Community Acquired Pneumonia, Detection and Prevention– A Hospital Based Descriptive Study

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ABSTRACT

Introduction: Community acquired pneumonia (CAP) is one of the commonest pulmonary infection in adults and it has been recognised as a common and potentially lethal condition which poses a challenge for the treating physician in all over the world.The present study was under taken to study the mode of presentation, its clinical features bacteriological and radiological features for earlier detection of the disease and to prevent complication arising out of it.

Material and methods: A descriptive and prospective study about community acquired pneumonia was conducted among 50 consecutive patients admitted in medicine ward in the department of Medicine KIMS Bhubaneswar during the period 2013 to 2014. Chi-square and Fisher exact test were used with p<0.05 as significant value.

Results: Majority of the patients were in the age group of above 50 years comprising 52 % and sex wise majority were males comprising 86%. The commonest presentation was fever, cough and expectoration (100 %), 60% had chest pain and 50% had dyspnoea.

Conclusion: Community acquired pneumonia was more common in people over 50 years and more common in men with commonest presenting symptom was cough expectoration dyspnoea and chest pain. Bacteriological analysis revelled 70% Gm + bacteria and empiric and specific antibiotics were main stay of treatment with good clinical outcome and no mortality was encountered in the present study.

Keywords: Chronic obstructive pulmonary disease; Community-acquired pneumonia; Lung Disease

INTRODUCTION

Community-acquired pneumonia (CAP) is one of considerable reason of morbidity and mortality in adults. It is defined as an infection of the lung parenchyma that is not acquired in a hospital, long-term care facility, or other recent contact with the health care system.[1] There are many aspects that leads to the development, disease progression and severity of chronic obstructive pulmonary disease (COPD). Some factors are largely controlled by an individual's genes while others are greatly influenced by harmful environmental hazards. Thus, there emerge two types of risk factors that attributes to the development of COPD: environmental risk factors and genetic risk factors. Smoking remains the major environmental factor that leads to COPD as well as significantly worsens the condition.[2]

The promotion of fluoroquinolones and newer macrolides for the treatment of CAP has been introduced due to concerns of antibiotic resistance and the emergence of new pathogens such as Chlamydia pneumonia.[3] The aim of initial management in CAP patient is on early initiation of appropriate empirical antibiotics and identification of the pathogen.[4] The present study was under taken to study the mode of presentation, clinical features, bacteriological and radiological features for earlier detection of the disease and to prevent complication arising out of it.

MATERIAL AND METHODS

A descriptive and prospective study about Community acquired pneumonia was conducted among 50 patients attending MOPD or admitted in Medicine ward KIMS Bhubaneswar during the period 2013 -2014.Before the study the protocol was approved by ethical committee of KIMS Medical College Bhubaneswar.In order to avoid any problem in the study and to guarantee full cooperation of the participants informed consent was obtained from all the patients before their participation.Therapeutic strategies adopted in this study included drugs and invasive procedures. There was no mortality in this study. Detailed clinical examination related to mode of presentation like consolidation, effusion respiratory distress and other constitutional signs were vividlyanalysed. Patients were subjected to routine laboratory. X-ray investigative procedures and also subsequently reviewed after they have recovered from their illness for compression.

STATISTICAL ANALYSIS

Statistical analysis was conducted using SPSS 11.0.Chi-square and Fisher exact test were used with p<0.05 as significant value.

RESULTS

The study consisted of 50 patients, 43 were males (86%), 7 were females (14%) (Figure 1). Among males 58% were above 50 years of age and among females 84% above 50 years of age (Figure 2).Associated risk factor (table 2) for CAP were analysed like (hypertension, diabetes, COPD) and it was found that ACP is more common in patients having COPD.Out of the clinical signs (pallor,icterus, clubbing, edema, lymphadenopathy) clubbing was noted in frequently comprising 22% and pallor in 3% of cases. All patients had fever, cough and expectoration (100%), chest pain 66%, dyspnoea 50% (table 4). Signs of consolidation were observed in 68% of cases. Mild leucocytosis particularly neutrophila was observed. Sputum analysis revelled gm positive organism (70%).26% were gram negative and mixed accounted for 4%.X-Ray Chest revelled right middle and lower

