



AN EPIDEMIOLOGICAL AND CLINICAL PROFILE OF COMMUNITY ACQUIRED PNEUMONIA AT A TERTIARY CARE CENTER

General Medicine

Deepak Kumar Postgraduate General Medicine, RIMS Ranchi.

Dileep Dandotiya* Postgraduate Community Medicine, GMC Bhopal. *Corresponding Author

Vinod Dangi Assistant Professor, Dept. of General Medicine, ABVGMC Vidisha.

RK Jha Professor and Head, Dept. of General Medicine, RIMS Ranchi.

ABSTRACT

INTRODUCTION: Community acquired pneumonia has a variety of ways of clinical presentation and different prognosis for different epidemiological and patient related risk factors. Hence a better understanding of this condition will help clinicians in early detection of cases with poor prognosis leading to improved clinical practice and disease prognosis.

AIM: The aim of this study is to assess epidemiological and clinical risk factors affecting morbidity and mortality in community acquired pneumonia at a tertiary care center.

METHOD AND MATERIALS: 60 patients with clinical diagnosis of community acquired pneumonia were included at Rajendra Institute Medical Sciences Ranchi. detailed clinical history, physical examination and relevant investigations were performed. Patients with diagnosis of HIV and hospital acquired pneumonia were excluded.

RESULT: The incidence of community acquired pneumonia was more common in elderly age group (>49 years of age) as compared to younger population. Rural population has increased proportion of patients. Risk factors like Chronic obstructive pulmonary disease, smoking, diabetes and alcoholism had worse prognosis as compared to otherwise healthy individuals.

15 patients developed complications and 10 of these patients died.

CONCLUSION: elderly patients and patients who develop complications at the time of admission require special attention with close monitoring and early categorization for intensive care.

KEYWORDS

Community Acquired Pneumonia, Epidemiology, Risk Factors, Complications, Mortality.

INTRODUCTION :

Sir William Osler, known as "The Father of Modern Medicine" appreciated the morbidity and mortality of Pneumonia, describing it as the "captain of the man of death" in 1918. Pneumonia is a common illness affecting approximately 450 million people a year and occurring in all parts of the world [1]. It is a major cause of death among all age groups resulting in 4 million deaths (7% of the world's total death) yearly [2]. In the United States pneumonia is the sixth leading cause of death [3,4]. The cause of CAP is often difficult to establish. Despite the progress made in the diagnosis of pneumonia. It takes a few days to identify the causative micro-organism in the blood or sputum samples and the etiology of half of patients with CAP remains uncertain. To reach on a logical therapeutic decisions physicians need reliable data on the relative prevalence of different etiologic agent in the patients "area of residence" in addition to the clinical, laboratory and radiological findings [5]. Pneumonia is an infection of lung parenchyma. It results from proliferation of microbial pathogens like bacteria, viruses, fungi and protozoa at the alveolar level and host response to these pathogens. Despite being case of such a great concern it is often misdiagnosed, mistreated and underestimated [6].

The IDSA (Infectious Disease Society of America) defines CAP as "an acute infection of the pulmonary parenchyma that is associated with at least some symptoms of acute infection, accompanied by the presence of infiltrate on a chest radiograph or subject findings consistent with pneumonia (such as bronchial breath sounds and/or localized rales), in patient not hospitalized or residing in a long term care facility for more than 14 days before onset of symptoms [7]. pneumonia is sometimes referred to as the forgotten killer. The World health organization estimates that lower respiratory tract infection is the most common infectious cause of death world, the third most common cause overall with almost 3.5 million deaths annually [8].

Studies from United Kingdom, United States of America and Europe attest to the considerable burden of the disease associated with this infection in the developed world [9,10,11]. Furthermore most countries in Asia and Africa have 2 to 10 fold more pneumonia in children than in United States. In a developing country like India infectious disease like pneumonia are a leading cause of mortality especially among lower socioeconomic strata [12]. In India during the year 2013 about 31.7 million cases of acute respiratory tract infection (ARI) were reported and about 3278 people died of ARI out of them 2597 died of pneumonitis [13].

AIM & OBJECTIVES

Aim of this study is to assess the epidemiological and clinical risk factors affecting morbidity and mortality in community acquired pneumonia

1. To study the epidemiology and clinical presentation of community acquired pneumonia.
2. To study the risk factors in relation to morbidity and mortality.

MATERIALS AND METHODOLOGY :

Source Of Data: patients admitted in department of general medicine at Rajendra institute of medical sciences.

Period Of Study: October 2015 to October 2016.

Study Subject: patients with clinical features of community acquired pneumonia.

