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Pulmonary Medicine

A COMPARATIVE STUDY OF COMMUNITY ACQUIRED PNEUMONIA BETWEEN ADULTS AND ELDERLY PATIENTS

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ABSTRACT

BACKGROUND: Community acquired pneumonia continues to be a leading infectious cause of mortality and morbidity. In elderly patients, the risk of acquiring infection and the severity of infection is higher when compared to adults. Elderly patients with community acquired pneumonia tend to have different clinical presentation when compared to adults,which may lead to delay in diagnosis and initiation of treatment.

OBJECTIVES: To study and compare the clinical ,bacteriological and radiological profiles of Community acquired pneumonia(CAP) between elderly and adults and to study the outcome of management in both groups.

METHODOLOGY: Prospective study of 60 patients attending Department of pulmonary medicine,Government general hospital,Siddhartha medical college, Vijayawada from January 2018 to June 2018 were selected with 30 patients in each group. One group with adults between 18 and 64 years and the other group with elderly patients with age 65 years and above

RESULTS: The mean age of the cases in the adults' group was 44 ± 11.9 years, whereas it was 73.9 ± 5.8 years in elderly patients group. Males were affected more than females with overall and also in each group. The bacteriological positivity on gram staining was seen in 50 % overall, out of which 53%(16 patients) in adults group and 47%(14 patients) belong to the elderly group. Streptococcus Pneumonia was the most common etiological agent isolated overall and also in both groups. Lobar pneumonia was the most common radiological finding, which was noted in and also in both group. The most common complication noted was septic shock followed by pleural effusion.In this study, overall out of 60 patients,88% (53 patients) improved, and 12% (7 patients) died. Mortality was higher in the elderly age group with 12%(5 out of 30 patients) when compared to adults group (2 out of 30 patients).

CONCLUSION : These atypical presentations may lead to delay in diagnosis and initiation of treatment and may be responsible for higher mortality if not recognized early. In elderly patients, special attention should be given for oral hygiene, correction of malnutrition and treatment of underlying comorbidities to reduce the mortality and morbidity associated with the disease.Adherence to guidelines for the initiation of empirical treatment is necessary. Vaccination with pneumococcal and influenza vaccines and smoking cessation should be recommended in all patients.

KEYWORDS : Community acquired Pneumonia, Elderly.

INTRODUCTION

Pneumonia is defined as inflammation and consolidation of lung tissue due to an infectious agent. Pneumonia that develops outside the hospital is considered community-acquired pneumonia (CAP). [1] Community acquired pneumonia (CAP) is a major cause of morbidity and mortality and is the leading cause of mortality due to an infectious disease and the fifth leading cause of death overall. In the elderly population, defined as those aged 65 years and above, the medical and economic impact of pneumonia is far greater than in other age groups. [2] The annual incidence of pneumonia in the elderly (age>65 years) is four-times that of adults (age between 18 and 64 years). Also, the elderly have higher rates of hospitalization and are more likely to die as a result of CAP. Elderly patients were hospitalized at a rate of 18.3 per 1000 cases of CAP and hospitalization rates of 4 per 1000 cases in adult populations. [3] In India, the incidence of CAP is 4 million cases per year with 20% requiring hospitalisation. The mortality rate of CAP in India is estimated to be 1-5% in Outpatient settings and around 25% in Intensive care unit settings.[4] In India, LRTI, which includes Pneumonia, constitute the fourth leading cause of Disability Adjusted life year (DALY).[5] The mortality due to CAP has been variably reported between 3.3% and 11% in several studies from India.[6]

Several physiological changes in elderly population like reduced mucociliary clearance, diminished cough reflex, decreased chest wall compliance, reduced respiratory muscle strength and other factors like decreased cell-mediated and humoral immunity, increased chances of silent aspiration ,increased upper airway colonization with virulent organisms and presence of comorbid illness may be responsible for increased incidence and mortality of CAP in elderly population when compared to other age groups.Community acquired pneumonia (CAP) in elderly patients has varied clinical presentation and higher mortality than CAP in other age groups. Clinical presentation may differ from the more common presence of fever to altered sensorium.[7]

The mechanisms behind the disproportionate incidence and mortality rates in elderly pneumonia patients are not fully understood. The elderly population is increasing at twice the rate of the general population, necessitating a better understanding of the pathophysiology, microbiology, treatment and prevention of this common affliction. The altered clinical presentation of CAP in the elderly patients may be associated with a delay in establishing the diagnosis and, consequently, in initiating antibiotic therapy.[8] Delay in diagnosis and treatment may contribute to the higher observed death rate in the elderly population with CAP when compared to the adult population. Hence the following study was undertaken to study and compare the clinical, radiological, and bacteriological profile of community-acquired pneumonia in adults and elderly population.

