

Wheeze among Pneumonia Patients in Paediatrics Department of Patan Hospital

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Abstract

Background: Acute respiratory infections are major causes of morbidity and mortality in children in developing countries. It is estimated that 3.9 million children die annually from acute respiratory diseases and most of them in developing countries. In significant cases, wheeze is associated with Pneumonia. This study was done to find out the outcome of pneumonia patients admitted in the paediatric ward with wheeze and without wheeze in terms of hospital stay, age predominance, sex ratio, mortality and morbidity of patients. Some comorbidities of patients were also studied, **Methods:** This was a retrospective study done in the paediatric ward of Patan Hospital from April-June 2004 to March-April 2006 AD with following inclusion and exclusion criteria. All the children presented to Emergency ward up to 14 years with symptoms and sign of pneumonia were included in the study (high grade fever with chills and rigor, cough, fast breathing, creps and wheeze in auscultation) Age more than 14 years, history of Asthma, Tuberculosis, Acute wheeze associated with cardiac problems were excluded from study. Pneumonia patients admitted not from Emergency department were also excluded from study. Pneumonia with wheeze, outcome, and the hospital stay were studied. The outcome was measured in terms of improvement, deterioration or death of patients. Co morbidities associated with Pneumonia were also studied. **Results:** Out of 4620 children admitted in pediatric ward eleven hundred and sixty four (Twenty five percent) cases were of pneumonia and among them two hundred eighty three (twenty four percent) had wheeze. Majority of patients with pneumonia having wheeze falls on age group in between 2 and 12 months, followed by 1-5 years. The male children were more frequently affected. The co morbidities were febrile seizure, acute gastroenteritis, sepsis and urinary tract infection. **Conclusion:** The children admitted in Paediatric ward with Pneumonia were eleven hundred and sixty four and with wheeze were two hundred and eight three. Among them male were more than females. Majority of patients falls on age group two to twelve months. and study showed that they had prolonged hospital stay in relation to without wheeze. Three percent of the cases had blood culture positive among eleven hundred and sixty four sample

Key words: Acute respiratory infections (ARI), Wheeze, Paediatric ward, Sepsis, hospital stay.

Introduction

Acute respiratory infections constitute one of the principle causes of morbidity and mortality in children and mainly among children less than 5 years of age in developing countries. It is estimated that 3.9 million children die annually from ARI and most of them in developing countries¹.

Approximately 10-20% of all children less than 5

years in developing countries develop Pneumonia each year. Pneumonia often associates with wheeze and study done by Hazir et al showed 36.7% of pneumonia patients had wheeze². Younger age group (2-4 months), low parental education, smoking at home, prematurity, weaning from breast milk at 6 months or less than 6 months, a negative history of Diphtheria, pertusis and tetanus vaccination, anemia and malnutrition are the significant risk factors responsible for Pneumonia³.

Recently, several authors have documented that respiratory infections may cause wheezing and acute exacerbation of asthma in children. Recently, it became clear that infections by intracellular pathogens, such as *Chlamydia* and *Mycoplasma*, may cause acute and chronic wheezing in some individuals⁴.

The best predictor for asthma was two or more earlier similar episodes (sensitivity 84%, specificity 84%) followed by temperature < 37.6 degrees C (sensitivity 73% and specificity 84%). Absence of fever, audible wheeze and a family history of asthma had excellent specificities (98-100%) but low sensitivities (20-34%)⁵.

Objective of this study was to find out the percentage of pneumonia patients with wheeze among all pneumonia cases and to compare the duration of hospital stay in between Pneumonia patient with wheeze and without wheeze. And also to find out sex ratio, age predominance of pneumonia patients with wheeze and the co-morbidity associated with Pneumonia where possible.

Methodology

This is a hospital based retrospective and descriptive study which was done at the paediatric department of Patan Hospital. Study period was 2 years starting from April-June 2004 to March-April 2006. In

this study all children who had presented to emergency department with symptoms of fever with chills, cough, rapid breathing, vomiting, and chest pain along with decreased activity were labeled as Pneumonia. In many patients, auscultation revealed wheezing. Children having documented asthma, tuberculosis of chest, congenital chest abnormalities and acute cardiac problems with wheeze were excluded from study.

All patients with wheezes were treated initially with salbutamol inhalation by nebulization along with steroids and subsequently switched to oral salbutamol (according to hospital protocol). All the patients showed excellent outcome. Pulmonary function test were not done, as there were no facilities available for this. Amoxicillin was prescribed in most of the cases and switched to other antibiotics, whenever necessary.

Data for all the above were taken from the discharge register of the paediatrics ward at the end of each month for the duration of study period. It was analysed and tabulated.

Ethical approval was taken from Hospital ethical committee.

Results

The results of study are as given below.

