



CLINICAL, RADIOLOGICAL AND BACTERIOLOGICAL PROFILE OF PATIENTS WITH COMMUNITY ACQUIRED PNEUMONIA (CAP)

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ABSTRACT

Background: Community acquired pneumonia (CAP) has been recognized as a common and potentially lethal condition nearly two centuries ago. CAP is a spectrum of diseases ranging from a simple febrile respiratory infection to a severe and fulminating illness leading to death. **Aim:** To study about the mode of presentation, clinical, bacteriological and radiological profile of patients with community acquired pneumonia for the early detection of the disease. **Materials and methods:** A total 50 patients diagnosed as community acquired pneumonia were considered and analyzed individual clinical, radiological and microbial status for predetermination of disease. **Results:** Dyspnoea was more frequently seen in elderly patients and chest pain was frequent in younger patients. Gram-positive cocci were observed in (70%) and gram-negative bacilli in 26% whereas, mixed cocci were found in 4%. In radiological examination, CAP associated with COPD was constituted 22%. **Conclusion:** Identification and determining the etiological and clinical patterns of Community Acquired Pneumonia helps in adoption of regionally optimized diagnostic and therapeutic approach.

KEYWORDS :

INTRODUCTION:

Community acquired pneumonia is one of the leading causes of morbidity and mortality worldwide.

CAP is defined as an acute infection of the lung parenchyma that is associated with at least some symptoms of acute infection, along with presence of infiltrates on chest radiograph, or auscultatory findings, consistent with pneumonia, in patient not hospitalized or residing in a long term care facility for more than 2 weeks. However, reliable and consistent data are available from only a few countries. Reports suggest nearly 2.4 million deaths occur among all ages due to lower respiratory tract infections (LRTIs)¹. The mortality rate of pneumonia patients in out-patient settings is low, in the range of one to five per cent, but among patients who require admissions to ICU it approaches 25%².

World health Organization (WHO) global burden of disease study estimated that lower respiratory tract infections (LRTIs), which include CAP, were 429.2 million. India constitutes about 23% of global pneumonia burden.

The true incidence of pneumonia acquired in the community is unknown and undoubtedly many pneumonic episodes are treated by primary care physicians as "lower respiratory tract infection or bronchiolitis" without recourse to chest radiographs. In recent years, both the epidemiology and treatment of pneumonia have undergone changes. Pneumonia is increasingly common among older patients and those with co-morbidities like COPD, DM, renal failure, congestive heart failure, CLD and other conditions.

This study is directed at understanding the mode of presentation, clinical features, bacteriological and radiological features for the early detection of community acquired pneumonia.

MATERIALS AND METHODS:

This study included a total 50 patients diagnosed with community acquired pneumonia and was conducted in Department of Respiratory Medicine, GEMS College and Hospital, Srikakulam during JUNE 2019 to AUGUST 2020. Consent was obtained from all the subjects and ethical

clearance was obtained from GEMS COLLEGE AND HOSPITALS.

Inclusion Criteria

All adult patients of both genders, who were recently diagnosed as Community Acquired Pneumonia (CAP) with age more than 14 years

Selection criteria of the patient:

With any of the following clinical symptoms along with signs of consolidation

- Patient presented with acute onset of fever
- Patient having cough with expectoration and
- Chest pain and breathlessness

All the patients were subjected for detailed clinical examination to make a provisional diagnosis of Community Acquired Pneumonia (CAP).

- Sputum examination for Gram stain, AFB, and Culture were done
- Blood tests for WBC Count and Differential Count were done
- Chest X-ray done to know the Site of consolidation
- Elisa was done to rule out HIV infection

Exclusion Criteria

- Patients with Hospital Acquired Pneumonia, aspiration pneumonia and PCP pneumonia in patients with HIV were excluded.

All patients were hospitalized and one full course of antibiotic treatment according to sensitivity was given.

RESULTS

A prospective clinical study consisting of 50 Community Acquired Pneumonia (CAP) patients was undertaken to investigate the magnitude and pattern of clinical, radiological and bacteriological presentation. The study group consisted of 50 patients, among whom 43 (86%) were males and 7 (14%) were females. Among 50 patients, 48% were elderly > 50 years.

Almost all the patients had fever, cough with expectoration, majority had chest pain (66%) and dyspnea in 50%. Dyspnea was significantly more common in elderly CAP patients and chest pain was more common in younger CAP patients. Hypertension, DM and PTB were not found to be risk factors for CAP. The CAP was significantly more common in patients with COPD (Table - 1).

Table 1

Risk factors	Age <50 Years (n=26)		Age >50 Years (n=24)		Total (n=50)
	Number	%	Number	%	Number
Hypertension	-	-	-	-	-
DM	1	3.8	1	4.1	2
PTB	-	-	-	-	-
COPD	1	3.8	10	41.7	11

Table 2

GPE	Age <50 Years (n=26)		Age >50 Years (n=24)		Total (n=50)
	Number	%	Number	%	Number
Pallor	1	3.8	2	8.3	3
Icterus	-	-	-	-	-
Clubbing	1	3.8	4	16.6	5
Cyanosis	-	-	-	-	-
Lymphadenopathy	-	-	-	-	-
Edema	-	-	-	-	-

On general examination, clubbing was seen in 5 patients (10%) and pallor in 3 patients (6%). On systemic examination, there were signs of consolidation in all patients.

