60% had chills, 96% had cough, 92% had expectoration, 58% had breathlessness, 72% had chest pain, 6% had haemoptysis, 20% had headache, 50% had other (Nausea, vomiting, Diarrhoea) symptoms.

Relevant Distribution of Clinical Signs:

The 94% of the patients had temperature, 60% had tachycardia, and 6% were hypotensive. Respiratory signs like dull note, crepitations and bronchial breathing were present in 86%, 96% and 86% of the patients respectively. Diminished breathe sound were present in 20% of the patients. Hepatomegaly, splenomegaly and hepato – splenomegaly were present in 6%, 4% and 4% of the patients respectively. Altered consciousness were present in 6% of the patients.

Pattern of Laboratory Investigation

Reports: The Leucocyte count were >10,000 in 66% and <10,000 in 34% if cases, LFT and RFT raised in 6% and 10% of patients respectively. Blood sugar was raised in 4% and HIV was reactive in 6% of cases. Blood culture is positive yield in 48% , and sputum culture shows positive yield in 52% of cases. Sputum Gram stain shows positive yield in 48% and sputum culture shows positive yield in 52% of cases. Out of 6 cases BAL-Culture shows positive yield in 3 cases i.e. 50%

Zone Involvement By Radiological

Assessment: That Right and Left lower zones were involved more frequently in 20% and 16% respectively, Upper zone and

Middle zone were not involved much. Right and Left lower zone plus middle zone were involved in 12% and 14% of patients respectively. Upper zone plus middle zone were not involved much. Extensive involvement of whole lung, Uz + Mz were seen on right side and in 2% of cases. Bilateral involvement is seen only 10% of cases.

Causative Organisms In 50 Cases: That Streptococcus pneumonia is the most commonly identified organism in 22 % of cases. Gram – negative bacilli were identified in 22 % of cases i.e. Pseudomonas aeruginosa in 6 %. Mixed flora were detected in 4 % of cases. No-organism were identified in 48 % of cases.

Effusion In Community Acquired

Pneumonia: That Streptococcus pneumonia is the commonest organism causing pleural effusion, while staphylococcus aureus and klebsiella were responsible in 14.2 % each. No causative organism was identified in 28.5 % of cases with effusion.

Percentage Distribution Of Effusion Due

To Various Causes: That out of 11 cases of Streptococcus pneumonia 3 were developed effusion, while out of 6 cases of Staphylococcus and 4 cases of Klebsiella, 1 patient had developed effusion. Among no-

organism identified cases 2 patients were developed effusions.

Primary Line of Treatment : 70% of cases received only Ampicillin and 30 % of cases received Ampicillin plus Ciprofloxacin awaiting bacteriological results. After the culture and sensitivity reports antibiotics had been changed according to sensitivity if required.

Activity Of Commonly Advocated Antimicrobial Agents Versus Common Agents Of Pneumonia:

That all the cases of streptococcus pneumonia are sensitive to Ampicillin. Also most of them are sensitive to Roxithromycin, Cefotaxime and Cotrimoxazole. Staphylococcus aureus are less sensitive to Ampicillin, they are usually sensitive to Erythromycin, Ciprofloxacin, Cefotaxime and Gentamycin and Amikacin. Gram-negative bacilli like Pseudomonas, Klebsiella and E-coli are sensitive to Aminoglycoside group of drugs like Gentamycin and Amikacin. They are usually resistant to Ampicillin, Cefotaxime and Cotrimoxazole. In the present study Streptococcus viridans are resistant to all group of drugs

Complications Due To Community Acquired Pneumonia:

That pleural effusion is the most common complication occurring

in 14% of the patients. Empyema, lung abscess and Hydropneumothorax occurs in 2%, 6% and 6% respectively. Hepatomegaly, Splenomegaly and Jaundice occurs in 6%, 4% and 6% respectively while acute renal failure occurs in 8% of the cases.

Mortality: That the mortality rate in the present study is 8%.

Discussion

Comparing the previous three series it can be inferred that males were (84%) little more affected in the present series. No specific cause could be attributed. Males carrying more risk factors such as smoking alcoholism and drug addiction may be the reason for it.

That majority of the patients (36%) have symptoms of upper respiratory tract infections. 48% of the patients were smoker while 28% were malnourished which coincides with 50% and 30% of S.V. Madhu study pre-existing respiratory disease were in 12 % of cases which coincides with 13% of S.V. Madhu series. Diabetes among 4% of patients while in S.V. Madhu series it is 9% of cases. CHF, HIV, Alcohol and Drug addiction were also responsible for pneumonia and are less common predisposing factors.