STUDY DESIGN

Prospective Observational study involving 60 patients attending to pulmonary medicine department, GGH, Vijayawada with clinical features suggestive of CAP during the period January 2018 to June 2018. Purposive sampling technique was used.Out of 60 patients, One group of 30 patients with adults between 18 and 64 years and the other group with elderly patients with age 65 years and above. Patients presenting with clinical features suggestive of Community acquired Pneumonia from outpatient clinic and wards of pulmonary medicine department are selected based on inclusion and exclusion criteria, and workup will be done. All patients selected undergo complete evaluation and investigations were done according to ICS/NCCP CAP guidelines.

INCLUSION CRITERIA:
Patients with age more than 18 years with clinical features suggestive of CAP attending pulmonary medicine department, Government General Hospital, Vijayawada.

EXCLUSION CRITERIA:
1. Patients with immunosuppressive states like HIV infection, steroid therapy, chronic renal failure.
2. Patients with hospitalization for two or more days in the last 90 days and patients attending a hospital clinic or dialysis centre in the last 30 days.
3. Patients with residence in a nursing home or long-term care facility in the last 30 days and patients receiving home wound care within the past 30 days.
4. Malignancy
5. Seriously ill patients with comorbid conditions.
6. Pregnancy
7. Uncooperative and unwilling patients.

STATISTICAL METHODS
Data were entered in MS-Excel and analyzed in SPSS V22. Descriptive statistics were represented with percentages; Chi-square test / Fisher Exact test was applied to find significance. P<0.05 was considered as statistically significant.