Sputum for AFB was negative, gram-positive cocci were more common (70%) and gram-negative bacilli was about 26%. Mixed were accounted for about 4%. Sputum culture report showed Streptococcal pneumonia as more common constituted about 46%, Staphylococcus aureus about 24%, Pseudomonas 4%, Klebsiella accounted about 14%, E. Coli 8%, mixed bacteria constituted 4% in this study (Table - 3).

Table 3

Sputum culture- organisms grown	No.	%
Streptococcus pneumonia	23	46
Staphylococcus aureus	12	24
Klebsiella	7	14
Pseudomonas	2	4
NC E. coli	4	8
Mixed bacteria	2	4

CAP associated with COPD constituted 22%. Right lower lobe consolidation was more common constituting about 26% of the cases. Right middle lobe involvement was 18%, right upper lobe was seen in 3 cases (6%), right middle and lower lobe in 5 patients (10%), left upper lobe (6%), left lower lobe in 8 patients (16%), left upper and lower lobe in 7 patients (14%), bilateral in 2 patients (4%).

Table 4

RADIOLOGICAL PATTERN IN CAP	No.	%
Right Upper Lobe	3	6
Right Middle Lobe	9	18
Right Lower Lobe	13	26
Right Middle And Lower	5	10
Left Upper Lobe	3	6
Left Lower Lobe	8	16
Left Upper And Lower	7	14
Bilateral	2	4



Right Upper Lobe



Right Lower Lobe

DISCUSSION:

In the present study, 50 patients admitted to GEMS Medical College Hospital with admitting diagnosis of Community Acquired Pneumonia were prospectively evaluated. All the cases selected met the inclusion and exclusion criteria.

In the present study which includes age group of 14-80 years, 58% are of elderly age group. A study of Dey, et al. they have found out that among the study patients affected, those aged > 50 years are more as compared to less than 50 years age. This study is on par with their study³.

In the present study we found out that Gram positive organisms are more common (70%) compared to Gram-negative organisms (26%) and mixed 4%. This result is on par with the previous study done by Larry G. Reimer⁴. In India also the etiological agent of CAP varies with geographical distribution e.g. Streptococcus pneumoniae predominates as etiological agent of CAP.

In the present study, it was found that streptococcal pneumoniae being more common pathogen in CAP accounting for 46%. Next common was staphylococcus aureus, which accounted for 24%. Pseudomonas and other constituted about 16%. This observation is similar to that of study done by Larry G. Reimer others and in the study of Sanraj K. Basi streptococcal was about 73% and Staph 32% [4]. Dr. Jayant B. Chauhan, et al. (2014) shows that Streptococcus pneumoniae is still the most common cause of community acquired pneumonia (22%). Next common cause in their study was Gram-negative bacilli (22%) and Staphylococcus aureus (12%). Among Gram-negative bacilli Klebsiella and E-coli were common (8% each)⁵.

CONCLUSION:

The incidence of CAP is influenced by the geographic region, patients' age, and presence of the predisposing factors. The most common admission age group for CAP was between ages of 40 to 60 years, comprising 56% of the study patients. Males were affected more than females (8.6 : 1.4). Most frequent presenting features were acute onset of fever with cough and expectoration. Most frequent predisposing factor for CAP in males is COPD (22%). Most frequent pathogen isolated in CAP is Streptococcus pneumoniae (46%). Most frequent infectious preponderance was found in right lung.

REFERENCES:

1. GBD 2016 Lower Respiratory Infections Collaborators. Estimates of the global regional and national morbidity, mortality, and aetiologies of lower respiratory infections in 195 countries, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet Infect Dis. 2018 Nov;18(11):1191-1210. doi:10.1016/S1473-3099(18)30310-4. Epub 2018 Sep 19. PMID: 30243584; PMCID: PMC6202443
2. Fang GD, Fine M, Orloff J, Arisumi D, Yu VL, Kapoor W, et al. New and emerging etiologies for community acquired pneumonia with implication for therapy: A prospective multicentre study of 359 cases. Medicine (Baltimore), 1990; 69:307-16.
3. Dey, et al. Clinical presentation and predictors of outcome in adult patients with community-acquired pneumonia. Natl Med-India, 1997; 104: 169-172
4. Larry G. Reimer, Karen C. Carroll. Role of the microbiology laboratory in the diagnosis of lower respiratory tract infection. Clinical Infectious Diseases, 1998; 26: 742-8.
5. Dr. Jayant B. Chauhan, Dr. Ghanshyam B. Borisagar, Dr. (Mrs.) K. V. Shah. Clinical and Bacteriological Profile of Hospitalised Community Acquired Pneumonia (CAP). SEAJCRR, 2014; 3(1): 619-627.