Original Article

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A Prospective Comparative Analysis of Management of Patients of Pneumonia at Tertiary Care Centre

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Abstract

Background: To compare management of pneumonia. **Subjects and Methods :** Sixty adult patients of pneumonia age ranged 18- 50 years were divided into three groups was done Group C patients were prescribed Clarithromycin 500 mg BD, group A were given azithromycin 500 mg PO then, 250 mg OD and group L were given levofloxacin 750 mg PO OD. Parameters such as temperature, cough, respiratory rate, bronchial breathing, WBC count and adverse events were recorded. **Results:** All groups had reduction in WBC count, temperature (degree), cough, bronchial breathing and respiratory rate recorded at day baseline, 3 and 5. However, the difference was non- significant (P> 0.05). Common adverse events were headache seen 3 in group C, 2 in group A and 4 in group L, abdominal pain 4 in group C, 5 in group A and 4 in group L and skin eruption seen 1 in group A. The difference was non- significant (P> 0.05). **Conclusion:** Clarithromycin, azithromycin and levofloxacin were comparable in terms of reduction in temperature, respiratory rate and cough and bronchial breathing.

Keywords: Azithromycin, Clarithromycin, Levofloxacin, Pneumonia.

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Introduction

Pneumonia is an infection of the pulmonary parenchyma. Despite being the cause of significantmorbidity and mortality, pneumonia is often misdiagnosed, mistreatedand underestimated.[1] Pneumonia results from the proliferation of microbial pathogensat the alveolar level and host response to those pathogens.[2] Pneumonia is an infection of the lungs caused by bacteria, virus or fungi. It is a leading cause of morbidity and mortality worldwide, especially in elder patients and patients with comorbidities.[3] The annual incidence of pneumonia was estimated at 1.07–1.2 cases per 1,000 persons per year in Europe and 16.9 cases per 1,000 persons per year in Asia. Diagnosis of pneumonia in adults presenting with signs of lower respiratory tract infection is important because it requires specific treatment and follow up.[4]

Streptococcus pneumonia is the most commonly isolated pathogen responsible for 35% to 60% of cases. Studies reported during the last two decades from India have also reported a higher prevalence of Klebsiella pneumoniae among culture positive pneumonias.[5] The prevalence of Mycoplasma pneumonia has been reported to be 35% in adults and 27.4% in children. The pneumonia 60 severity index (PSI) is adopted by the American Thoracic Society and used in a wide scale in North America, which was introduced in 1997.[6]

Pneumonia is usually diagnosed by a combination of clinical history, physical examination and/or laboratory tests.[7] According to most clinical guidelines globally, the supposed gold standard tool for diagnosing pneumonia is a chest X-ray (CXR) which can distinguish pneumonia from other respiratory tract infections.[8] Other diagnostic tests such as laboratory tests (white blood cell count (WBC), erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), procalcitonin), blood culture, serology, and computed tomography scan (CT scan) have been reported with different rates of accuracy. Management includes antibiotic treatment with clarithromycin, azithromycin and levofloxacin etc.[9] Considering this, the present study compared management of pneumonia in study group.

Subjects and Methods

Sixty adults age ranged 18- 50 years with history of fever and breathlessness or cough from the last 2 days were selected in this study. Ethical approval from higher authorities were

obtained before selecting the study. All selected patients were made aware and their consent in their language were taken. Cases were confirmed with clinical features, radiological findings of patch on chest X- ray and sputum microscopy.

Selected patients were screened thoroughly. A case history proforma were created and relevant patents information was entered. Randomization of patients into three groups was done Group C patients were prescribed Clarithromycin 500 mg BD, group A were given azithromycin 500 mg PO then, 250 mg OD and group L were given levofloxacin 750 mg PO OD. Parameters such as temperature, cough, respiratory rate, bronchial breathing, WBC count and adverse events were recorded. Results of the present study after recording all relevant data were subjected for statistical inferences using chi- square test. The level of significance was significant if p value is below 0.05 and highly significant if it is less than 0.01.

Results

There were 12 males and 8 female sin group C, 9 males and 11 females in group A and 10 males and 10 females in group L [Table 1].

It was shown that all groups had reduction in WBC count, temperature (degree), cough, bronchial breathing and respiratory rate recorded at day baseline, 3 and 5. However, the difference was non- significant (P> 0.05) [Table 2].

Common adverse events were headache seen 3 in group C, 2 in group A and 4 in group L, abdominal pain 4 in group C, 5 in group A and 4 in group L and skin eruption seen 1 in group A. The difference was non- significant (P> 0.05) [Table 3, Figure 1].