RESULTS
In this study, as depicted in table (1),the age group of patients varied from 19 to 88 years. Overall, the mean age was 59 ± 20.32 years. The mean age of the cases in the adults' group was 44 ±11.9 years, whereas it was 73.9 ± 5.8 years in elderly patients group. In this study, as depicted in figure (1), males with 64% (38 patients) were affected more than females with 36% (22 patients) overall and also in each group. In adults with age <65 years, 60% (18 patients) were males, and 40% (12 patients) were females. In elderly with age 65 years and above, 67% (20 patients) were males and 33% (10 patients) were females. As depicted in table (2),Smoking was the predominant predisposing condition overall with 34 patients (57%) and also in both groups, followed by alcoholism. In adults with age <65 years,53%(16 patients) were smokers and in elderly with age 65 years, and above, 60% (18 patients) had a smoking habit. COPD was the most common comorbidity overall with 25 patients (42%), in less than 65 years age group with 11 patients (37%) and in the age group with 65 years and above (47% with 14 patients). Overall 40% patients (24 out of 60 patients) were diabetics whereas 27% patients (8 out of 30 patients) were diabetics in adults group and 53% patients (16 out of 30 patients) were diabetics in the elderly group with age 60 years and above. As depicted in table (3),Cough was the most common presenting symptom overall with 50 patients(80%) had cough and also in both groups. Cough was present in 80% (24 patients) in adults with age <65 years, and in 83% (25 patients) in the elderly group with age 65 years and above. The frequency of fever as a presenting symptom was less in the elderly age group with 43% when compared to adults group (70%), and it was statistically significant. Atypical symptoms like altered mental status and vomiting were more common in elderly patients group with statistically significant values. In the present study, as depicted in Table (4),tachypnea was the most common finding on general physical examination overall and in each group, followed by Tachycardia. Overall, tachypnea was found in 46 patients(77%) overall, 24 patients(80%) in the age group with 65 years and above and in 22 patients (73%) in less than 65 years age group. The raised body temperature was less in the elderly group (20%) when compared to the adults' group (47%) with statistically significant value. Among the findings noted on respiratory system examination, as noted in figure (2),Crepitations was the most frequent finding overall (42%) and also in adults group (73%), elderly group (67%). Other characteristic respiratory signs like bronchial breathing, increased vocal fremitus and vocal resonance, impaired note on percussion were less common in elderly patients group when compared to adults group. Among the laboratory investigations, as described in table(6),leucocytosis was the most consistent finding overall (79%), in adults with age less than 65 years group (73%) and in elderly with age 65 years and above group(83%). In this study, as depicted in table (5),bacteriological positivity on gram staining was seen in 50 %(30 patients) overall, out of which 53%(16 patients) in adults group and 47%(14 patients) belong to the elderly group. Cultures were positive in only 35% (21 patients). As depicted in figure (3),Streptococcus Pneumonia was the most common etiological agent isolated overall(12%) and also in both groups. The proportion of cases due to gram-negative bacilli like Klebsiella pneumonia, E.coli, Pseudomonas aeruginosa was higher among the elderly group when compared to adults with age less than 65 years. In this study, as depicted in Table (7),Lobar pneumonia was the most common radiological finding, which was noted in 45 patients(75%). It is also the most common in both groups with 77% (23 out of 30 patients) in the elderly group and 73% (22 out of 30 patients) in adults group. Other radiological findings like Bronchopneumonia, Interstitial pneumonia and cavitation were noted in frequencies represented below. As depicted in figure (4),Pleural effusion was noted in 12% cases. The most common complication noted was septic shock (17%) followed by pleural effusion (12%).In both elderly age group and adults group, septic shock was the most common complication with 20%(6 out of 30 patients) and 13% (4 out of 30 patients) respectively. The frequency of complications was more in the elderly age group when compared to adults with age group less than 65 years. In this study, overall out of 60 patients,88% (53 patients) improved, and 12% (7 patients) died. Mortality was higher in the elderly age group with 12%(5 out of 30 patients) when compared to adults group (2 out of 30 patients).

Table 1 : Age Distribution

Age group (years)		Frequency	Percentage
< 65 years (n=30)	<20	1	1.7
	20-29	3	5
	30-39	8	13.3
	40-49	6	10
	50-64	12	20
≥ 65 years (n=30)	65-74	18	30
	75-84	10	16.7
	≥ 85	2	3.3
Total		60	100

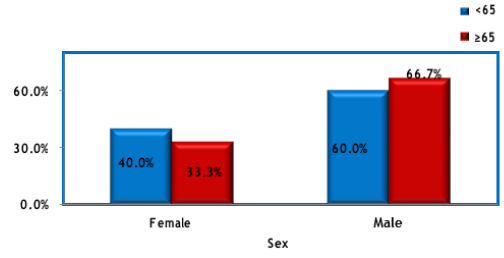

Figure 1 : Sex distribution

Table 2: Predisposing conditions and comorbidites

Predisposing Conditions &Co-Morbidities	<65 years		≥ 65 years		Total		P-value
	Count	%	Count	%	Count	%	
Smoking	16	53.3%	18	60.0%	34	56.7%	0.8
Alcoholism	7	23.3%	5	16.7%	12	20.0%	0.75
COPD	11	36.7%	14	46.7%	25	41.7%	0.6
Diabetes Mellitus	8	26.7%	12	40%	20	33.3%	0.7
Congestive Cardiac Failure	2	6.7%	5	17.0%	7	11.7%	0.2
Cerebrovascular accident	1	3.3%	2	7.0%	3	5.0%	0.5
Chronic liver disease	1	3.3%	3	10.0%	4	6.7%	0.3

Table 3 : Clinical presentation

Gen. Physical Examination	<65 years		≥ 65 years		Total		P-value
	Count	%	Count	%	Count	%	
Increased temperature	14	46.7%	6	20.0%	20	33.3%	0.03
Tachypnea	22	73.3%	24	80.0%	46	76.7%	0.76
Tachycardia	20	66.7%	23	76.7%	43	71.7%	0.57
Hypotension	5	16.7%	8	26.7%	13	21.7%	0.53
Decreased temperature	4	13.3%	2	6.7%	6	10.0%	0.67

