
Original Article

Prevalence of Pneumonia in Patients Hospitalized in the Pediatric Ward of Masih Daneshvari Hospital, Tehran-Iran

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ABSTRACT

Background: *Pneumonia in children is known as a common serious disease all over the world. It is one of the major causes of mortality and morbidity in children younger than 5 yrs in developing countries. This study was conducted to evaluate the clinical and paraclinical signs and symptoms in children hospitalized in this center due to pneumonia.*

Materials and methods: *This was a descriptive cross-sectional study conducted on children aged 0-15 years who had been hospitalized in the pediatric ward of Masih Daneshvari Hospital during 2000-2005 due to pneumonia. The patients were evaluated in terms of age, sex, body temperature, clinical signs and symptoms, interval between the onset of symptoms and admission, paraclinical findings, hospitalization period and the disease complications.*

Results: *In this study 182 children with pneumonia at the age range of 0-15 years (10% of those who had been hospitalized) had undergone treatment. 48.4% were males and 51.6% were females. The mean age was 4.7 yrs. The most common clinical signs and symptoms were cough (90.1% of cases), fever (63.2% of cases), coryza (21.9% of cases) and respiratory distress (18.2% of cases). Anemia and leukocytosis were detected in 24.2% and 31.3% of cases respectively. Mean ESR was 29.7 and CRP test had been reported positive in medical records of 50% of patients. The most common radiologic findings were pulmonary infiltration (47.2%) and consolidation (28.3%). In 24.5% of cases, pleural effusion and collapse and consolidation were concomitant with infiltration. Right lung, left lung and both lungs were involved in 33.7%, 31.9% and 34.4% of cases respectively. 68% of patients had received antibiotic therapy before the referral/ admission. 4% of patients needed intensive care and no mortality had been reported.*

Conclusion: *Considering the fact that in evaluation of the medical records no data was available regarding the diagnosis of the cause of disease, the results of this study were in accord with most of other researchers' findings and also due to the importance of detecting the cause of disease for specific treatment, performing researches regarding the etiology of disease is necessary.*

Keywords: *Pneumonia, Clinical signs and symptoms, Paraclinic, Children*

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INTRODUCTION

Pneumonia in children is known as a serious common disease all over the world. Its incidence in the European countries and the United States is estimated to be 34 to 40 in 1000 children under the age of 5 yrs (1, 2). In developing countries not only the prevalence of pneumonia is higher but also it is one of the main causes of mortality and morbidity in children younger than 5 years (1, 2, 3).

This disease is classified/ categorized based on its causative microorganism. Bacteria, viruses, Chlamydia, Rickettsia, Mycoplasma, ameba/ amoeba and parasites all can cause the lower respiratory tract infection (1,4,7). The common signs and symptoms are cough, fever and dyspnea. The most evident clinical finding in patients is the change in breath sounds (1-3). Radiography is one of the most efficacious diagnostic means for pneumonia. A simple chest x ray or CT scan can reveal a wide variety of findings (1, 3, 14, 15).

However, signs, symptoms and patients' radiography can not determine the exact etiology of disease (1,2,5).

The aim of this study was to determine the prevalence of pneumonia in children hospitalized in the pediatric ward of Masih Daneshvari Hospital during 2000-2005 and also to evaluate the clinical, laboratory and radiologic findings of these patients.

MATERIALS AND METHODS

Medical records of 182 children hospitalized in the pediatric ward of Masih Daneshvari Hospital between 2000 and 2005 due to pneumonia were evaluated. Children were at the age range of 0-15 yrs. The diagnostic criteria at the time of admission were clinical symptoms (fever, cough, change in breath sounds) and radiography of the lungs (infiltration, consolidation).

Immunodeficient children and those with bronchiolitis, chronic pulmonary diseases,

tuberculosis and cystic fibrosis (CF) were excluded from the study.

Patients' data including age, sex, body temperature, clinical symptoms, the interval between the onset of symptoms and admission time, para-clinical findings and hospitalization period were collected and entered the questionnaires.

The obtained results were evaluated and analyzed by using SPSS software.

RESULTS

The total number of patients hospitalized in the pediatric ward between the years 2000-2005 was 1821 cases; out of those 182 children were diagnosed as having pneumonia (10%). 48.4% (88 children) were males and 51.6 (94 cases) were females. The mean age of children was 4.7 ± 5 yrs (range 2 months-14 years). Of these children, 7.2% (13 cases) were younger than 6 months, 30% (55 cases) were between 6 months to 2 years, 29.2% (53 cases) were between 2-5 years and the remaining 33.5% were older than 5 years of age. These patients had presented to the hospital averagely 10.8 ± 11.5 days after the onset of symptoms (range 2 days- 2 months). Mean body temperature of children at the time of admission was 37.09°C (range $36-38.5^\circ\text{C}$).

The most common symptoms of disease in sequence were cough (90.1%), fever (63.2%), coryza (21.9%) and dyspnea (18.2%) (Figure 1).