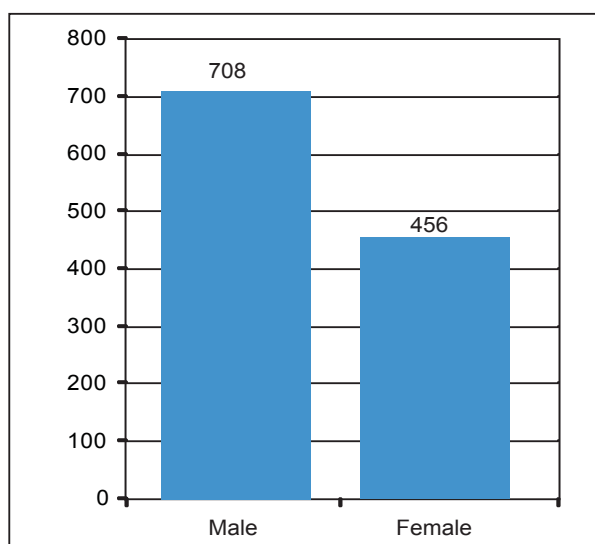


Fig 1: Eleven hundred and sixty four patients with Pneumonia were included in the study, among them seven hundred and eight patients were males and the rest females.

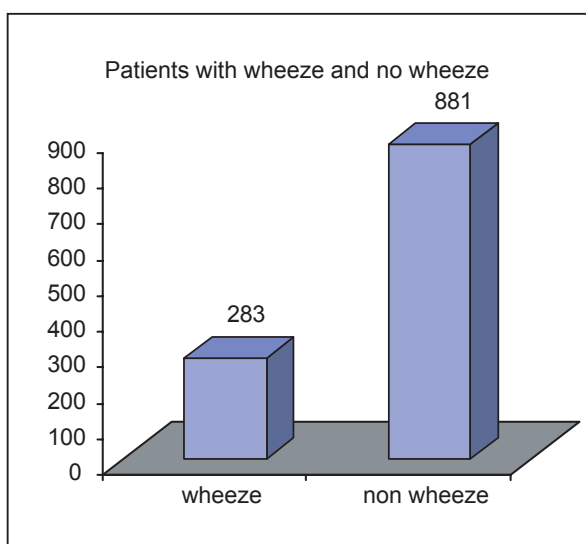


Fig 2: Showing among all Pneumonia patient two hundred and sixty four (24%) as having wheeze and rest eight hundred and eight one (76%) not having wheeze.

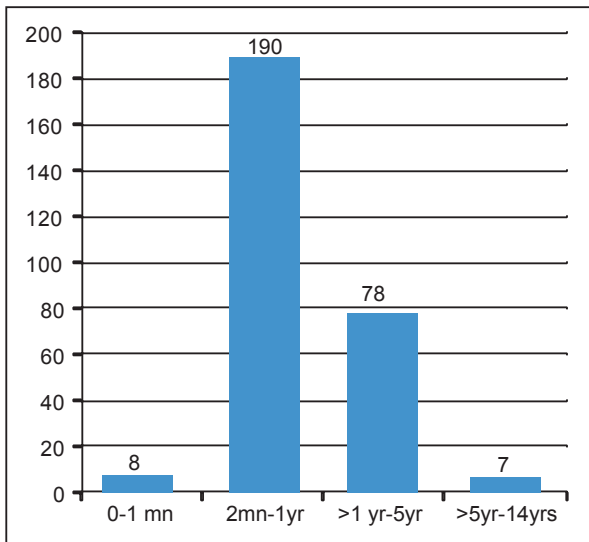


Fig 3: Showing agewise distribution of patients with wheeze. Majority of patients fell in the age group of 2 -12 months.

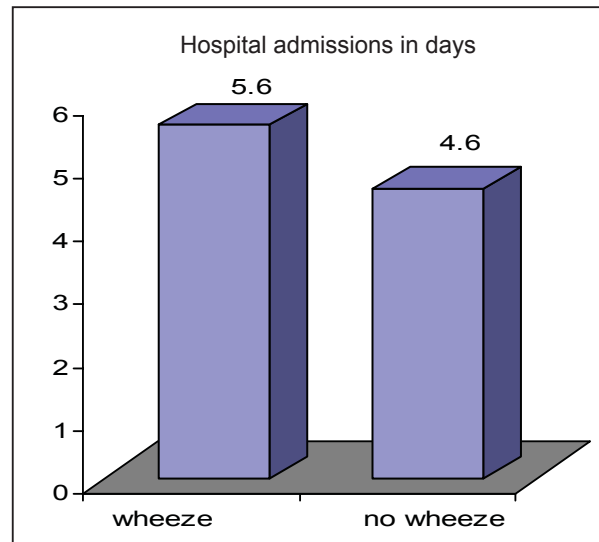


Fig 4: Showing the number of days of hospital stay of patients with wheeze and without wheeze. Patients with Pneumonia with wheeze stay longer in hospital than patients without wheeze (5.6 days against 4.6 days).

Table 1: Showing Blood culture positive cases. Blood culture of thirty four (3%) patients was positive whereas report of 17 cases came as contaminated and blood culture was not sent in 25 cases. In some cases blood culture report was not found.