Table 4 : Findings on General Physical examination

Clinical presentation	<65 years		≥ 65 years		Total		P-value
	Count	%	Count	%	Count	%	
Cough	24	80.0%	25	83.3%	49	81.7%	1
Fever	21	70.0%	13	43.3%	34	56.7%	0.04

Dyspnea	18	60.0%	23	76.7%	41	68.3%	0.27
Expectoration	20	66.7%	18	60.0%	38	63.3%	0.79
Pl.chest pain	14	46.7%	10	33.3%	24	40.0%	0.43
Altered mental status	2	6.7%	8	26.7%	10	16.7%	0.03
Nausea/Vomiting	4	13.3%	11	36.7%	15	25.0%	

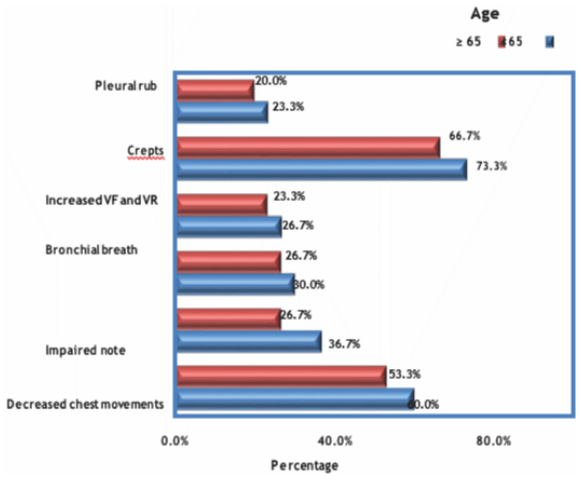

Figure 2: Findings on Respiratory system examination

Table 5 : Bacteriological profile

	Age <65 years(n=30)		Age ≥ 65 years (n=30)		Total(n=60)	
	Frequency	%	Frequency	%	Frequency	%
Microbiological diagnosis by Sputum Gram stain	16	53%	14	47%	30	50%
Microbiological diagnosis by culture	11	37%	10	33%	21	35%

Table 6 : Laboratory Investigations

aboratory Investigations	<65 years		≥ 65 years		Total	
	Count	%	Count	%	Count	%
Decreased haemoglobin	9	30.0%	11	36.7%	20	33.3%
Increased total leucocyte count	22	73.3%	25	83.3%	47	78.3%
Decreased total leucocyte count	1	3.3%	3	10.0%	4	6.7%
Increased ESR	18	60.0%	20	66.7%	38	63.3%
Increased serum creatinine	3	10.0%	5	16.7%	8	13.3%
reased blood urea	7	23.3%	11	36.7%	18	30.0%
Increased serum bilirubin	2	6.7%	4	13.3%	6	10.0%
Raised LFT	3	10.0%	6	20.0%	9	15.0%
Decreased serum albumin	5	16.7%	6	20.0%	11	18.3%

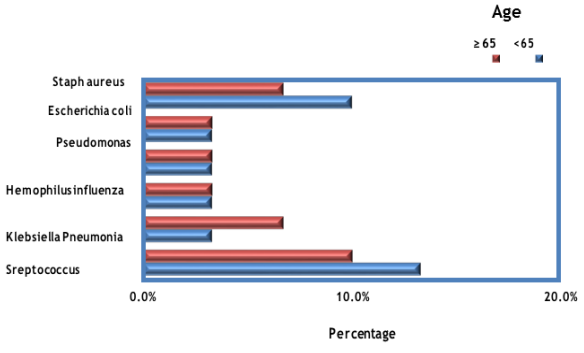

Figure 3 : Bacteria isolated on culture

Table 7 : Radiological findings

Radiological Findings	<65		≥ 65		Total		P-value
	Count	%	Count	%	Count	%	
Lobar pneumonia	22	73.3%	23	76.7%	45	75.0%	1
Broncho pneumonia	5	16.7%	4	13.3%	9	15.0%	1
Interstitial pneumonia	1	3.3%	2	6.7%	3	5.0%	1
Cavitation	2	6.7%	1	3.3%	3	5.0%	1
Ass Pl effusion	3	10.0%	4	13.3%	7	11.7%	1

