

## Original Research

### Assessment of cases of community acquired pneumonia

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#### ABSTRACT:

**Background:** Community acquired pneumonia (CAP) is an acute illness characterized signs and symptoms of lower respiratory tract infection (LRTI). The name community acquired is because it is acquired from community. The present study was conducted to assess cases of community acquired pneumonia (CAP). **Materials & Methods:** 116 patients with community acquired pneumonia (CAP) of both genders were included. Clinical features and radiological findings were recorded. **Results:** Out of 116 patients, males were 62 and females were 54. Common clinical findings were fever in 92%, dyspnea in 81%, cough in 75%, expectoration in 64%, nausea/vomiting in 80% and pleuritic chest pain in 57% patients. The difference was significant ( $P < 0.05$ ). The radiological findings were lobar pneumonia was seen in 52%, interstitial pneumonia in 12%, bronchopneumonia in 30% and pleural effusion in 6% patients. The difference was significant ( $P < 0.05$ ). **Conclusion:** Common clinical findings were fever, dyspnea, cough, expectoration, nausea/vomiting and pleuritic chest pain. Radiological findings were lobar pneumonia, interstitial pneumonia, bronchopneumonia and pleural effusion.

**Key words:** Community acquired pneumonia, S aureus, H. influenza

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#### INTRODUCTION

Chronic pneumonia is defined as an acute inflammation of the pulmonary parenchyma. It may result from various infective and non-infective agents.<sup>1</sup> Community acquired pneumonia (CAP) is an acute illness characterized signs and symptoms of lower respiratory tract infection (LRTI). The name community acquired is because it is acquired from community.<sup>2</sup>

CAP is one of the most common reasons for hospitalization in the US. It can affect individuals of any age and cause significant strain on the healthcare system due to its financial burden; but more importantly, it carries significant morbidity and mortality. Most of the mortality occurs in patients that require hospitalization. The understanding of the multiple components about CAP, such as the incidence, epidemiology, and outcomes of patients, can help us guide preventative measures and treatments.<sup>3,4</sup>

The number of patients with compromised immune status has significantly increased and subsequently the

cases of CAP in the last few year,. Worldwide, the cases of AIDS due to human immunodeficiency virus (HIV) disease have increased.<sup>5</sup> Patients with liver or kidney transplantation are on medication such as immunosuppressive agents. Similarly, there have been rise in CAP in such patients. Bacteriological profile of the patients shows presence of S. pneumonia, K. pneumonia, S. aureus, H. influenza, Pseudomonas and Acinetobacter and E. coli.<sup>6</sup> The present study was conducted to assess cases of community acquired pneumonia (CAP).

#### MATERIALS & METHODS

The present study comprised of 116 patients with community acquired pneumonia (CAP) of both genders. All patients were informed regarding the study and written consent was obtained.

Patient profile such as name, age, gender etc. was recorded. Diagnosis of CAP was made based on presence of fever with temperature above 37.8°C, sputum production and presence of cough. A thorough clinical examination was performed in all patients.

Blood sample was obtained and routine laboratory tests were performed. Patients were subjected to CT chest taken with Toshiba machine. Sputum sample was obtained and culturing on blood agar and MacConkeys agar media was done followed by

inoculation on appropriate agar medias at 37°C for 48-72 hours. Results thus obtained were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

|                   |              |                |
|-------------------|--------------|----------------|
| <b>Total- 116</b> |              |                |
| <b>Gender</b>     | <b>Males</b> | <b>Females</b> |
| Number            | 62           | 54             |

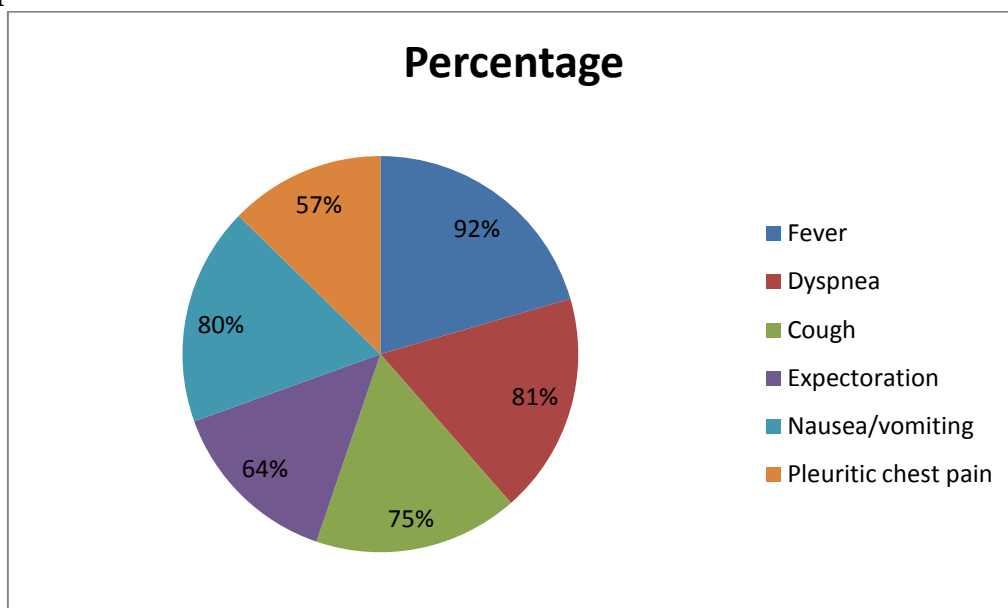
Table I shows that out of 116 patients, males were 62 and females were 54.