Study Design: observational cross sectional study.

Method Of Collection Of Data: All included patients were subjected for a detailed history and clinical examination. Standard protocol was used for collection of random sampling. Informed consent was obtained from all the patients.

Inclusion Criteria: patients who presented with or in combination of any of the symptoms like cough with expectoration, fever (temperature >98.8 degree F), chest pain (pleuritic type) and breathlessness. All patients were subjected for detailed history and clinical examination to make a provisional diagnosis of Community Acquired Pneumonia.

Exclusion Criteria: patients with hospital Acquired Pneumonia, Aspiration Pneumonia and with history of antibiotic intake prior to this admission were excluded and pneumocystis j. pneumonia in patients with HIV was also excluded.

Statistical Analysis: Data obtained from history and clinical examination was recorded according to the proforma followed by examination of the patient's sputum and chest X-ray. The obtained information was arranged using a master chart and statistically analysis done by software SPSS 16.

RESULT/OBSERVATION

The study population had total 60 cases out of which male consisted of

40 subjects and female were 20 in number. Most of the case i.e. 43 were in above 49 years of age group (71.66%).

Table No.1 Age Distribution Of Pneumonia Cases

Age distribution(years)	Number of cases	Percentage
<20	2	3.3%
20-30	4	6.6%
30-40	6	9.9%
40-49	5	8.3%
50-60	14	23.3%
60-70	14	23.3%
>70	15	25%
Total	60	100

65% of population belonged to rural residence. 63% of patients were of tribal origin. Data of presenting complaints shows that fever and cough are most common presenting complaints in both age groups (<49 years and >49 years). Fever was seen in less number of patients in elderly population as compared to young patients. Sputum expectoration and dyspnoea were noticed in 47% and 60% of patients respectively. Chest pain was seen more in younger age group (23.5%) than elderly (4.6%) of patients. Nausea and vomiting was associated with 11% and 14% of cases respectively. Altered mental status observed in 2 patients in elderly population (4.6%).

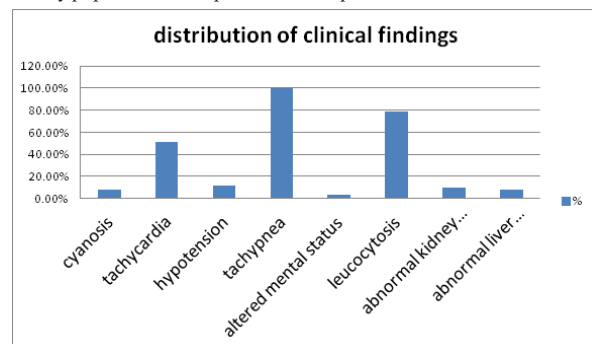
Distribution Of Predisposing Risk Factors :

Among all observed risk factors or comorbidities which can affect prognosis were smoking (40%) and chronic obstructive airway disease (36.66%) cases. Mostly seen in elderly population. Cerebrovascular accidents (1.6%), liver disease (1.6%) and diabetes mellitus seen in 6.66% cases were seen in elderly only while cardiovascular disorder (16.66%) and alcoholism (11.66%) were seen in both age groups with a higher number in elderly population.

Table No.2 Distribution Of Predisposing Risk Factors

Risk factors	Total no of patients	Overall percentage of risk factors (n=60)
Smoking	24	40%
Chronic obstructive airway disease	22	36.6%
Diabetes	4	6.66%
Alcoholism	7	11.6%
Liver disease	1	1.6%
CVS disorder	10	16.66%
CVA	1	1.6%

Among clinical findings tachypnea was universally seen in all patients followed by leucocytosis in 78.3% and tachycardia in 51.6% of patients. Cyanosis, deranged renal and liver function were observed in 8 to 10% of patients. Hypotension developed in 11% of patients. In elderly population 3.3% patients developed altered mental status.



Among complications notably shock was more prevalent and developed in 11.6% of cases. Acute respiratory distress and pleural effusion was seen in 6.6% of cases. Total 15 cases developed complications i.e. 25% of our study population.

Table No.3 Distribution Of Cases With Complications

Complications	No. of cases (n=60)	% of cases
Shock	7	11.6%
Pleural effusion	4	6.6%
ARDS	4	6.6%
TOTAL	15	25%

Total death were 10 (16.66%). Duration of illness before presentation to our health facility was 6.5 average in death group and 5.18 days in alive group also mean pulse rate was 135 and 100 in death and alive group respectively. similarly mean respiratory rate was 41 in mortality group and 32 in alive group. For age, the mean age was 64 who died and 54 in alive group.