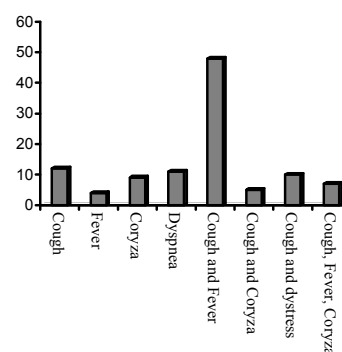


Figure 1. The frequency distribution of clinical symptoms (percentage)

Laboratory findings showed that the mean ESR of patients was 29.7 ± 22.4 and leukocytosis was present in 50% of children. CRP test had been performed for only 74 patients (40.7%) which was positive in 50% of cases. 24.2% of patients (44 cases) had anemia (hypochromic anemia in 17.6% and normochromic anemia in 6.6%). Radiologic findings indicated that 61.4% of patients had disseminated involvement while 38.5% had regional involvement.

Right lung, left lung and both lungs involvements were seen in 33.7%, 31.9% and 34.4% of cases respectively. Also, infiltration and consolidation patterns were seen in 47.2% and 28.3% of cases respectively. In 24.5% of cases, collapse, pleural effusion and collapse and consolidation were concomitant with infiltration. Atelectasis and pleural effusion were present in 2.7% and 4.4% of children respectively. Details of the radiographic patterns are demonstrated in figure 2.

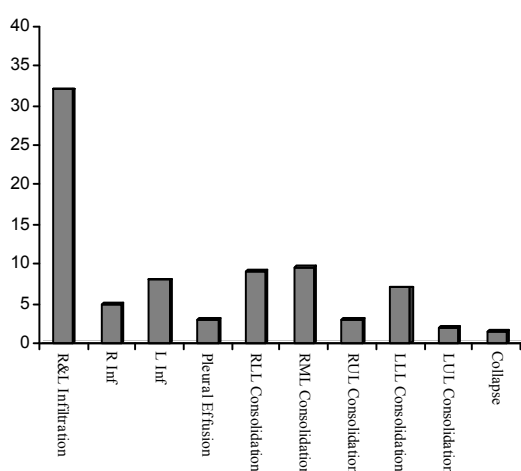


Diagram 2. Frequency distribution of the radiographic patterns (percentage).

Of these patients, 3% (6 cases) needed intubation. Surgical procedures performed were bronchoscopy in 11% (21 cases), lobectomy in 1% (3 cases) and chest tube insertion in 2% (5 cases) of patients.

68% of patients had received antibiotics before the referral. In almost none of the files it was

mentioned that the child had been treated as outpatient. During the hospitalization 93.6% of the patients had been treated with ceftriaxon and erythromycin, 4.1% were treated with cotrimoxazol and erythromycin and 2.2% were treated with ampicillin and gentamycin.

Mucolytic drugs and respiratory physiotherapy had been used for most patients. Mean duration of hospital stay was 6.8 ± 4.56 days and no mortality had been reported.

DISCUSSION

This study showed that the prevalence of pneumonia in patients hospitalized in the pediatric ward of our center was 10%. Various studies have reported this figure to be 9.8 to 20% (5, 6, 8, 9, 1, 17).

Mean age of affliction in these children was 4.7 yrs and the most common age of affliction was older than 5 years.

Michelow and colleagues in their study reported the mean age of patients to be 3.1 yrs (5). This difference is justifiable considering the fact that our study has been performed in only one medical center and with a smaller sample size.

This study showed that there was no significant difference in developing pneumonia between boys and girls ($p < 0.16$). This finding was concomitant with that of other similar studies (1, 2, 4, 5).

Mean body temperature of our patients was 37°C . Nacul et al. in their study in 2005 reported this to be 39°C (8). It seems that this difference is due to the incomplete treatment that 68% of patients had received before the referral. In evaluation of the disease symptoms it was revealed that cough and fever were the most common findings in a child suffering from pneumonia. Other researchers' studies are in accord with this finding (1, 5, 7, 8, 13). In accredited researches, a relationship has been detected between the laboratory tests specially PCR

and the etiology of disease (4,5). Unfortunately medical records of our patients lacked the etiologic findings. Therefore, we can not make a statement or comparison in this regard.

In Magree et al. study in 2005, the rate of right lung involvement was slightly higher than the left lung (14), which is concomitant with our finding. Since the angle of the left bronchus at the level of the carina is larger than that of the right bronchus this difference is justified due to the anatomical difference of the right and left bronchi (1, 2, 14, 15).

Sixty-eight percent of patients had previously received antibiotics. This rate has reported to be 40% in a study conducted in Texas, USA (5). This difference is indicative of the improper and higher than normal rate of antibiotic use in our country (18, 19, 21, 23, 25).

Three percent of our patients required artificial ventilation. In a study conducted in a medical center in the United States 5% of patients required intubation (20).

The rate of morbidity and mortality in patients hospitalized in the ward is 2-10% in different reports (8, 9, 11). Fortunately none of our patients expired.

CONCLUSION

Our study showed that no etiologic diagnosis was available in the patients' medical records to help us identify the causative agent. Therefore, considering the fact that national research institute of tuberculosis and lung disease (Masih Daneshvari Hospital) is the only referral center for pulmonary diseases in the country, it is recommended to perform a prospective study with the aim of evaluating the etiology of disease to take a step forward in offering a diagnostic and therapeutic guideline for children.

Also, this study suggests that once the diagnosis of pneumonia is established, prompt appropriate treatment should be started right away or the patient should be referred to an equipped medical center so

that the serious hazardous complications of the disease (surgical procedures, and death) could be avoided.

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