ORIGINAL RESEARCH PAPER

Volume-8 | Issue-3 | March-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

# CLINICAL PROFILE, RISK FACTORS, BACTERIOLOGY AND CURB -65 SCORE CATEGORIZATION IN COMMUNITY ACQUIRED PNEUMONIA

General Medicine

**Srinivasa Murthy** MD Associate Professor Department of Medicine PGIMER and DR RML Hospital New Delhi

## ABSTRACT

The study was done to observe the clinical features, risk factors, etiological agents and also to assess the severity of the clinical condition, so that patient can be managed accordingly in Community acquired Pneumonia. This is an observational study. The study includes 126 patients assessed for the relevant clinical features on presentation. Then assessing their risk factors and Sputum culture samples for the causative agent as per the clinical spectrum prevalent in the region. The study has shown common clinical features such as fever, cough, sputum, Dyspnoea, chest pain as the main presenting complaints .Among the clinical signs bronchial breath sounds, crepitations, dullness on percussion and tachypnea were important in patients. CURB-65 score is utilized to assess the severity and categorizing patients for the preferred management as either outpatient, inpatient or intensive care therapy.

## KEYWORDS

clinical profile, risk factors, Bacteriology, CURB-65 score, community acquired Pneumonia

## INTRODUCTION:

Community acquired pneumonia is one of the cause of morbidity and mortality in world (1).It affects all age group from infancy to old age. It is a serious cause of morbidity and mortality in elderly people (2).In India there is no proper field survey to accumulate the data for the prevalence of community acquired pneumonia (3).Also there is no proper utilization of radiology and sputum culture methods to diagnose community acquired pneumonia. Hence the diagnosis is solely based on history, physical examination and a diagnosis of Lower respiratory tract infection is made and antibiotics are started. WHO data shows global burden of lower respiratory tract infection with community acquired pneumonia stands at 429.2 million and global pneumonia burden of India accounts for 23%.Also it is observed that estimated death rate and age adjusted death rate were high in India compared to U.K that is 89.5/100000population, 113.6/100000 population respectively in the year 2004(4). Association of community acquired pneumonia with smoking and alcoholism was found in studies. Streptococcus pneumonia is commonly seen with alcoholism in cases with community acquired pneumonia (5, 6). A study from Vellore has found the prevalence of Mycoplasma pneumonia with HIV infection(7).Overall studies conducted at Delhi, M.P, Kashmir, Himachal Pradesh have concluded that following organisms Streptococcus Pneumoniae, Klebsiella, Pseudomonas are prevalent in community acquired pneumonia(8,9,10).This study focuses in the clinical features with symptoms, signs, associated risk factors, co-morbidity, radiology of the cases including type of lung involvement and causative organism involved in the community acquired pneumonia. Also assessing the severity and type of management required in the patients suffering from community acquired pneumonia.

## MATERIALS AND METHODS:

This is an observational prospective, Descriptional study done at the inpatient and outpatients of the Department of medicine, Dr RML hospital with study duration of 6 months. Total 126 patients with features suggestive of community acquired pneumonia were studied. Clinical features, associated risk factors, co-morbidities, radiological features, sputum culture,CURB-65 score, type of therapy provided are recorded and depicted using descriptive statistics.

### Inclusion criteria:

1. All males and Females ≥15 year
2. Diagnosis of community acquired pneumonia established by history, physical examination supported by radiology and sputum culture.

### Exclusion criteria:

1. All Males and Females < 15 year
2. Patients with history of hospitalization other than community acquired pneumonia were excluded from the study.

## RESULTS:

Total 126 patients were studied in which 67(53.17%) males, 59 (46.82%) females infected with community acquired pneumonia.[Table no.1] Community acquired pneumonia seen affecting > 65 year old (34 patients, 26.98%) followed by 55-64 age group(25 patients, 29.84%).Also at the age group of 15-24 years 20 (15.87%) patients affected. While evaluating the clinical symptoms of community acquired pneumonia in 126 patients the following were observed. Fever was present in all patients. Other features observed in the following order of frequency: Cough (98.41%), Constitutional symptoms (93.65%), Pleuritic chest pain (80.95%), whitish sputum (61.90%), Yellowish sputum (33.33%), Dyspnoea (52.38%) [Table no.2]