Organisms	Number
Coagulase+ staphylococcus	6
Coagulase- staphylococcus	7
E.Coli	7
Klebsiella	7
Salmonella	1
Hemolytic streptococcus	1
Acinobacter	1
Enterobacter species	2
Strepto Pneumoniae	2
Total	34

Discussion

An acute respiratory infection, particularly Pneumonia, is a major cause of hospitalization and death during childhood in poorer areas of the world^{2,3}. Most countries in Africa and Asia record 2-10 times more episode of pneumonia in children (7-40/100 annually) than in the USA⁶.

Deaths from ARI played a smaller role after 1950, when the use of antibiotics became generalized. In developing countries, the role of ARI mortality seems to be similar to the European experience⁷. The age pattern is very marked. In absolute values, ARI mortality is highest in the neonatal period and decreases with age.

In relative values, ARI mortality is highest in the post neonatal period. ARI, mainly pneumonia, accounts for about 18% of underlying causes of death in developing countries. Pneumonia and other ARI are frequent complications of measles and pertussis; ARI is also commonly found after other infections and in association with severe malnutrition⁷. Virtually no data are available in developing countries to provide final estimates of the role of ARI in mortality of children aged less than 5 years. However, the WHO figure of 1 out of 3 deaths due to-or associated with-ARI may be close to the real range of the ARI-proportional mortality in children of developing countries⁷.

This study shows one fourth of cases among all admitted cases in paediatrics ward constituted pneumonia patients. *This data is comparable with the data presented by G. Marian et al. He found that 39.2% pneumonia among all pneumonia patients admitted in the ward*⁸. Similar result was found by Menge I et al from Kenya, T Simiyu DE found admission of 32% patients in the paediatric ward due to Pneumonia⁹.

Our study showed that there were 61% male and 39% female among all Pneumonia cases. Cristina M.C. et al in their study found 54.1% males and 45.9% females among Pneumonia patients¹⁰. Others like G/ Miriam in his study found male predominance among Pneumonia patients admitted in the paediatric ward⁸.

This study showed wheeze among 24.31% pneumonia patients. This was comparable with the

study done by Sachdev et al. They found this rate to be present in 22% cases¹¹. But Rattanadilok Na Bhuket et al found 40.5% wheezing among Pneumonia Patients¹².

This study showed, common age for Pneumonia fell in the age group of 2-12 months. Dev SK in their study found Pneumonia to be the highest in the infant group¹³. Whereas Sachadev et al. showed 22.5% of pneumonia patients among 6-11 months age group⁵.

In our study the most common organisms isolated from blood were gram negative cocci and bacillus (The most often isolated bacteria were Streptococcus pneumoniae 33% and Haemophilus influenzae 21%). It may be due to 30% among all patients fall on age group less than two months of age and max no of blood cultures were sent from this age group. Besides this, blood culture and sensitivity was not sent from bigger children and children with prior antibiotics. Viral cultures were not done in our setup. And Mycoplasma pneumoniae were not grown in our culture media.

In North America and Europe (9 studies), the etiology of pneumonia was established in 62% of studied children (range 43%-88%) by use of noninvasive specific methods for microbiologic diagnosis. The most often identified agents were S. pneumoniae (22%), respiratory syncytial virus (RSV) (20%), Haemophilus influenzae (7%), and Mycoplasma pneumoniae (15%). In Africa and South America (8 studies), bacteria were recovered from 56% (range 32%-68%) of severely ill children studied by lung aspirate. The most often isolated bacteria were Streptococcus pneumoniae (33%) and Haemophilus influenzae (21%). A high percentage of H. influenzae strains were not serotype b. throughout the world, children requiring hospitalization were most likely to have infection caused by pneumococcus, H. influenzae or RSV¹⁰. During study period four patients (1.2 %) died despite of treatment. Sachadev et al. found 5 deaths among 126 admitted patient and among them two patients died due to Pneumonia with CHF⁵.

Conclusion

During study period eleven hundred and sixty four patients had pneumonia, this is 25% of total patients and among Pneumonia patients, twenty four percent patients had wheeze. Male pneumonia patients with wheeze were more than female pneumonia patients with wheeze, peak age of patients falls on age group of 2-12 months. Peak season for pneumonia is Bhadra and Asoj which is also true for pneumonia with wheeze. Disease may present atypically as febrile convulsion or diarrhea. The hospital stay of patients with wheeze is longer than non wheeze patients.

Recommendation: A larger prospective study is necessary to confirm the data of this study.

Acknowledgment: We would like to thank to all residents and interns, who actively helped us to complete this study.

Conflict of interest: None.

Funding: None.

Permission from IRB: Yes.

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How to cite this article ?

Shrestha SR, Yadhav B, Shrestha S. Wheeze among Pneumonia Patients in Paediatrics Department of Patan Hospital. *J Nep Paedtr Soc* 2011;31(2):116-120.
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