ORIGINAL ARTICLE

Characteristics and Outcome of Adult Patients with Community Acquired Pneumonia - Experience of a Tertiary Care Hospital in Pakistan

MUHAMMAD FAROOQ

Senior Registrar, Department of Pulmonology, Bolan Medical College Quetta

Correspondence to Dr. Muhammad Farooq, E-mail: farooq.oighor@gmail.com Cell: 0321-5368391

ABSTRACT

Aim: To evaluate the characteristics and outcome of patients with community acquired pneumonia admitted to a tertiary care hospital of Pakistan.

Study design: Retrospective observational study

Place and duration of study: Department of Pulmonology, Bolan Medical College Quetta from 1st January 2017 to 31st December 2018.

Methodology: Two hundred and ninety three patients were enrolled. Baseline demographics and characteristics, clinical features, complications and mortality were recorded for each patient at a tertiary care hospital of Quetta.

Results: There were 170 (58%) male patients with mean age 61.74 ± 16.15 years. The average length of hospital stay was 4.88 ± 4.0 days. Fifty nine (20.2%) had COPD, 65 (22.2%) were active smokers and 54 (18.4%) were ex smokers. The parapneumonic effusion during the course of the disease was found to be 49 (16.7%). Fourteen (5.8%) of the patients had empyema. Forty eight (16.4%) patients among the study population died during their hospital stay.

Conclusion: The community acquired pneumonia has high mortality rate and high frequency of complications like parapneumonic effusion and empyema among the patients admitted to a tertiary care hospital of Pakistan.

Keywords: Community acquired pneumonia. Parapneumonic effusion, Empyema

INTRODUCTION

Community-acquired pneumonia (CAP) is a common public health problem. It has an incidence ranging between 3 and 40 per 1,000 populations per year, with rates of hospitalization between 40 and 60%. The overall mortality rate among hospitalized patients is 10%.¹

The symptoms of CAP vary from high grade fever, cough and chest pain in young patients to merely confusion and altered mental status among elderly. Similarly clinical and laboratory variable also differ among individual patients depending upon the age and co morbid conditions of the patient and severity of the disease.² Some of the well known complications of CAP include: respiratory failure sometimes severe enough that heralds admission to ICU and the need for mechanical ventilation, complicated parapneumonic effusion and empyema requiring intercostals drainage, VATS decortications or thoracotomy.^{3,4}

Several risk factors in terms of catching CAP, mortality, morbidity, complications and severity of disease have been reported in different descriptive studies. But the findings vary among communities where these studies have been conducted.^{2,5} There may be several reasons for such variations. For example; the delay in time for consulting a doctor, appropriate use of antibiotics, perception of the patient about the disease, co morbidities might have been playing role in the determination of complications and outcome of the CAP.

Community-acquired pneumonia is a common disease in Pakistan as well, causing significant mortality. We designed this study to evaluate the characteristics and

outcome of patients with Community Acquired Pneumonia admitted to a tertiary care hospital of Pakistan.

MATERIALS AND METHODS

This retrospective observational study was conducted at Department of Pulmonology, Bolan Medical College Quetta from 1st January 2017 to 31st December 2018 after approval from Ethical Committee. A total of 293 patients were enrolled. Patients' demographics, co-morbid conditions, smoking status, vital statistics, CURB 65 score and chest X-ray findings were recorded. Laboratory parameters like WBC counts, Platelet counts, hematochrit, BUN, Electrolytes were also noted. During the hospital stay complications like development of parapneumonic effusion, empyema, renal failure, multi-organ failure, sepsis and septic shock and death if happened were also documented. Patients having non resolving pneumonia, aspiration pneumonia, hospital acquired pneumonia, Pulmonary Tuberculosis (sputum/BAL smear positive for AFB), lung cancer and post obstructive pneumonia were excluded. The data was entered and analyzed through SPP-24.

RESULTS

There were 170 (58%) male patients and 123 (42%) female patients. The mean age was 61.74 ± 16.15 years and average length of hospital stay was 4.88 ± 4.0 days. Sixty (20.4%) had diabetes, 106(36.2%) had hypertension, 59(20.2%) had COPD, 11(3.7%) had bronchiectasis, 65(22.2%) were active smokers, 54(18.4%) were ex-smokers. Twenty one (7.3%) had coronary artery disease, 9(3%) had myocardial infarction in past and 4(1.4%) patients had congestive heart failure. Twenty three (7.8%) of the patients had chronic kidney disease (Table 1).