Watching association between various risk factors and development of complications, diabetes mellitus came to be the most notorious one as 50% of diabetic with pneumonitis developed complications followed by cases with chronic obstructive airway disease that had complications in 36.36% of cases. Alcohol intake was also seen with increased tendency to develop complications (28.5%). Cardiac disorders and history of smoking without COAD developed complications in 10 to 12% of cases respectively.

No significant role of gender was seen on mortality. 90% of mortality seen in elderly age group (90%). Studying risk factors and death, altered mental status and Cerebrovascular accident had 100% mortality followed by COAD (36.30%) and smoking (29.16%) and alcoholism (28.60%). Lastly among complicated cases that had death as outcome, shock had 50% mortality followed by acute respiratory distress syndrome where 40% cases died. Pleural effusion cases did not show any increased tendency of mortality.

DISCUSSION

This study dealt with epidemiology and clinical profile of community acquired pneumonia and its effect on prognosis. Maximum number of patients (71.66%) were seen in elderly age group (>49 years) probably due to increased incidence of co morbidities like diabetes mellitus, alcoholism etc. Also this age group has decreased cough reflex and gag reflex as well as decreased antibody response and toll like receptor leading to increased susceptibility to infection. In united states the overall annual rate of pneumonia is 12 cases per 1000 population but the incidence increases to 20/1000 among persons >60 years. [14].

The higher incidence in male population is due higher exposure to smoking, alcoholism, crowded places and healthcare facilities leading to increased vulnerability to infections. About 65% of population belong to rural origin. Illiteracy, insanitation, overcrowding, malnutrition, poor coverage of vaccination, ignorance to prevent droplet infection may be the responsible factors. Co morbidities and risk factors like smoking, diabetes have been seen associated more commonly. These conditions causes structural damage to lungs causing decreased ciliary motility leading to stasis of secretions and infections.

Among complications developed, most common was shock (11.65% cases) especially in cases with septicaemia which was very difficult to manage and had very bad prognosis. Synpneumonic pleural effusion seen in 6.6% of cases seen on chest x ray and confirmed by needle thoracocentesis. ARDS (acute respiratory distress syndrome) was also seen in 6.6% of cases which is notoriously known to have increased mortality. These cases had to managed initially with broad spectrum antibiotics, vasopressors, steroids, oxygen and invasive ventilator support. All of them died. Total 15 patients developed complications either singly or in combination of one or many i.e. deranged renal or liver function tests or shock. Rest 45 patients had uncomplicated course. Mortality was 66.66% in complicated and zero in uncomplicated cases. Complications predispose patients to develop dyselethrolytemia, dehydration, septicaemia leading to increased morbidity and mortality.

Study of clinical presentation at the time of presentation to health care facility. Mean days of presentation >6.5 days had a bad prognosis. Mean pulse rate was 135 and tachypnea >41 seen in mortality group. Among pre-existing risk factors COAD and cigarette smoking had increased propensity to develop complications and mortality. Cigarette smoking is a well known risk factor by multiple mechanisms including pneumococcal carrier rate. In a study at Shimla by Bansal S, Pal LS et al, 2004, Indian J chest disease allied. 46, in addition to age, COAD and smoking were significantly associated with the development of Community acquired pneumonia as seen in a study by Farr BM, Barlett CL et al. Risk factors for community acquired pneumonia on hospital admission. BTS pneumonia group. Resp. Medicine 2000. There was no statistically significant difference of mortality seen between male and female. Out of total 10 mortalities, 9 were seen in age group >49 years of age. The higher no. Of death in elderly population may be due to higher no. Of patients with

comorbidity and increased no. Of cases with complications in this age group. Here age has come as an important factor determining prognosis. Percentage of mortality cases was 60% in rural population and 40% in urban population. Delayed presentation to health care and malnutrition may be a factor here.

CONCLUSION

Though community acquired pneumonia is a common diagnosis at any hospital setup but its epidemiology and clinical scenario varies with different population groups and geographical areas. After this study these are conclusions drawn to improve our knowledge and clinical practices. Rural residence patients usually present late to a health care. Elderly patients (>49 years of age) usually present with comorbidities. These patients should be given special emphasis. Those patients who have tachycardia (>135/min), tachypnea (>41/min) and hypotension (systolic BP <90 mm of Hg) should be categorised initially at the time of admission for admission to an intensive care unit for close monitoring to assess for development of complications. Patients who developed dreaded complications like acute respiratory distress syndrome or shock or both should be managed by ICU specialists, also they have very bad prognosis.

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