CODEN (USA): IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

Available online at: http://www.iajps.com *Research Article*

DEMOGRAPHICAL, ETIOLOGICAL AND CLINICAL PROFILE OF COMMUNITY ACQUIRED PNEUMONIA IN ELDERLY POPULATION

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Abstract:

OBJECTIVE: *To determine the demographical, etiological and clinical profile of patient with community acquired pneumonia in elderly population.*

PATIENTS AND METHODS: *This cross sectional study of six months was conducted at tertiary care hospital Hyderabad. The inclusion criteria of the study was patients ≥ 60 years of age, either gender presented with clinical symptoms of fever, chest pain, cough with or without expectoration, shortness of breath and sensorium alteration were recruited in the study. The routine investigations along with radiological evaluation and sputum studies were the major tools to detect the pneumonia. The patients were management accordingly and observe the outcome as well while the data was collected on pre-designed proforma and analyzed in SPSS 16. The frequency and percentages was calculated while the numerical statistics were used to compute mean ±SD.*

RESULTS: *During six months study period total fifty patients with community acquired pneumonia was detected and studied demographically, etiologically and clinically. The mean ±SD for whole study population was 72.97±7.85. The male population was predominant 74%; the common co-morbidities observed were COPD (38%), diabetes mellitus (44%), hypertension (24%) and congestive cardiac failure (20%) while the smoking and alcoholism was detected in 44% and 22% population. The sputum Gram positive cocci and mixed pattern was identified in 40% and 44% while Streptococcus pneumonia, Klebsiella pneumonia and Pseudomonas aeruginosa was observed in 64%, 8% and 8% elderly population. On radiology, the lobar and bronchopneumonia was detected in 64% and 20% patients while the common complications identified were septic shock (37.5%), pleural effusion (25%) and acute respiratory distress syndrome (12.5%) whereas the mortality was observed in 12% elderly pneumonic patients.*

CONCLUSION: *Community acquired pneumonia in elderly population is a major health issue has varying clinical presentation and higher mortality rate*

Keywords: *Pneumonia, Community acquired pneumonia, Consolidation*

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Please cite this article in press as Akber Yousfani et al, ***Demographical, Etiological and Clinical Profile of Community Acquired Pneumonia in Elderly Population****, Indo Am. J. P. Sci, 2017; 4(03).*

INTRODUCTION:

Pneumonia the health trouble for aged persons is one of the most frequent infectious disease reported in clinical practice and common cause for mortality worldwide. [1-3] In developed countries almost one half of total hospitalization because of pneumonia occurs in individuals over 65 years of age and a cause of death in such age group. [4, 5] Managing pneumonia in elderly age group requires proper attention and expertise in medicine field and includes detail clinical history, clinical examination and relevant investigations; sometimes such age group needs ICU management. [6, 7] The effect of pneumonia on health of elderly person and its pattern and spread of complications is different than younger populations, as it may be latent with or without chills the scanty cough and expectoration, the physical signs and constitutional symptoms variable and atypical. [8, 9] Majority of the patients who needs hospitalization for treatment of community acquired pneumonia (CAP) are usually immuno-compromised or elderly population because of impaired body functions and host's defense mechanism against pulmonary infection, prior neurologic and nutritional disturbances, aging process and existence of co-morbidities. [10]

The non specific clinical presentation constitutes alteration of the general health, malaise, confusion, fever and flu like symptoms while the partial clinical picture of community in elderly population may be associated in a delay to establish the exact diagnosis and in starting adequate antibiotic therapy. [11, 12] Therefore the present study was conducted on the elderly patients presented with pneumonia at tertiary care hospital because early evaluation and timely management can prevent the patients to spread the infection as delay in diagnosis and treatment may contribute to the higher mortality rate in such age group with community acquired pneumonia.

PATIENTS AND METHODS:

This cross sectional study of six months was conducted at tertiary care hospital Hyderabad. The inclusion criteria of the study was patients ≥ 60 years of age, either gender presented with clinical symptoms of fever, chest pain, cough with or without expectoration, shortness of breath and sensorium alteration were recruited in the study. The informed consent was taken along with detail history and specific clinical examination (to detect the signs of consolidation) was performed and relevant investigations were advised to establish the diagnosis of community acquired pneumonia with the consultation of the senior physicians of the ward. The exclusion criteria of the study were patients with hospital acquired pneumonia, HIV positive, tuberculosis, lung malignancies and pregnant ladies. The related history for co-morbid illnesses addiction like smoking and alcoholism were also taken while the co-morbid illnesses were existence of co-existing heart failure, coronary heart disease, chronic pulmonary disease, chronic hepatic, neurological and renal disease, diabetes mellitus and hypertension and malabsorption. The routine investigations along with radiological evaluation and sputum studies were the major tools to detect the pneumonia. The patients were management accordingly and observe the outcome as well while the data was collected on pre-designed proforma and analyzed in SPSS 16. The frequency and percentages was calculated while the numerical statistics were used to compute mean ±SD.

RESULTS:

During six months study period total fifty patients with community acquired pneumonia was detected and studied demographically, etiologically and clinically. The mean ±SD for whole study population was 72.97±7.85. The findings of the study are presented in Table 1-3.