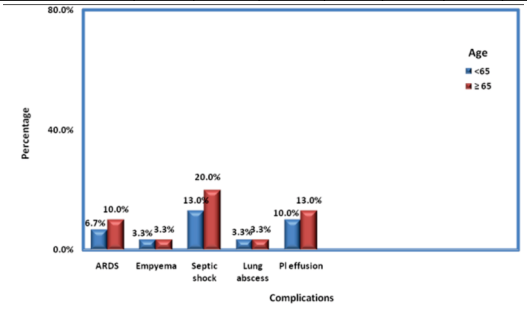

Figure 4 : Complications

DISCUSSION

Community-acquired pneumonia (CAP) is a predominant cause of morbidity and mortality in elderly patients worldwide. The clinical presentation, aetiology and outcome of community acquired pneumonia in elderly differ from that of other population. This prospective observational study was done at Government General Hospital, Vijayawada from January 2018 to June 2018. Out of 60 patients, one group of 30 patients includes adults in between 18 and 64 years, and the other group of 30 patients include elderly patients with age 65 years and above. The clinical profile, microbiological profile and radiological profile were studied in each group and compared between the two groups.

AGE DISTRIBUTION

In the present study, the age group of patients varied from 19 to 88 years. Overall, the mean age was 59 ± 20.32 years. The mean age of the cases in the adults' group was 44 ± 11.9 years, whereas it was 73.9 ± 5.8 years in elderly patients group. Majority of the patients (30%) were in the age group of 65-74 years. Of the 60 patients, 1 patient (1.7%) was in <20 years age group, 3 patients (5%) were aged 20-29 years , 8 (13.3%) patients were aged 30-39 years, 6 patients (10%) were aged 40-49 years,12 patients (20%) were aged 50-64 years , 18patients (30%) were aged 65-74 years ,10 patients (16.7%) were aged 75-84 years ,2 patients (3.3%) were aged above 85 years. The age distribution in this study was comparable with the previous studies which are described as follows. In a study by SK. Jain et al., the mean age of the patients was 52.36 ± 16.77 years with age ranging between 15 and 85. Majority of the patients (68%) belong to > 50 years.[9]

In a study done by Talebi-Taher Mahshid et al., comparing community acquired pneumonia in elderly and others, patients were aged between 15 and 115 years with a mean age of 59 ± 24 years. [10] According to a study done by Sahana Shetty et al., on Community acquired Pneumonia on elderly patients, age group of patients ranged from 66 to 88years. Of these, 64% of patients were in the age group of 65-74 years, 28% were in the age group of 75-84 years, and 8% were in the age group >85 years.[11] In another study done by Luna et al., on Community acquired pneumonia which included 6,205 cases, the mean age of the patients included in the study was 66.5 ± 17.9 years. [12] According to a study done by Tinku Joseph et al., the majority of patients (37%) belongs to 50-64 age pool. Out of 104 patients, 68 % were aged 50 years and above while 32% were aged less than 50 years.31% were aged more than 65 years.[13]

SEX DISTRIBUTION

In this study, males with 64% (38 patients) were affected more than females with 36% (22 patients) overall and also in each group. In adults with age <65 years, 60% (18 patients) were males, and 40% (12 patients) were females. In elderly with age 65 years and above, 67% (20 patients) were males and 33% (10 patients) were females. The male predominance in this study was comparable with previous studies as mentioned here.

In a study done by Tinku Joseph et al., males (72%) were predominantly involved than females (28%). The male and female ratio in both adults and elderly patients were maintained in 2:1 ratio in this study. [13] In a study done by SK Jain et al., 68% (81 out of 120 patients) were males, and 32% were females, and 32% (39 out of 120 patients) were females. In adults with age less than 65 years, 58% (40 out of 69 patients) were males, and 42 % (29 out of 69 patients) were females. In elderly with age 65 years and above, 80% (41 out of 51 patients) were males, and 20% (10 out of 51 patients) were females.[9]