The study observed the following clinical signs in Respiratory System:-Bronchial breath sounds(95.23%), Crepitations (94.44%), Dullness on percussion (88.88%), Tachypnoea (85.71%).The observed cardiovascular signs were tachycardia (82.53%),hypoten sion (12.69%)and the neurological sing of clouding of consciousness in 14(11.11%) patients.[Table no.3] Among the predisposing factors highly consistent risk factor was smoking in 116 (92.06%) patients. This was followed by alcoholism in 108 (85.71%) patients. Previous co-morbidities such as COPD, Bronchial Asthma, hypertension found in 40(31.74%) patients .HIV infection found in 5 (3.96%) patients[Table no.4].During the assessment of radiological features consolidation of lower lobe predominantly found in 70 (50.55%) patients. Upper lobe consolidation in 44 (34.92%) and whole lung involvement is seen in 6 (4.76%) patients. Right sided lung involvement seen in 71 (56.34%) patients and left sided involvement seen in 55(43.65%) patients. Associated Pleural effusion observed in36 (28.57%) patients [Table no 5&6].

The study Observed sputum cultures were positive for Streptococcus Pneumoniae in 59(46.82%), Klebsiella in 26 (20.63%) and Staphylococcus Aureus in 20 (15.87%) patients [Table no.7].

During the evaluation of severity of community acquired pneumonia using CURB-65 score the following were observed. In risk group 1, there were 79 (62.69%) patients. In risk group 2 there were 35 (27.77%) patients and risk group 3 had 12 (9.52%) patients [Table no.8].

**Age and Gender distribution Table no.1**

| Age group in years | Male | Female | Total |
|---|---|---|---|
| 15-24 | 11(55%) | 9(45%) | 20(15.87%) |
| 25-34 | 9(56.25%) | 7(43.75%) | 16(12.69%) |
| 35-44 | 5(50%) | 5(50%) | 10(7.93%) |
| 45-54 | 11(52.38%) | 10(47.61%) | 21(16.66%) |
| 55-64 | 13(52%) | 12(48%) | 25(19.84%) |
| >65 | 18(52.94%) | 16(47.05%) | 34(26.98%) |
| **Total** | **67(53.17%)** | **59(46.82%)** | **126** |

**Distribution of Clinical Symptoms Table no.2**

| Clinical Symptoms | Number of Patients |
|---|---|
| Fever | 126(100%) |
| Cough | 124(98.41%) |

| | |
|---|---|
| Whitish Sputum | 78(61.90%) |
| Yellowish Sputum | 42(33.33%) |
| Yellowish green Sputum | 6(4.76%) |
| Haemoptysis | 12(9.52%) |
| Pleuritic Chest pain | 102(80.95%) |
| Dyspnoea | 66(52.38%) |
| Constitutional symptoms | 118(93.65%) |

**Distribution of Clinical signs Table no.3**

| Clinical Signs | Number of patients |
|---|---|
| Tachypnea >25 breath/minute | 108(85.71%) |
| Dullness on Percussion | 112(88.88%) |
| Crepitation | 119(94.44%) |
| Bronchial breath sounds | 120(95.23%) |
| Fluid shift | 36(28.57%) |
| Tachycardia >90 beats/minute | 104(82.53%) |
| Hypotension | 16(12.69%) |
| Clouding of consciousness or Alertness | 14(11.11%) |

**Predisposing factors and Comorbidities Table no.4**

| Predisposing factors | Number of patients |
|---|---|
| Smoking | 116(92.06%) |
| Alcoholism | 108(85.71%) |
| Previous co morbidity COPD/Bronchial Asthma/Hypertension | 40(31.74%) |
| HIV Positive | 5(3.96%) |

**Type of Consolidation of lung Table no.5**

| Consolidation | Right Lung | Left Lung | Total |
|---|---|---|---|
| Upper Lobe | 24(54.54%) | 20(45.45%) | 44(34.92%) |
| Middle Lobe/Lingula | 3(50%) | 3(50%) | 6(4.76%) |
| Lower Lobe | 40(57.14%) | 30(42.85%) | 70(55.55%) |
| Whole Lung | 4(66.66%) | 2(33.335) | 6(4.76%) |
| **Total** | **71(56.34%)** | **51(43.65%)** | **126** |