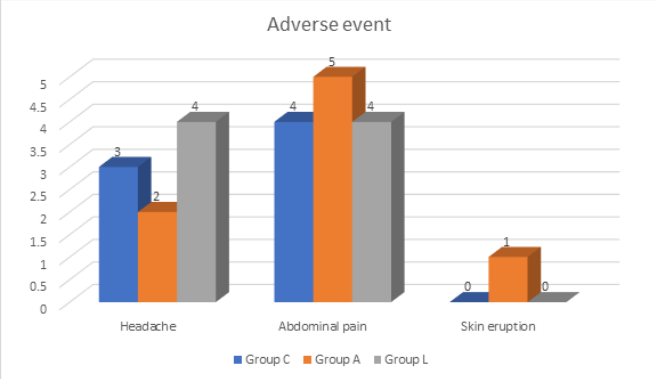

Figure 1: Adverse events

Discussion

Despite the fact that pneumonia is the most common cause of serious illness and death in young children worldwide, our ability, as clinicians, to infer an infectious pathological process in the lung from specific features of the history and examination is poor.[10] Many common conditions of childhood, including malaria, bacterial sepsis, and severe anemia, produce a spectrum of clinical symptoms and signs that overlaps significantly with pneumonia, and differentiating between these conditions is challenging.[11] We in this study, enrolled sixty adults age ranged 18- 50 years with history of fever and breathlessness or cough from the last 2 days. All were confirmed cases of pneumonia. Patients were divided into 3 groups of 20 each. Group C patients were prescribed Clarithromycin 500 mg BD, group A were given azithromycin 500 mg PO then, 250 mg OD and group L were given levofloxacin 750 mg PO OD.

Our study demonstrated that there was reduction in WBC count, temperature (degree), cough, bronchial breathing and respiratory rate recorded at day baseline, 3 and 5. Abdullah et al,[12] evaluated a total of 50 patients with pneumonia. Age group varied from 66 years to 88 years. Presentation varied from typical symptoms to altered sensorium. Smoking and COPD were most common predisposing conditions. Most common organisms responsible were Streptococcus pneumonia, Klebsiella pneumonia, Pseudomonas, H. influenza, and Staphylococcus aureus. Etiological agents could not be identified in many cases because of difficulty in collecting sputum in elderly patients, lower yield of culture, and various atypical and difficult to isolate causative organisms. Hence there is need for an empirical therapy covering both typical and atypical organisms. Better understanding of these aspects may help a long way in managing elderly patients with pneumonia.

Our results showed that common adverse events were headache seen 3 in group C, 2 in group A and 4 in group L, abdominal pain 4 in group C, 5 in group A and 4 in group L and skin eruption seen 1 in group A. Mody et al,[13] evaluated the effect of preadmission functional status on severity of pneumonia, length of hospital stay (LOS), and all-cause 30-day and 1-year mortality of adults aged 60 and older and to understand the effect of pneumonia on short-term functional impairment in one hundred twelve patients. Functional status and comorbidities were assessed using the Functional Autonomy Measurement System (SMAF) and Charlson Comorbidity Index. Clinical information was used to calculate the Pneumonia Prognostic Index (PPI). Eighty-four (75%) patients were functionally independent (FI) before admission, with a SMAF score of 40 or lower. Dementia and aspiration history were higher in the group that was functionally dependent (FD) before admission ($P < .001$). The FI group had less-severe pneumonia per the PPI and shorter mean LOS ± standard deviation (5.62 ± 0.51 days) than the FD group (11.42 ± 2.58, $P < .004$). The FI group had lower 1-year mortality (19/65, 23%) than the FD group (14/28, 50%), and the difference remained significant after adjusting for

Table 1: Distribution of patients in three groups

Groups	Group C	Group A	Group L
Drug	Clarithromycin 500 mg	Azithromycin 500 mg	Levofloxacin 750 mg
Male	12	9	10
Female	8	11	10

Table 2: Comparison of parameters in all groups.

Parameters	Variables	Group C	Group A	Group L	P value
WBC	Day 0	11020	10600	10240	Significant <0.05
	Day 3	7026	4360	4210	
	Day 5	5600	4062	3840	
Temperature	Day 0	101.2	101.0	99.8	Non- Significant
	Day 3	98.8	98.2	99.2	
	Day 5	97.8	97.2	98.0	
Cough (no. of	Day 0	16	15	15	Significant <0.05
	Day 3	10	8	10	
	Day 5	6	6	8	
Bronchial	Day 0	18	17	17	Non- Significant
	Day 3	9	8	8	
	Day 5	2	4	4	
Respiratory rate	Day 0	21	23	21	Non- Significant
	Day 3	18	19	18	
	Day 5	15	14	16	

Table 3: Adverse events.

Adverse events	Group C	Group A	Group L	P value
Headache	3	2	4	>0.05
Abdominal pain	4	5	4	>0.05
Skin eruption	0	1	0	>0.05

Charlson Index and severity of illness (P = .009). All patients lost function after admission, with loss being more pronounced in the FI group (mean change 19.24 ± 12.9 vs 4.72 ± 6.55, P < .001).

Various studies have shown that nursing home–acquired pneumonia differs from community-acquired pneumonia with respect to its prognosis and outcomes. Residence in nursing homes is one of the variables used to assess pneumonia severity in the PPI.[14] Nursing home–acquired pneumonia is considered to be a poor prognostic factor when adjusted for disease severity but not when adjusted for functional status. This is an important distinction and suggests that poor functional status (or the resultant delayed diagnosis and transfer) is the main factor that explains higher mortality with nursing home–acquired pneumonia.[15] Inclusion of premorbid functional status in the PPI might be a better marker for poor outcome rather than place of residence per se.

Conclusion

Drug such as clarithromycin, azithromycin and levofloxacin were comparable in terms of reduction in temperature, respiratory rate and cough and bronchial breathing.

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