

**LOWER RESPIRATORY TRACT INFECTIONS IN OUR LOCAL AREA**Akula Sanjeevaiah<sup>1</sup>, Akula Sushmitha<sup>2</sup><sup>1</sup>Civil Surgeon (Specialist) in Internal Medicine, District Head Quarter Hospital, Warangal (Rural), Hyderabad, Telangana.<sup>2</sup>Postgraduate Student, Department of Internal Medicine, Nizam Institute of Medical Sciences, Hyderabad, Telangana.**ABSTRACT****BACKGROUND**

Respiratory tract infections are common and most frequent annoying infections in children and adults. These infections are divided into upper respiratory tract infections (UTI) and lower respiratory tract infections (LRTI).

The objectives of this study were- 1. To investigate the incidence and characteristics of pneumonia 2. The incidence of typical and atypical pneumonia and 3. To determine the duration of hospitalization of patients.

**MATERIALS AND METHODS**

This retrospective-prospective study included 120 patients with lower respiratory tract infections hospitalized at our hospital for 2 years period. It included patients suffering from infection of the lower respiratory system at 18-65 years of ages.

**RESULTS**

Infections of the lower respiratory tract are more common in male population. A statistically significant difference in our hospitalized patients' samples was found in comparison of typical and atypical pneumonia, in favour of the first-typical bacterial pneumonia. Hospitalization duration ranged between 7-14 days.

**CONCLUSION**

Hence knowledge of major respiratory bacterial infections can help to determine the first-line of treatment.

**KEYWORDS**

Lower Respiratory Tract Infections, C- Reactive Protein, Pneumonia.

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**BACKGROUND**

In India around 3.5 million cases were reported in 2015 mainly of acute respiratory infection (ARI) and a 30% increase since 2010. Respiratory disease has increased despite of steady improvement in medical care and nutrition, as well as a shift away from using wood as fuel in rural areas.<sup>1,2</sup> The most significant risk factors for serious respiratory infections in children include exposure to tobacco smoke, lack of exclusive breastfeeding, housing (including crowding and housing condition), poor nutrition, and incomplete immunisation. The evidence for a relationship between indoor pollution and respiratory infections in developing countries is clear and has been recognized for at least two decades. Indoor or outdoor pollutants and acute respiratory infections (or respiratory symptoms in general) in children and adults suggests a relationship but none have confirmed infection microbiologically but instead relied on clinical criteria based on symptoms or use of health services. Consequently, little is known of the spectrum of infectious

agents or whether these pollutants increase susceptibility to infection or whether they exacerbate pre-existing morbidity following lower respiratory tract infection.<sup>3</sup>

Pneumonia most common lower respiratory tract infection and is classified into three groups according to the location and cause of the occurrence as Community-acquired pneumonia, Hospital acquired (nosocomial) pneumonia, Pneumonia in patients with impaired immunity, Epidemiologic causes The most important bacterial cause of community-acquired pneumonia is Streptococcus pneumoniae, which is responsible for 80% of cases and is represented in all age groups.<sup>4</sup> Out of 82 Streptococcus pneumoniae serotypes the disease is caused by nine, while the most severe clinical presentation causes serotype 3.<sup>5</sup>

The objective of this study was to detects local outbreaks of lower-respiratory tract infections (LRTIs). Using retrospective hospitalization data. As our hospital is a tertiary care center in this local area, we could get cases of all the age groups. Present study investigates the incidence and characteristics of pneumonia as the most serious lower respiratory tract infection, the incidence of typical and atypical pneumonia and hospitalization duration of patients

**MATERIALS AND METHODS**

This retrospective-prospective study included 120 patients with lower respiratory tract infections hospitalized in department of Medicine at our District Head quarter hospital Warangal Rural. The study was conducted in the period from

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January 2016 until December 2018. It included patients suffering from infection of the lower respiratory system at 18-65 years of ages. As data source are used medical records of hospitalized patients with lower respiratory tract infections, which are treated at our center.

**Inclusion Criteria**

Age 18-65 yrs. both mail and females were physical findings and clinical symptoms in favor of infection and X-ray finding with lung infiltration, increased laboratory parameters suggestive of infection of the lower respiratory tract

**Exclusion Criteria**

Patients with PA X-ray of the lungs with infiltrations that by differential diagnosis does not correspond to infections of the lower respiratory tract.