TABLE 1: THE DEMOGRAPHICAL PROFILE OF THE STUDY POPULATION

Parameter	Frequency (N=50)	Percentage (%)
AGE (yrs)		
60-65	20	40
66-69	15	30
70 +	15	30
GENDER		
Male	37	74
Female	13	26
CO-MORBIDITIES		
COPD	19	38
Diabetes mellitus	22	44
Congestive cardiac failure	10	20
Renal disease	04	8
Chronic liver disease	04	8
Hypertension	12	24
Obesity	06	12
Cerebrovascular accident	08	16
ADDICTION		
Smoking	22	44
Alcohol	12	24
CLINICAL FEATURES		
Cough	32	64
Expectoration	27	54
Fever	40	80
Shortness of breath	38	76
Chest pain	35	70
Altered sensorium	16	32

TABLE 2: THE SPUTUM AND RADIOLOGICAL FINDINGS OF STUDY POPULATION

PARAMETER	FREQUENCY (N = 50)	PERCENTAGE (%)
SPUTUM STUDY		
Gram positive cocci	20	40
Gram negative bacilli	08	16
Mixed	22	44
SPUTUM CULTURE		
Streptococcus pneumoniae	32	64
Klebsiella pneumonia	04	8
Pseudomonas aeruginosa	04	8
Haemophilus influenza	04	8
Staphylococcus aureus	03	6
Escherichia coli	03	6
RADIOLOGICAL FINDINGS		
Lobar pneumonia	32	64
Bronchopneumonia	10	20
Interstitial pneumonia	04	8
Pleural effusion	04	8

TABLE 3: THE COMPLICATIONS AND MORTALITY OBSERVED IN STUDY POPULATION

COMPLICATION	N=16	PERCENTAGE (%)
Septic shock	06	37.5
Pleural effusion	04	25
Acute respiratory distress syndrome	02	12.5
Lungs abscess	02	12.5
Empyema	02	12.5
MORTALITY	**N = 50**	
Improved	44	88
Died	06	12

DISCUSSION:

Community-acquired pneumonia (CAP) is a major cause for hospitalization and mortality in elderly population worldwide. The demographical presentation, etiology and outcome of community acquired pneumonia in elderly vary from young population due to atypical and variable presentation. [13-15] In present study the majority of patients were between 60-65 years of age with mean age 72.97±7.85 years with male gender predominance. In the study by Riquelme R, et al [16] the mean age for the study population with community acquired pneumonia was 75.85±8.75 years. The differences might be due to variation in the rate of hospitalization and facilities of health care system for the elderly population.

The elderly population are vulnerable for respiratory tract infection (community acquired pneumonia) because of the disturbance in airways and elastic recoil capacity of lungs, loss of strength of respiratory muscle leads to impair coughing mechanism, impairment in mucociliary clearance, disturbance in cell mediated and humoral immunity and associated co-morbid conditions and their treatment compliance. [17, 18] The gender distribution is consistent to the study by Riquelme OR, et al [19] where 67% were males and 33% were females, the gender difference might be because of alcoholism and smoking practice more common in

male population and also might be because of more co-morbidities detected in our study male population. Predisposing factors and co-morbidities are also detected by the study of Alexandroaie B, et al. [20] Smoking was found in 22% in our study population. The increased risk of pneumonia due to smoking is due to changes in respiratory flora, impair clearance and defense mechanisms. Respiratory tract infections are more common in smokers than non-smokers; defective in mucociliary clearance leads to changes in viscoelastic properties of pulmonary secretions. [21] In study by Almirall J, et al observed that cigarette smoking was the strongest risk factor for respiratory tract infections. [22] The alcoholism is another risk factor as it interfere immune system of respiratory tract defenses such as disturbance in normal flora, increased risk of aspiration, defect in mechanical clearance and deficient cellular and humoral immunity. [23] The findings are consistent with former studies. [24, 25] Elderly patient may have atypical and typical presentation and consist of alteration in general condition, confusion, malaise and irritability. The observations are consistent with the study by Woodhead M and McCue JD. [26, 27] Therefore, a practical effort has to be taken to advise chest radiographs in all elderly patients with delirium, irritability and confusion upon arrival at the hospital. Regarding sputum examination, the common pathogen observed were streptococcus pneumonia followed by gram negative bacilli as Klebsiella 4(8%), Pseudomonas aeruginosa 4(8%), Hemophilus influenza 4(8%), E.coli 3(6%), and staphylococcus aureus 3(6%) patient. The findings are consistent with the study by Levison ME, et al. [28] The risk of pathogens E. coli, Pseudomonas aeruginosa and Klebsiella increases with increasing age and leads to the life threatening septicemia. [29] The cause for community acquired pneumonia is often difficult to evaluate and the most effective methods are invasive techniques but not confirmatory and reliable while the serological diagnosis takes time as far as therapeutic measures are concerned. It takes time to detect pathogen in blood and sputum but most of the time the etiology for CAP remain unclear and uncertain. [30] Regarding the radiological data of current series, lobar pneumonia in 32(64%) patients followed by bronchopneumonia 10 (20%) patients. The study by Vilar J, et al also found lobar pneumonia, bronchopneumonia and interstitial pneumonia in elderly populated patients. [31] Regarding complications Septic shock 6(12%), pleural effusion 4(8%), acute respiratory distress syndrome 2(4%), lungs abscess 2(4%) and empyema 2(4%), the observations are consistent with the former studies. [32, 33] In present study, 6(12%) patients expired, the mortality of community acquired pneumonia (CAP) in elderly patients range from 6% to 40% in former literature along with associated co-morbidities and increased age itself is a major risk factor for increased for mortality due to CAP in elderly population. [34, 35]

CONCLUSION:

Community acquired pneumonia in elderly population is a major health issue observed in usual clinical practice. Elderly patients with have varying clinical presentation with higher mortality rate, usually present with altered sensorium and other than common pneumonic symptoms while the sputum examination and chest imaging are good tools to detect evidence of consolidation . The early evaluation and appropriate therapeutic management strategies should be planned as soon as possible in elderly patients with community acquired pneumonia. These measures can save the patients to spread the infection and complications associated with pneumonia.

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