PREDISPOSING CONDITIONS AND COMORBIDITIES

In this study, smoking was the predominant predisposing condition overall with 34 patients (57%) and also in both groups, followed by alcoholism. In adults with age <65 years, 53 %(16 patients) were smokers and in elderly with age 65 years, and above, 60% (18 patients) had a smoking habit. COPD was the most common comorbidity overall with 25 patients (42%),in less than 65 years age group with 11 patients (37%) and in age group with 65 years and above (47% with 14 patients). Overall 40% patients (24 out of 60 patients were diabetics whereas 27% patients (8 out of 30 patients) were diabetics in adults group and 53% patients (16 out of 30 patients) were diabetics in the elderly group with age 60 years and above and the difference was found to be statistically significant. Comorbidities like COPD, Diabetes mellitus, Cardiovascular disorders, Cerebrovascular disease and liver disorders were higher in the elderly age group when compared to adults with age less than 65 years, and the difference was not statistically significant. Smoking was the most predisposing factor, and COPD was the most common comorbidity in both groups and in the elderly which is compatible with the previous studies mentioned below.

In a study done by Tinku Joseph et al., 52% were smokers and was the most common risk factor; followed by alcoholism (28%).COPD (23%) was the most common comorbidity in this study. It was followed by Diabetes mellitus (19%), Congestive Heart failure (5%), and cerebrovascular disease (4%).[13] According to a study done by Luna et al., COPD was the most common comorbidity overall with 27 % (1657 out of 6205 patients) and also in both groups. In elderly with age group 65 years and above, COPD was found in 33%(1236 out of 3733 patients) and 17% (424 out of 2472 patients) had COPD as a comorbidity in adults with age less than 65 years. Overall, 14% of patients (862 out of 6205 patients) had diabetes. In elderly group, 21% patients (773 out of 3733 patients) had diabetes whereas 15% patients (374 out of 2472 patients) were diabetic in adults group with age less than 65 years. [12] According to a study done by Raul Riquelme et al., smoking was the most common risk factor (62%) followed by alcoholism (22%).COPD (30%) was the most common comorbidity, and 17% were diabetics.[14]

CLINICAL PRESENTATION

Cough was the most common presenting symptom overall with 50 out of 60 patients (80%) had a cough and also in both groups. Cough was present in 80% (24 out of 30 patients) in adults with age <65 years, and in 83% (25 out of 30 patients) in the elderly group with age 65 years and above and the difference was found to be not statistically significant. Overall, cough was followed by dyspnea (68%), fever (57%)and pleuritic chest pain(40%). Cough was productive in 60% in elderly patients when compared to adult patients (67%). The frequency of fever as a presenting symptom was less in the elderly age group with 43% when compared to adults group (70%), and it was statistically significant. Atypical symptoms like altered mental status and vomiting were more common in elderly patients group with statistically significant values when compared to adults with age less than 65 years.
In a study done by Talebi-Taher Mahshid et al., comparing community acquired pneumonia in elderly and others; cough was the predominant symptom in both adults (62%) and elderly (76%). The frequency of fever as a presenting symptom was less in the elderly age group with 34% when compared to adult's group (47%). Atypical symptoms like altered mental status were predominantly observed in elderly (20%) when compared to adult patients (8%).[10] In studies were done by Raul Riquelme et al. and Kobashi, et al., cough was the most common clinical presentation with 81% and 62% of patients presenting with the cough respectively.[14,15]

GENERAL PHYSICAL EXAMINATION FINDINGS

In the present study, tachypnea was the most common finding on general physical examination overall and in each group, followed by Tachycardia. Overall, tachypnea was found in 46 patients(77%) overall, 24 out of 30 patients(80%) in the age group with 65 years and above and in 22 out of 30 patients (73%) in less than 65 years age group and the difference was found to be not statistically significant. Raised body temperature was less in the elderly group (20%) when compared to adults group (47%) with statistically significant value. These results are comparable with the following studies.