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It was found that 112(38.2%) patients had involvement of more than one lobe of the ipsilateral lung on chest X-rays while 80(27.3%) patients had bilateral infiltrates on their chest X-rays. Twenty five (8.5%) patients had radiological evidence of pleural effusion on their chest X-rays at the time of admission. The patients who had radiological evidence of pleural effusion at the time of admission plus those who developed pleural effusion during the course of the disease was found to be 45(56.4%). Fourteen (4.8%) of the patients had empyema. Forty two (14.3%) patients among the study population died during their hospital stay (Table 2)

Twenty seven (9.2%) subjects had septic shock (systolic blood pressure <90 mmHg or diastolic blood pressure <70mmHg) at the time of admission. On admission 61(20.8%), 50(17.1%), 15(5.1%) patients had CURB65 score of 2, 3 and 4 respectively. Two hundred and thirteen (72.3%) had increased WBCs (>11000) in their blood while 80 (27.3%) had thrombocytopenia i.e. platelet count <150,000 (Table 3).

Table 1: Demographic information of the patients (n=293)

Variable	No.	%
Gender		
Male	170	58.0
Female	123	42.0
Smoking status		
Active smokers	65	22.2
Ex-smokers	54	18.4
No smokers	174	59.4
Disease		
Chronic obstructive pulmonary disease	59	20.2
Hypertension	106	36.2
Diabetes	60	20.4
Chronic kidney disease	23	7.8
Congestive heart failure	4	1.4
Coronary artery disease	21	7.3
Bronchiectasis	11	3.7
Previous myocardial infarction	9	3.0

Table 2: Complications and chest X-ray findings of the population (n=293)

Variable	No.	%
Complications		
Parapneumonic effusion	45	15.4
Empyema	14	4.8
Death	42	14.3
Chest X-ray findings		
More than one lobe involvement	112	38.2
Bilateral involvement	80	27.3

Table 3: Clinical features and laboratory parameters of the study population

Variable	No.	%
Clinical parameters		
Shock	27	9.2
CURB65 score 2	61	20.8
CURB65 score 3	50	17.1
CURB65 score 4	15	5.1
Laboratory parameters		
WBC > 11000	213	72.7
Platelets <150,000	80	27.3

DISCUSSION

This observational study describes various characteristics of patients with CAP admitted to tertiary care hospital of

Pakistan. Mortality due to CAP in this study population is higher by around six percent than that reported from the developed world and by Irfan et al from a Karachi hospital, which is 10% and 11% respectively.^{1,6} Among other complications of CAP, the frequency of parapneumonic effusion and empyema in industrialized countries are reported in the range of 7.2 and 10.4%²⁻⁴ But the frequency of parapneumonic effusion and empyema is doubled and tripled respectively in this study group of Pakistani population.

Scoring system such as the confusion, urea, respiratory rate, low BP (CURB) score and CURB plus age of 65 years (CURB-65) score, stratify patients with Community-acquired pneumonia into mortality risk groups.^{7,8} We found that half of our study population had CURB 65 score of two and beyond. Clinicians have always evaluated the degree of leukocytosis in patients with pneumonia as an indication of systemic inflammatory response and severity of disease. Thrombocytopenia is also a recognized marker of poor outcomes in patients with pneumonia, due to the association of low platelet counts with disseminated intravascular coagulation and severe sepsis.^{8,9} Platelets are well recognized as an important component of systemic inflammation, innate and adaptive immunity. Platelet response in antimicrobial host defense is similar to the leukocyte response because both cell types contain antimicrobial peptides that act against a broad range of pathogens.^{9,10} In our study population majority of the patients (72.2%) had leukocytosis. One third of the study population had thrombocytopenia in this study. Since we have not analyzed the association of the severity or mortality due to CAP with thrombocytopenia, it would be worth investigating this association. This is because a significant proportion of our study population had thrombocytopenia.

Various facts and figures about the epidemic of tobacco and smoking are reported in several studies from other parts of Pakistan. Around half of the populations are current smokers in rural Sindh. 16 to 30% of university students are smoking in Pakistan.¹¹⁻¹³ Similar patterns of smoking behavior are observed in this study population. Almost a quarter of our study patients are found to be active smokers at the time of admission to hospital due to CAP. Also worth noting is the frequency of other co morbid conditions. Almost every other patient has hypertension, every third patient has diabetes and every sixth patients is diagnosed with coronary artery disease.

We have reported the increased frequency of various complications associated with CAP but this study does not mention the possible causes of this increase e.g. the duration of the illness, socioeconomic status of the patients, perception of the patients about the disease, usage antibiotics, smoking status and many more. On the other hand it has several strengths as well. This study is conducted on patients of CAP, most of them belonging to rural Sindh and Baluchistan and highlights the several characteristics and complications of CAP in our community.

CONCLUSION

The community acquired pneumonia has high mortality rate and high frequency of complications like parapneumonic effusion and empyema among the patients admitted to a tertiary care hospital of Karachi Pakistan.

Conflict of interest: Nil

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