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Research Article

**MANAGEMENT AND OUTCOME OF COMMUNITY
ACQUIRED PNEUMONIA IN A TERTIARY CARE HOSPITAL**¹Dr.Hadia Riaz, ²Dr.Mehwish Kalsoom, ³Dr.Saba Irshad¹Fatima jinnah Medical University, ² Fatima Jinnah Medical University, ³Universty Medical and Dental College Faislabad.**Abstract:**

Background: Lower Respiratory Tract (LRT) infections are the reason of 1/5 the deaths caused due to infectious diseases and Pneumonia. Timely and appropriate empirical treatment based on knowledge of local etiological factors is important in the management of the disease. Investigation data has been available from different geographical regions.

Methods: The present prospective observational study was completed in the study duration at CHEST Medicine Ward of Services Hospital lahore. The number of patients included in the study was 50 and all of them were above 12 years of age with CAP on clinical diagnosis assisted by radiology.

Results: In 22% cases haemoglobin was below 10gm. Leucocytosis was observed in 72% cases. Ten percent patients were seropositive for HIV. Treatment with penicillin group of drugs had a moderate response (approximately 22%). Most of the patients had to be put on other group of drugs like Cephalosporins, macrolides and quinolones for clinical response. Delayed resolution in 12 (24%) patients, synpneumonic effusion in 6 (12%) and septicaemia in 3 (6%) patients, were the most common complications observed during the study period. The mortality rate was found 6%.

Conclusions: The results indicate a low response to treatment by penicillin group antibiotics and a high rate of complications. Mortality is similar to reports.

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INTRODUCTION:

Community acquired Pneumonia (CAP) is a commonly encountered diagnosis by the general medical practitioners as well as the pulmonary medicine specialists. The diagnosis is based on the clinical findings and/or the radiologic features. Community acquired pneumonia is among the leading causes of death especially in the developing countries and it has been reported to cause around a million deaths every year among the adult population in the Asian continent. Mortality data specific to the community acquired pneumonia is not available for the population, however, lower respiratory tract infections are responsible for around one-fifth of the deaths caused due to infectious diseases and pneumonia is a major culprit.

Timely and appropriate empirical treatment of the community acquired pneumonia based on the background knowledge of the local etiological factors and the susceptibility patterns to the antibiotic drugs is important and helpful in the management of the disease. [1-3] Despite progress in the diagnostic and therapeutic spectrum of the disease, it still has a significant morbidity as well as mortality associated with it. Data related to investigation profile and therapy as well as morbidity and mortality for the community acquired pneumonia are available from the different geographic regions across the country. [4-6] The present study describes the management and outcome of disease data during the study period from a tertiary care Hospital.

METHODS:

The present prospective observational study describing the management and outcome of community acquired pneumonia was completed in the study duration from the November 2017 to April 2018 at Chest Medicine ward Of Services Hospital lahore .50 male or female patients above 12 years of age with community acquired pneumonia on clinical diagnosis assisted by radiology were included in the study.

Both the outpatients as well as hospitalised patients with the diagnosis of community acquired pneumonia were included in the study. Any subject who was hospitalised within last fortnight for reasons other than

community acquired pneumonia was excluded. Patient information sheet regarding the study was provided to the subjects.

Informed consent was obtained from all the study participants or their legal guardian in case of minors, prior to enrolment in the study. Detailed history taking, general examination as well as systemic examination were done for all the patients. Blood samples were taken under all aseptic precautions in ethylene diamine tetra acetic acid (EDTA) vacutainers and analysed by fully automated digital cell counter for cell counts and the erythrocyte sedimentation rate at the end of one hour was also estimated. HIV testing was done by ELISA kits.

The clinical features and epidemiology including aetiology have been described in a related separate publication. The haematology profile, therapy, complications and mortality were described.

RESULTS:

Mean age of patients was 38.38 ± 17.41 years with 40% patients aged 12 to 30 years and 28% patients aged above 50 years. Male patients were 68%. Table 1 describes the haematology profile. Haemoglobin was below 10-gram percent in 22% cases. Leucocytosis was observed in 72% of cases whereas leucopenia was observed in 6% of cases. ESR was raised in 68% of cases. Ten percent patients were seropositive for HIV. Table 2 and 3 describes the treatment given and complications of CAP observed during the study. There was a moderate response to treatment with penicillin group of drugs (approximately 22%). Many patients had to be offered other group of drugs like cephalosporins, macrolides and quinolones for clinical response. Thus, there is growing resistance towards penicillin group of drugs. Most common complications observed were: Delayed resolution in 12 (24%) patients, synpneumonic effusion in 6 (12%) and septicaemia in 3 (6%) patients. Other complications were collapse in 2 (4%), lung abscess/empyema in 1 (2%), and pneumothorax in 1 (2%). Mortality rate was 6% with the death of 3 patients during the study period.

Table 1: Profile of laboratory investigations.