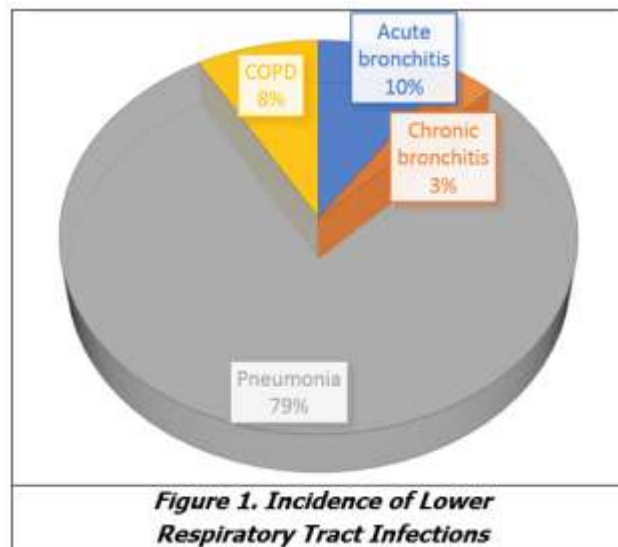
The diagnosis is made by clinician with evaluation based on history, clinical examination, diagnostic findings of the lungs), laboratory and microbiological and X-ray of the lungs like diagnostics. From medical history data included symptoms for which the patient was admitted (cough, fever, sputum, shortness of breath, fatigue, shivering,). From clinical data age, gender and auscultatory findings were analysed which was indicative of infections of lower respiratory tract. In case of bacterial pneumonia auscultatory finding is characterized by bronchial breathing and appearance of crepitation, at times pleural friction is also hear.

In case of atypical pneumonia findings at the beginning of the disease was usually normal, but later crepitation can be noticed and high frequency noise at the end of inhalation. From laboratory parameters biochemical parameters analysed were erythrocyte sedimentation rate (ESR), blood count and hematocrit, differential blood count (mostly focused on neutrophils), C-reactive protein (CRP), X-ray findings and microbiological analysis (analysis of the nose and throat swabs, sputum smear).

Statistical analysis by SPSS was used to study associations between local prevalence of respiratory symptoms and local levels of air pollution. For each of the respiratory symptom prevalence considered, the appropriate form of the logistic regression model in terms of basic individual and geographic predictors was established in a first step. Significance was considered if P-value is <0.05.

**RESULTS**

Between January 2016 and December 2018 analysis involved 95 hospitalized patients with infections of the lower respiratory tract. In total 120 patients with lower respiratory tract infections 95 patients had pneumonia.



Incidence of infections of the lower respiratory tract, of which the largest number represented pneumonia with 79%. Next by the frequency is acute bronchitis with 10%, chronic obstructive pulmonary disease (COPD) with 8%, while chronic bronchitis was present in only 3%.

Variable	Number of Cases	Percentages
<b>Age Distribution</b>		
18-30	9	9.47
31-40	14	14.73
41-50	23	24.21
51-60	49	51.57
<b>Gender</b>		
Males	62	65.26
Females	33	34.73

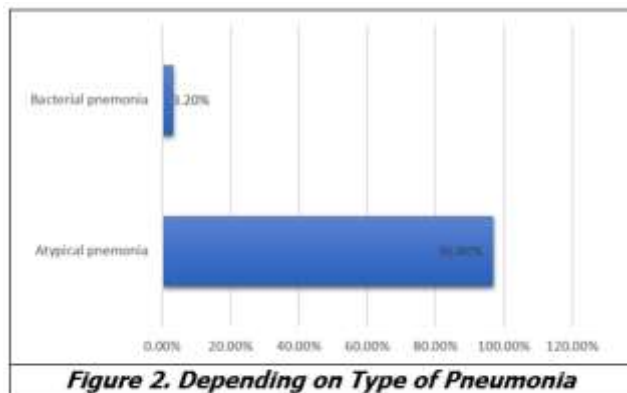
**Table 1. Demographic Details of Patients with Pneumonia**

The most common age group in our study was over 51-60 years of age, and the pneumonia occurred the least among patients at age from 18-30 years. In relation to the total number of patients more among men 62.26% then among women 34.73%.

Clinical Findings	Number of Patients	%
Fever	67	70.52
Chills	4	4.21
Cough	45	47.36
ESR (Erythrocyte Sedimentation Rate)	55	57.89
CRP (C-Reactive Protein)	65	68.42
Blood Leukocyte Count Elevated	34	35.78
Neutrophil Counts Elevated	3	3.15
Auscultatory Findings Positive	59	62.10
Lung X Ray Positive	89	93.3

**Table 2. Characteristics of Pneumonia**

In patients with pneumonia are the most common is characteristic X-ray of the lung represented in 93.3% and auscultatory pathological findings of the lungs in 62%. From clinical symptoms follows fever with 70.5%, cough 47.36%. Among laboratory parameters CRP 68.4%, erythrocyte sedimentation rate 57%, leukocytes count 35.7% and 3.15% neutrophils.