In a study done by Talebi-Taher Mahshid et al., comparing community acquired pneumonia in elderly and others; tachypnea was the most common finding on physical examination both in elderly and adults population. In this study, in 61% of patients, tachypnea, i.e., respiratory rate was more than 24 breaths per minute. This was seen in 64% of the elderly and 57% of the others. Raised body temperature was less than in elderly population (34%) when compared to adults' group.[10]In a study by Kobashi, et al., on Community acquired Pneumonia in elderly patients, elevated body temperature was found only in 56% patients. Tachypnea (70%) was the most common finding on general physical examination, followed by tachycardia (69%).[15]

FINDINGS ON RESPIRATORY SYSTEM EXAMINATION

In the present study, among the findings noted on respiratory system examination, Crepitations was the most frequent finding overall (42%) and also in adults group (73%), elderly group (67%), and the difference was found to be not statistically significant. Other characteristic respiratory signs like bronchial breathing, increased vocal fremitus and vocal resonance, impaired note on percussion were less common in elderly patients group when compared to adults group. The paucity of characteristic clinical signs on respiratory system examination in elderly patients, when compared to adults, is in accordance with the following studies, which signifies the need to diagnose the Community acquired Pneumonia in elderly, who present with minimal symptoms and signs. The overall findings on respiratory system examination can be compared with the following studies.[6]

Table No 4

Authors	Year	No.	Impaired note on Percussion	Crepitations	Bronchial Breath sounds
Javed et al.	2010	113	27%	37%	19%
Shah et al.	2010	100	38%	65%	16%
Diaz et al.	2007	176	45%	58%	33%
Bruns et al.	2007	288	26%	52%	22%
Muller et al.	2007	545	31%	72%	37%
Bansal et al	2004	70	60%	98%	47%
Riquelme et al.	1997	100	39%	65%	12%
Sow et al.	1996	217	41%	70%	26%
Present study		60	32%	70%	29%

LABORATORY INVESTIGATIONS

Among the laboratory investigations, leucocytosis was the most consistent finding overall (79%), in adults with age less than 65 years group (73%) and in elderly with age 65 years and above group (83%) and the difference was found to be not statistically significant. Decreased Hemoglobin (< 11gms/dl) was noted in 33% overall, whereas it was 37% in the elderly group and 30% in adults group.In the present study, raised blood urea (>40 mg/dl) and serum creatinine (>1.2 mg/dl) levels were noted more in elderly with 37% and 17% when compared to adults group with 23% and 10% respectively. Raised serum bilirubin levels (>1.2 mg/dl) and raised liver enzymes were noted more in elderly patients with 13% and 20% when compared to adults with 7% and 10% respectively. These values signify that the hepatic impairment and renal impairment were more severe in the elderly age group when compared to adults, which may suggest a more severe systemic infection in elderly patients. Serum albumin levels were noted in 20% in elderly and in 17% of patients of adults group. The low albumin levels may be caused by malnutrition or by an acute inflammatory response. These laboratory investigations' picture can be compared with the following studies.

In a study done by Chien Chang Lee et al., Leucocytosis was the most consistent finding overall and in each group. Leucocytosis was observed in 46% (218 out of 475 patients) in elderly and in 39% patients (164 out of 415 patients) in adults group. Anaemia with haemoglobin <12 gms/dl was found in 27% of elderly patients and in 22% of adults group. The impaired renal function functions were significant in elderly patients (13%) when compared to adults (7%).[16]

BACTERIOLOGICAL PROFILE

In this study, the causative organism isolation on gram staining was able to be done in 50 %(30 patients) overall, out of which 53 %(16

patients) in adults group and 47 %(14 patients) belong to the elderly group. Cultures were positive in only 35% (21 patients). Streptococcus Pneumonia was the most common microorganism isolated overall (12%) and also in both groups. The proportion of cases due to gram-negative bacilli like Klebsiella pneumonia, E.coli, Pseudomonas aeruginosa was higher among the elderly group when compared to adults with age less than 65 years. This may be due to increased aspiration of oropharyngeal contents with altered microbiological flora in elderly patients.The cause of Community acquired Pneumonia is often difficult to establish with the aetiology of at least half of patients in various studies remains uncertain. In a study done by SK. Jain, et al., the establishment of etiological diagnosis was possible in 55 (45.8%) patients of Community Acquired Pneumonia. Rates of isolation of organisms were by sputum culture 44 (36.7%) and by blood culture 11 (9.1%).[9]