Investigation	Number of patients	(%)
Hb		
<10 gm%	11	22%
>10 gm%	39	78%
Total WBC (Count)		
4000-10000/cmm	11	22%
<4000/cmm	3	6%
10000-15000/cmm.	16	32%
15000-20000/cmm.	5	10%
>20000/cmm	15	30%
ESR		
<30 mm/1 st hr (i.e. WNL)	21	42%
30-50 mm/1 st hr	5	10%
>50 mm/1 st hr	24	48%
HIV Seropositivity		
Sputum conclusive report (i.e. Either gram stains and/or culture sensitivity and/or AFB)	5	10%
	28	56%

Table 2: Primary line of treatment.

Drug	Number of patients	Percentage (%)
Penicillin group includes crystalline (or) derivatives like Amoxicillin/Ampicillin Beta-Lactam group	11	22%
Cephalosporin group	9	18%
Macrolides (Erythromycin, Azithromycin, Clarithromycin)	8	16%
Quinolones group i.e. - Ciprofloxacin, Levofloxacin	6	12%
Multiple combination drug therapy	16	32%

Table 3: Complications of CAP observed during study.

Complication	Number of patients	(%)
Delayed resolution	12	24%
Collapse (segmental or lobar)	2	4%
Synpneumonic effusion	6	12%
Lung abscess / empyema	1	2%
Pneumothorax	1	2%
Other systemic effects like shock/septicaemia	3	6%

DISCUSSION:

Leucocytosis was observed in 72% of cases whereas leucopenia was observed in 6% of cases. ESR was raised in 68% of cases. Leucopenia (WBC Count <4000/cmm) is a minor criterion for risk stratification as per ATS-IDSA guidelines for ICU admission of patients with CAP. [7] In our study, ten percent patients were seropositive for HIV. Bacterial pneumonia has been reported to be around 25 times more likely to occur in HIV positive individuals. [8] There was a moderate response to treatment with penicillin group of drugs (approximately 22%). Many patients had to be offered other group of drugs like cephalosporins, macrolides and quinolones for clinical response. Thus, there is growing resistance towards penicillin group of drugs. Oberoi and Agrawal study from Ludhiana, Punjab has reported that for community acquired pneumonia, third generation cephalosporins, fluoroquinolones and the aminoglycosides had the best sensitivity. They attributed this finding to the higher incidence found of the gram-negative bacteria. They further suggested that judicious use of antibiotics as per sensitivity pattern can reduce the morbidity as well as deaths caused by community acquired pneumonia. [9] As per Joint ICS/NCCP (I) guidelines published in the year 2012, the empiric treatment of CAP should begin immediately in severe cases of CAP and only after the establishment of diagnosis in non-severe cases. The choice of antibiotic should take into consideration the most likely causative microorganism, local antibiotic susceptibility pattern, pharmacological properties of drugs like kinetics and dynamics, safety profile of the drug, compliance pattern and cost factor as well as the recently prescribed drugs to the patient. It was suggested that *Streptococcus pneumoniae* was the most frequent organism isolated and antibiotics targeting it should be used in empiric treatment. Also, commonly used antibiotics were reported to be effective against *Streptococcus pneumoniae* with beta-lactam antibiotics and macrolides being the commonly used. The guidelines suggested avoiding the fluoroquinolones use for treatment of CAP as it is also effective against tuberculosis and can mask the tuberculosis infection. [3] Prasad and Bhat studied the clinical and microbiological profile of CAP at a tertiary care centre in Mangalore, Karnataka and reported that amoxiclav and levofloxacin were effective against *Streptococcus pneumoniae* with around 20% drug resistance. Cefuroxime, amoxiclav and azithromycin were effective against *H. Influenza* with around 6%, 23% and 13% resistance respectively. *K. pneumoniae* and *Pseudomonas* spp. were effectively treated by carbapenems, cefoperazone-sulbactam and piperacillin-tazobactam

with 16.6%, 42% and 39.5% resistance respectively. [10] Capoor et al, reported that in the multidrug-resistant CAP, cefepime and cefotaxime could be used. [11] In our study, the mortality rate was 6% with the death of 3 patients during the study period. Khadanga et al, study reported a mortality rate of 7.3% overall for CAP.⁵ Shah B et al, study from Kashmir reported a high rate of mortality, i.e. 14%, which may be due to the inclusion of hospitalised patients only. [12] However, Para RA et al study from Kashmir reported a mortality rate of 8%.⁶ Joint ICS/NCCP (I) guidelines published in the year 2012 mentioned that mortality rates across the region vary from 3.3% to 11%. [3]

Our study has limitations like hospital-based small sample size reducing external validity of the study results. Further better designed studies will help in the analysis of treatment response patterns and outcome of disease which may help in designing prevention and better management strategies.

CONCLUSION:

The results indicate a low response to treatment by penicillin group antibiotics and a high rate of complications. Mortality is similar to reports.

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