The incidence of bacterial (typical) and atypical pneumonia was significantly higher in favour of typical with 96.8% (92 patients), whereas atypical were represented only 3.2% (3 cases).

Auscultatory Findings	Number of Patients	%
Normal Sound	13	13.68
Weak Respiratory Sound on Right Side	9	9.47
Weak Respiratory Sound on Left Side	11	11.57
Weak Respiratory Sound on Both Sides	9	9.473
Intensified Sounds	3	3.15
Vesicular Breathing	3	3.15
<b>Accompanying Pathological Phenomena</b>		
Inspiratory Crackles	32	33.68
Expiratory Crackles	4	4.21
Crepitations	8	8.42

**Table 3. Auscultation Findings of Lungs**

Most common auscultatory findings of lung is inspiratory crackles.

Duration of Days in Hospital	Number of Patients	%
0-6 Days	17	17.89473684
7-14 Days	55	57.89473684
More Than 14 Days	23	24.21052632

**Table 4. Duration of Hospitalization in Study**

Patients with pneumonia hospitalization duration was most often from 7-14 days and the smallest number of the patients stayed up to 6 days.

**DISCUSSION**

In our study results are as most common infectious disease of the lower airways is pneumonia. (Figure-1) Our study showed a predominance of male patients suffering from pneumonia with 62.26% as similar results notice in study done by Jasmina Biscevic-Tokic et al<sup>6</sup> predominance of males with 62.025%. Kuzman<sup>5</sup> in his study found that there were more men than women and the ratio is higher in favor of men 1.5:1. They claim that the age is one of the important factors for the development of pneumonia.<sup>7</sup> Certainly these data coincide with our research. (Table-1)

In our study, In patients with pneumonia are the most common is characteristic X-ray of the lung represented in 93.3% and auscultatory pathological findings of the lungs in 62%. From clinical symptoms follows fever with 86%, cough 58.1% and shivering with 5%. Among laboratory parameters dominated the pathological CRP (C-reactive protein) 83.5%, erythrocyte sedimentation rate (SE) 70%, leukocytes count 44.3% and 5% neutrophils. (Table-2) Kuzman et al.<sup>8</sup> found high mean CRP value of 232.1 mg/dL in bacterial and 132.6 in case of atypical pneumonia in study done by Jasmina Biscevic-Tokic et al<sup>6</sup> the mean value of C-reactive protein (CRP) in patients with pneumonia who had elevated levels amounted to 107.19 mg/dL. Lehtomäki and associates<sup>9</sup> found the average value of CRP that was 149 mg/dL, with 90% of bacterial pneumonia, which is similar to results of our study. Kerttula et al.<sup>10</sup> in his study mean value of C-reactive protein was 164 mg/dL in bacterial and 51 mg/dL in atypical, which coincide with our results.

In our study bacterial (typical) and atypical pneumonia was significantly higher in favour of typical with 96.8% (92 patients), whereas atypical were represented only 3.2% (3 cases). (Figure-2) Bedi RS et al.<sup>11</sup> simultaneously examined the ratio of typical and atypical pneumonia in theirs studies and came to the fact that bacterial pneumonia is more common in hospitalized patients then atypical because such patients are hospitalized because of severe symptoms and complications. In study done by Jasmina Biscevic-Tokic et al<sup>5</sup> showed bacterial 97.47%, and atypical pneumonia 2.53% with significance between typical and atypical pneumonia. It is evident that our results coincide with the results of authors dealing with the same topic.

Unlike Harambasic and collaborators<sup>12</sup> who conducted two large studies and shown that pneumonia is more often present in lower than in the upper parts and that there are no major differences in the involvement of the left and right lung.

In our study patients with pneumonia hospitalization duration was most often from 7-14 days and the smallest number of the patients stayed at the clinic up to 6 days. (Table-4) Research by Fill and Mandell showed that pneumonia without complications and without major associated chronic diseases should be treated for 7-10 days, with a tendency of shortening of this period.<sup>3</sup>

**CONCLUSION**

Taking into account the burden of LRTIs in India, the findings from this study will be useful for health

stakeholders and will provide information that can lead to efficient strategies for controlling the burden of LRTIs. As all settings are not able to diagnose bacterial aetiologies in people with LRTI, knowledge of major respiratory bacterial infections can help to determine the first-line of treatment.

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