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| Clinical features	Age ≤ 50 years (n=26)		Age >50 years (n=24)		Total (n=50)	
	No.	%	No.	%	No.	%
Fever	26	100	24	100	50	100
Cough	26	100	24	100	50	100
Expectoration	26	100	24	100	50	100
Dyspnoea	5	26	20	83.3	25	50
Chest Pain	20	76.9	13	54.2	33	66
Inference	Dyspnoea is significantly more common in elderly CAP patients (21.0 times more with p<0.001) and chest pain is more common in younger CAP patients (2.82 times more with p=0.090)					
Table-1: Presentation clinical features in CAP Patients						
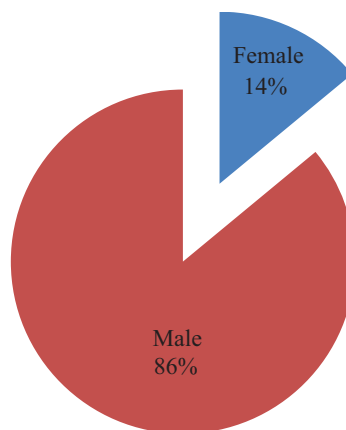
Figure-1: Distribution according to gender of patients

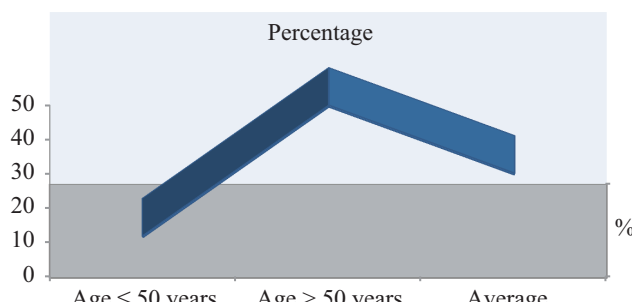| Risk factors	Age ≤ 50 years (n=26)		Age >50 years (n=24)		Total (n=50)	
	No.	%	No.	%	No.	%
Hypertension	-	-	-	-	-	-
DM	1	3.8	1	4.1	2	4.0
PTB	-	-	-	-	-	-
COPD	1	3.8	10	41.7	11	22.0
Inference	Hypertension,DM and PTB are not risk factors for CP.The CAP is signigficantly more commonin the patients with COPD(p<0.001					
DM –Diabetes Melitus, PTB –Pulmonary Tuberculosis, COPD –Chronic Obstructive Pulmonary Disesase						
Table-2: Presentation of risk factors in CAPD Patients						
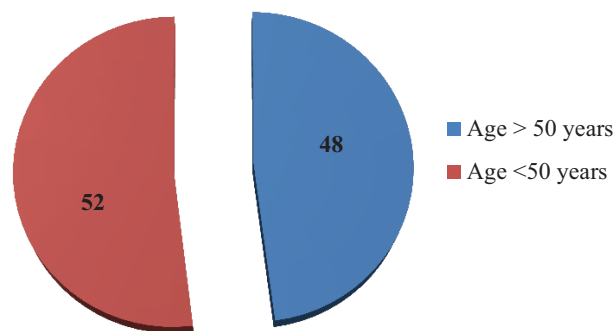
Age –Pia Chart Showing >50 yrs 48% <50yrs 52%.
Figure-2: Distribution according to age of patients

Signs	No of patients	%
VF	50	100
BBS	50	100
VR	50	100
WP	50	100
VF – Vescicular Braeth sound, BBS –Bronchial Breath Sound, VR-Vocal Resonance, WP-Whispering Pectprolique Adventitial Sound		
Table-3: Systemic examination findings		

Figure-3: COPD with Age in Years

GPE	Age ≤ 50 years (n=26)		Age >50 years (n=24)		Total (n=50)	
	No.	%	No.	%	No.	%
Pallor	1	3.8	2	8.3	3	6.0
Icterus	-	-	-	-	-	-
Clubbing	1	3.8	10	41.7	11	22.0
Lymphadenopathy	-	-	-	-	-	-
Edema	-	-	-	-	-	-
Inference	Clubbing Significantly more common in CAP the patients with (p<0.001)					
Table-4: Presentation of GPE in CAP patients						

lobe affection 40%.