Fever and Cough with expectoration was present in more than 92% of patients. This coincides well with the literature. S.V. Madhu reported fever in 100 % of cases and cough is 98 % of cases while Tugwell had 82% having fever and cough respectively. Chest pain was reported 72% in present series while 87%, 66% and 64% in S.V. Madhu, Tugwell and BTS respectively. Haemoptysis was present in 6% of cases in present series and 9% in S.V. Madhu, 27% and 17% in Tugwell and BTS. Other symptoms like Nausea, Vomiting and Diarrhoea present in 50% of cases in present series while 61% and 51% in S.V. Madhu and Tugwell series.

94% of the patients were having fever of acute onset. On physical examination 80-90% of the patients had positive physical findings suggestive of pneumonias which shows that if physical examination is done properly pneumonia cannot be missed. S.V. Madhu was reported 98%, A.M. Neil in 81% and BTS in 83% of positive physical findings. Hepatomegaly was reported in 6% of cases in present series and Splenomegaly in 4% of cases. In S.V. Madhu series splenomegaly reported in 1% of cases. Altered consciousness was 6% in present

series and 11% and 14% in S.V. Madhu and BTS series.

That in the present study 14% had pleural effusion which is comparable with 10.8% of the N.C. Karalus study. All cases have been tapped for the diagnostic purpose and examination shows high protein count and neutrophilia but none of them was positive for culture. These effusions were sympleuronic and are cleared with pneumonia gradually. The most common etiologic agent responsible for pleural effusion is *S. pneumoniae* in present study (42.8%) which is comparable with N.C. Karalus study. No-organism identified in 28.5 % of the present series. Other organisms are rarely causing effusions.

In the present study, complications were found with some of the patients. 7 patients (14%) had pleural effusion but majority of them were cured themselves as pneumonia recovers. Empyema was occurred in 1 (2%) patient. ICD was inserted to drain the empyema. Lung abscess were occurred in 6% of cases which resolves slowly. Hydropneumothorax were occurred in 6% of cases, ICD was inserted and higher antibiotics were given. Out of 3 cases of HPT 1 patient was expired and rest 2 cases are slowly recovering. Hepatomegaly and

Splenomegaly were occurred in 6% and 4% of the patients respectively. Jaundice were occurred in 3 (6%) cases out of which 1 was expired as the patient is HIV reactive and bilateral involvement. 4 patients (8%) are presented with Acute Renal Failure out of them 1 patient was expired and in rest 3 renal functions comes to normal within few days without altering the course of disease.

That the mortality in present series is 8% which is comparable with all other studies. Hospital bases study have generally shown mortality of around 10-15% but from the above it can be said that mortality is now decreasing due to early hospitalization and vigorous therapy with broad spectrum antibiotics.

Conclusion

After studied, 50 cases of adult community acquired pneumonia following conclusions were drawn. Streptococcus pneumonia is still the most common cause of community acquired pneumonia (22%). Next common cause in the present study is Gram- negative bacilli (22%) and Staphylococcus aureus (12%). Among Gram-negative bacilli Klabasiella and E-coli were common (8% each). In spite of all possible diagnostic methods like sputum gram-stain, culture, blood culture and invasive procedure like

bronchoscopic aspirate. No organism was detected in 44% of cases. Pleural effusion were noted in 7 cases i.e. 14%. Streptococcus pneumonia is the causative agent in 3 cases out of 7 i.e. 42.8%. Ampicillin was found to be therapeutically effective and combination of Ampicillin and Ciprofloxacin shown excellent results in severe cases. Erythromycin was also found to be effective in many cases. In the study all streptococcus pneumonia isolated were sensitive to Ampicillin, therefore penicillin still remains the drug of choice for streptococcus pneumonia. Gram-negative bacilli were sensitive to Aminoglycoside group of drugs. Pleural effusion remains the most common complication of pneumonia. Lung abscess, Hydropneumothorax and Empyema are next to that. Acute renal failure was present in 8% of cases. 1 patient presented with bilateral pneumonia with acute renal failure was expired. In other patients Acute renal failure doesn't affect the course of disease much. The mortality in the present study was 8%. The decrease in mortality is due to early hospitalization and vigorous therapy with broad spectrum antibiotics. 80% of the patients were improved. 8% were expired and 12% had slow resolving pneumonias.

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