**Table II Clinical profile of patients**

| Clinical features    | Percentage | P value |
|----------------------|------------|---------|
| Fever                | 92%        | 0.71    |
| Dyspnea              | 81%        |         |
| Cough                | 75%        |         |
| Expectoration        | 64%        |         |
| Nausea/vomiting      | 80%        |         |
| Pleuritic chest pain | 57%        |         |

Table II, graph I shows that common clinical findings were fever in 92%, dyspnea in 81%, cough in 75%, expectoration in 64%, nausea/vomiting in 80% and pleuritic chest pain in 57% patients. The difference was significant (P< 0.05).

**Graph I**



**Table III Assessment of radiological findings**

| Radiological findings  | Percentage | P value |
|------------------------|------------|---------|
| Lobar pneumonia        | 52%        | 0.01    |
| Interstitial pneumonia | 12%        |         |
| Bronchopneumonia       | 30%        |         |
| Pleural effusion       | 6%         |         |

Table III shows that radiological findings were lobar pneumonia was seen in 52%, interstitial pneumonia in 12%, bronchopneumonia in 30% and pleural effusion in 6% patients. The difference was significant (P< 0.05).

**DISCUSSION**

CAP is the leading cause of infectious disease-related death in the US, with mortality occurring largely in patients who require hospitalizations. It accounts for

4.5 million outpatient and emergency room visits annually.<sup>7</sup> It is the second most common cause of hospitalizations and the most common infectious cause of death.<sup>8</sup> It is estimated that 1.5 million unique

CAP hospitalizations occur each year. CAP is not a reportable infection in the United States; therefore, data regarding the burden of the disease is primarily obtained through clinical investigation.<sup>9,10</sup> The present study was conducted to assess cases of community acquired pneumonia (CAP).

In present study, out of 116 patients, males were 62 and females were 54. Chow et al<sup>11</sup> included 1782 cases and found that mean age was 64.4 years with 59.4% men and 40.6% women. It was found that 60% had community acquired and 28.5% had hospital acquired. 97% had abnormal chest radiographic findings. *Haemophilus influenzae* was isolated in 204 patients, *Staphylococcus aureus* in 152 patients, *Streptococcus pneumoniae* in 143 patients, *Escherichia coli* in 113 patients and *Pseudomonas aeruginosa* in 111 patients. 104 patients had complications. There was 17 days and 43 days average length of hospitalization in the CA and NA groups respectively. At time of discharge 1261 patients (78%) were cured or improved and 361 patients (22%) died during the admission.

We observed that common clinical findings were fever in 92%, dyspnea in 81%, cough in 75%, expectoration in 64%, nausea/vomiting in 80% and pleuritic chest pain in 57% patients. Jain et al<sup>12</sup> enrolled 2488 of 3634 eligible adults (68%). Among 2320 adults with radiographic evidence of pneumonia (93%), the median age of the patients was 57 years (interquartile range, 46 to 71); 498 patients (21%) required intensive care and 52 (2%) died. Among 2259 patients who had radiographic evidence of pneumonia and specimens available for both bacterial and viral testing, a pathogen was detected in 853 (38%): one or more viruses in 530 (23%), bacteria in 247 (11%), bacterial and viral pathogens in 59 (3%), and a fungal or mycobacterial pathogen in 17 (1%). The most common pathogens were human rhinovirus (in 9% of patients), influenza virus (in 6%), and *Streptococcus pneumoniae* (in 5%). The annual incidence of pneumonia was 24.8 cases (95% confidence interval, 23.5 to 26.1) per 10,000 adults, with the highest rates among adults 65 to 79 years of age (63.0 cases per 10,000 adults) and those 80 years of age or older (164.3 cases per 10,000 adults). For each pathogen, the incidence increased with age.