DISCUSSION

The age group in this study varied from 27- 80 years and most of them were between 30-60 years of which 58% were above 80%.The incidence of CAP was more common in men 86% compared to females where their percentage were only 14%.It is well documented that pneumonia is a commonly occurring disease in the community and its incidence increases with increases in age.[5] In the present study of 50 cases it was found that males outnumbered female with a percentage of 86% as compared to 14% in female which can be attributed to indulgence to alcohol and smoking by males more than females (alcohol, smoking) and these are the predisposing factors. Alcohol consumption is known to affect both systemic and pulmonary immunity, predisposing the patient to pulmonary infections.[6] Lim WS et al[3] conducted a hospital based study of community acquired pneumonia aetiology in adults and found that 50.6% were men and the mean (SD) age was 65.4 (19.6) years.

COPD is worth mentioning as it is the most common predisposing cause which leads to patient more vulnerable to CAP. The presenting complaints observed was fever, cough, expectoration was seen in 100% of cases, followed by chest pain comprising 66%, lastly dyspnoea in 50% of cases. Torres A et al[7] evaluated risk factors for community-acquired

pneumonia in adults in Europe and reported that the overall annual incidence of CAP in adults ranged between 1.07 to 1.2 per 1000 person-years and 1.54 to 1.7 per 1000 population and increased with age (14 per 1000 person-years in adults aged ≥65 years). Men had higher incidence then women and alos incidence was higher in patients with chronic respiratory disease and HIV. Smoking, alcohol abuse, being underweight, having regular contact with children and poor dental hygiene increases the risk of CAP. The presence of comorbid conditions which increases the risk of CAP are chronic respiratory and cardiovascular diseases, cerebrovascular disease, parkinson's disease, epilepsy, dementia, dysphagia, HIV or chronic renal or liver disease. Study by de Roux A et al[6] revealed that S pneumoniae was found to be significantly more common in patients with alcohol misuse as well as found that current alcohol abuse was associated with severe CAP.

The present study observed that all patients recovered with the conventional approach, there was no mortality.Clinical progress was confirmed with resolution of X-Ray features and signs of improvement.The limitation of the present study was that it was a hospital based study conducted in a tertiary care centre and thus not exactly reflect the incidence in the community. The sample size wassmall and also less number of females were enrolled in the study because they seek or get less medical attention. Community based studies should be undertaken to find out more data regardingetiopathogenesis and other relevant predisposing factors. The etiologic pathogen responsible for most cases of CAP is Streptococcus pneumoniae. Other less common pathogens are Haemophilus influenzae and Chlamydia pneumoniae, as well as oralanaerobes, Staphylococcus aureus, Legionella pneumophila, Moraxella catarrhalis, and Hantavirus. However, in about 50% of cases diagnosed with CAP, no identifiable pathogen is identified. Thus, diagnosis and management is often based principally upon clinical factors, none of which appears definitive in identifying the causal agent. Initiation of immediate and appropriate treatment strategy is important, as early treatment of CAP has been shown to be associated with improved and better outcomes.[8]

CONCLUSION

In the present study fever, cough with occasional chest pain, expectoration were common presenting complaints. Dyspnoea, clubbing, whispering pecctorilique were common clinical signs that was observed. Laboratory test were consistent with leucocytosis, anaemia raised ESR. Elderly persons more in the age group of above 50 years and, with increased male preponderance were found to be more affected. Indulgence in alcohol as well as smoking, underlying illness like COPD increases the risk of acquiring CAP.

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