According to a Spanish multicentre study done on Community Acquired Pneumonia in elderly by Zalacain,et.al,microbiological diagnosis was achieved in 199 cases out of 503 (40%) ,being definitive in 164 cases(33%) and presumptive (with positive sputum culture as single sample) in 35 cases(7%).80In a study conducted by Antony Torres et al., the isolation of causative microorganism was achieved in 11 of 30 cases (37%).[14]

In the present study, Streptococcus Pneumonia was the most common organism isolated both in adults (37%) and elderly (30%) patients. Gram-negative organisms like Klebsiella, E.coli, Pseudomonas were predominant in elderly patients when compared to adults, and the difference was not statistically significant. The increased incidence of gram-negative bacilli in the elderly is by the various studies mentioned below.

In a study done by Tinku Joseph et al., Pneumococcus was more common in the elderly age group > 65 years (40%) in comparison to the younger people (29%). Also, a similar trend was seen with Klebsiella and other Gram Negative bacilli organisms which were commoner in the elderly CAP patients when compared to adults. The most common isolated organism in this study was Streptococcus pneumoniae (19/65), followed by Klebsiella pneumonia (17/65), Staphylococcus aureus (13/65), Pseudomonas aeruginosa (8/65), Escherichia coli (4/65), Acinetobacter spp. (3/65), Enterococcus spp. (1/65) .Gram Positive organisms constituted 51% of the isolates and 49% by Gram-Negative organisms.[13] Woodhead et al. reviewed 11 studies about the aetiology of pneumonia in the elderly and compared them to three studies of pneumonia in adults. The incidence of CAP due to H. influenzae, S. aureus, and gram-negative bacilli was more in the elderly, and the proportion due to atypical microorganisms was higher among the adults when compared to elderly.[17]

RADIOLOGICAL FINDINGS

In the present study, Lobar pneumonia was the most common radiological finding, which was noted in 45 patients(75%). It is also the most common in both groups with 77% (23 out of 30 patients) in the elderly group and 73% (22 out of 30 patients) in adults group, and it was found to be not statistically significant. Other radiological findings like Bronchopneumonia, Interstitial pneumonia and cavitations were noted in frequencies of 15%, 5% and 5% respectively. Pleural effusion was associated in 12% cases. This is similar to several studies as mentioned below.

In a study done by SK. Jain, et al., the radiological data showed a predominance of lobar pneumonia in 96 (80%) patients followed by bronchopneumonia in 20 (16.7%) and interstitial pneumonia in 4 (3.3%) patients.[9] In a study done by Riquelme et al., lobar pneumonia was observed in 82% of patients, the interstitial pattern in 6% of patients and mixed pattern in 13% and unilateral in 71% .[14] According to a Spanish multicentre study done on Community Acquired Pneumonia in elderly by Zalacain et al., with regards to chest radiography, it was predominantly lobar (53%) pattern or segmentary (23%) pattern. Bronchopneumonia was observed in 18% of cases.[18]

COMPLICATIONS

In the present study, the most common complication noted was a septic shock (17%) followed by pleural effusion (12%).In both elderly age group and adults group, septic shock was the most common complication with 20%(6 out of 30 patients) and 13% (4 out of 30 patients) respectively. The frequency of complications was more in the elderly age group when compared to adults with age group less than 65 years, which was found to be not statistically significant.

In a study done by Zalacain et al., among the complications, pleural effusion was noted in 60 patients (12%), septic shock in 41 patients (8%), lung abscess in 2 patients (4%) and empyema in 14 patients (3%).[18]

OUTCOME

In this study, overall out of 60 patients, 88% (53 patients) improved, and 12% (7 patients) died. Mortality was higher in the elderly age group with 12 %(5 out of 30 patients) when compared to adults group (2 out of 30 patients).The prevalence of mortality in elderly patients with CAP in previous studies range from 6 to 40% .28 Kaplan et al. reported a mortality of 11% in elderly patients with community acquired pneumonia.7

According to a Spanish multicentre study done on Community Acquired Pneumonia in elderly by Zalacain et al., the overall mortality was found to be 11%.Elderly age, comorbidities and malnutrition may be responsible for increased mortality for CAP in the elderly.

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