We found that radiological findings were lobar pneumonia was seen in 52%, interstitial pneumonia in 12%, bronchopneumonia in 30% and pleural effusion in 6% patients. Jain et al<sup>13</sup> in their study on 55 patients found that sputum was the most common etiological source of organism isolation seen 44 patients followed by blood in 11. *Streptococcus pneumoniae* was the commonest pathogen seen in 20 (36.4%) followed by *Klebsiella pneumoniae* in 16 (29%), *Staphylococcus aureus* in 11 (20%) and other Gram-negatives bacilli in 8 (14.5%), *Haemophilus influenzae* in 5.5%, *Pseudomonas* in 1.8%, *Acinetobacter* in 1.8%, *Enterobacter* in 1.8%, *Escherichia coli* in 1.8%,

*Citrobacter* in 1.8%. 67.5% cases were seen in in males and elderly age group (68.3%). 92.5% patients had cough, 90% had fever, 59.2% had dyspnea, expectoration in 55%, pleuritic chest pain was evident in 14.2%. 40.8% had habit of smoking, 35.8% had chronic obstructive airway disease, 16.7% had cardiovascular disease, 12.5% had alcoholism, 6.7% had diabetes mellitus 2.5% had neurological disorders. Lobar pneumonia with right lower lobe consolidation was seen in 48.3% patients followed by left lower lobe infiltration.

## CONCLUSION

Authors found that common clinical findings were fever, dyspnea, cough, expectoration, nausea/vomiting and pleuritic chest pain. Radiological findings were lobar pneumonia, interstitial pneumonia, bronchopneumonia and pleural effusion.

## REFERENCES

1. Welte T. Risk factors and severity scores in hospitalized patients with community-acquired pneumonia: prediction of severity and mortality. *European journal of clinical microbiology & infectious diseases: official publication of the European Society of Clinical Microbiology* 2012;57(1), 33–47.
2. Cilloniz C, Martin-Loeches I, Garcia-Vidal C, San Jose A, & Torres A. Microbial Etiology of Pneumonia: Epidemiology, Diagnosis and Resistance Patterns. *International Journal of Molecular Sciences* 2016;17(12).
3. Siegel RE, Halpern NA, Almenoff PL, Lee A, Cashin R, Greene JG. A prospective randomized study of inpatient IV. Antibiotics for community-acquired pneumonia. The optimal duration of therapy. *Chest* 1996;110:965-71.
4. Lieberman D, Schlaeffer F, Boldur I, Lieberman D, Horowitz S, Friedman MG, et al. Multiple pathogens in adult patients admitted with community acquired pneumonia: A one year prospective study of 346 consecutive patients. *Thorax* 1996;51:179-84.
5. Shah BA, Singh G, Naik MA, Dhobi GN. Bacteriological and clinical profile of Community acquired pneumonia in hospitalized patients. *Lung India* 2010;27:54-7.
6. Bansal S, Kashyap S, Pal LS, Goel A. Clinical and bacteriological profile of community acquired pneumonia in Shimla, Himachal Pradesh. *Indian J Chest Dis Allied Sci* 2004;46:17-22.
7. Arbo MD, Snyderman DR. Influence of blood culture results on antibiotic choice in the treatment of bacteremia. *Arch Intern Med* 1994;154:2641-5.
8. Kumari RP, Vipula VA, Jain S. Clinical, radiological and bacteriological profile of patients with community acquired pneumonia (CAP). *IAIM*. 2016;3(6):59-64.
9. Rider AC, & Frazee BW. Community-Acquired Pneumonia. *Emergency medicine clinics of North America* 2018;36(4):665–683.
10. Steel HC, Cockeran R, Anderson R, & Feldman C. Overview of community-acquired pneumonia and the role of inflammatory mechanisms in the immunopathogenesis of severe pneumococcal disease. *Mediators of inflammation* 2013;490346.
11. Chow CW, Lee-Pack LR, Senathiragah N, Rawji M, Chan M, Chan CK. Community acquired, nursing

- home acquired and hospital acquired pneumonia: a five-year review of the clinical, bacteriological and radiological characteristics. *Canadian Journal of Infectious Diseases and Medical Microbiology*. 1995;6(6):317-24.
12. Jain S, Self WH, Wunderink RG, Fakhran S, Balk R, Bramley AM, Reed C, Grijalva CG, Anderson EJ, Courtney DM, Chappell JD. Community-acquired pneumonia requiring hospitalization among US adults. *New England Journal of Medicine*. 2015 Jul 30;373(5):415-27.
13. Jain SK, Jain S, Trikha S. Study of Clinical, Radiological, and Bacteriological Profile of Community-Acquired Pneumonia in Hospitalized Patients of Gajra Raja Medical College, Gwalior, Central India. *Int J Sci Stud* 2014;2(6):96-100.