**Pleural effusion Table no 6**

| Right sided Pleural effusion | Left sided Pleural effusion | Total |
|---|---|---|
| 20 | 16 | 36(28.57%) |

**Microbiological agents of Community acquired Pneumonia Table no.7**

| Microbiological agents | Number of patients |
|---|---|
| Streptococcus Pneumoniae | 59(46.82%) |
| Staphylococcus Aureus | 20(15.87%) |
| Klebsiella | 26(20.63%) |
| H.Influenzae | 7(5.55%) |
| Pseudomonas | 9(7.14%) |
| Mycoplasma Pneumoniae | 5(3.96%) |
| Total | 126 |

**CURB-65 Score Table no.8**

| Risk group | Number of patients |
|---|---|
| 1 | 79(62.69%) |
| 2 | 35(27.77%) |
| 3 | 12(9.52%) |

## DISCUSSION:

The study shows there is a variation in the proportion of affected males between young (15-34 year) and older (55-65&above) patients suffering from community acquired pneumonia. Study done by Shah BA et all has shown that pneumonia is frequently common in older age group. They have also stated that community acquired pneumonia is increasingly affects those with co-morbidities such as COPD, Renal failure and CHF(11).Younger age group have become prone for community acquired pneumonia may be due to the early initiation of risk factors such as smoking, alcohol consumption, nutritional deficiencies, air pollution. This study has also observed that among the risk factors Smoking (92.06%) is the most frequent followed by alcoholism (85.71%) were associated with community acquired pneumonia. Among the co-morbidities were COPD, Bronchial Asthma, Hypertension found in 40(31.74%) patients. A systematic review study conducted by Almiral J et all found that following risk factors age, smoking, nutritional status and environmental exposure were associated with community acquired pneumonia. Comorbidities such as COPD, Asthma, prior CAP, periodontal disease were also associated with community acquired pneumonia (12)

Clinical symptoms and signs observed in this study are also found in the study conducted by Sandeep Kumar Jain et all (13).According to the imaging of Pneumonia trends and algorithm, bacterial pneumonia usually causes lobar consolidation. Lobar consolidation seen in most commonly with Streptococcus pneumoniae followed by Klebsiella, Gram negative bacilli, L.Pneumophilia, H.Influenza, M.Pneumonia (14,15,16). Study by SK Jain et all also found that lower lobe consolidation was predominant in community acquired pneumonia. This study has also observed a predominance of lower lobe consolidation followed by upper lobe and diffuse lung lung involvement in 6 cases. It is also observed that an associated pleural effusion seen in 36 (28.57%) cases. As per Andrew Rosenstengel Streptococcus pneumonia, Streptococcus pyogenes, Staphylococcus aureus, Streptococcus milleri group and intermedius are associated with pleural effusion (17).In the etiological agents this study has shown the growth of Streptococcus pneumonia (46.82%), Klebsiella (20.63%)and Staphylococcus aureus (15.87%)by sputum culture. Study conducted by Sagar Khadanga et all has shown that Streptococcus pneumonia followed by Pseudomonas, Klebsiella,Staphylococcus Aureus, are commonest organisms causing community acquired pneumonia(18).These organisms are also found in Europe, U.S, U.K,and Iraq. While in India the trend varies geographically from Streptococcus pneumonia in Delhi, Shimla followed by Pseudomonas aeruginosa in Ludhiana and Karnataka (8, 10).

In the assessment of severity of community acquired pneumonia using CURB-65 score and the management were as follows and they are in line with the standard guideline protocols. This study shows 79 (62.99%) cases in risk group 1and managed on outpatient basis. Risk group 2 had 35 (27.77%) cases and were managed with short hospital stay and continued supervisory care on outpatient department. Risk group 3 had 12 (9.52%) cases who needed intensive care management (19).

## CONCLUSION:

The study conducted shows that community acquired pneumonia varies disproportionately with the age group of young adults and elderly population. Commonly associated risk factors and comorbidities are smoking, alcoholism, COPD,Bronchial Asthma, air pollution. The common clinical features are consistent in all cases. Streptococcus pneumonia and Klebsiella are the commonest organism causing community acquired pneumonia. CURB-65 score is an important tool in categorizing the risk group and subsequent management.

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