A study of prevalence and frequency of respiratory illness in hospitalized children in North West part of Rajasthan

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Abstract

Background: Respiratory diseases remain a major cause of morbidity and mortality in children. This study aims to determine the prevalence and spectrum of respiratory illness in children. This study conducted at paediatric hospital Bikaner from July 2015 to December 2015. Data from case files of children with respiratory diseases admitted to Paediatric hospital Bikaner over a six month period were extracted and total number of inpatients data extracted from hospital register book. Prevalence of respiratory diseases was 18.1%. Most of the respiratory illness affected during winter season. Most common age group affected were belongs to less than 6 months (25.4%) followed by 1-2 years (22.9%). The most common respiratory illness was acute bronchiolitis (33%) followed by Pneumonia (25.3%) and Asthma (16.3%). In developing countries Respiratory tract illness contribute to most common cause of < 5 mortality in children. Our study concludes Developing countries need better health policy to control respiratory tract illness in children.

Keywords: Respiratory tract illness, Acute Bronchiolitis, Pneumonia, Under 5 Mortality, Antibiotics, Bikaner.

Introduction

Respiratory diseases remain a major cause of morbidity and mortality in children.[1,2,3] The spectrum of respiratory illness is wide and includes diseases of upper and lower airways, communicable and non-communicable types. The variation in pattern of morbidity mortality of respiratory illness may be affected by different/environmental and climatic variation in different parts of the world.[4,5] The World Health Organization estimates that approximately 10.6 million children under 5 years of age die each year. Epidemiological studies have shown different estimates of the burden of respiratory diseases in different countries. In the US respiratory diseases in children are responsible for 25% of hospital admissions[6] while in United Kingdom and continental Europe respiratory diseases contribute to 25% and 13% of hospital admissions among the paediatric age group respectively.

In the developing world, respiratory tract infections along with diarrheal diseases constitute the major causes childhood morbidity and mortality particularly in the less than five age group.[7] Globally, a systemic analysis of the global burden of burden of disease, reviewing two hundred and thirty five causes of death between 1990 and 2010, found Pneumonia, a respiratory illness, as the leading cause of morbidity and mortality in children aged below 5 years.[8] Apart from pneumonia, children may suffer a variety of respiratory illness ranging from common cold, Nasopharyngitis, Laryngitis, Sinusitis, Bronchiolitis, Tonsillopharyngitis, Asthma, Tuberculosis, Foreign body Aspiration etc. Some of these cases may require hospital admission based on its severity.

The spectrum of illness in a given locality may differ from another. This work is aimed at reviewing the various respiratory cases for which a child was admitted in our hospital, PBM Paediatric hospital, Bikaner over a 6 months period, in a bid to determine the most prevalent respiratory case admitted, the age group most affected seasonal predisposition and the outcome. Data on spectrum of paediatric respiratory illnesses admitted in the hospital is scarce and therefore, this retrospective study of respiratory case admissions is considered relevant as it would provide a baseline information for a better understanding of the epidemiology of paediatric respiratory admissions, assist health care planning, resource allocation, prevention and intervention strategies as well as making of relevant health policies.

Material and Methods

This study was conducted at Paediatric hospital, Sardar patel medical college, Bikaner in the North West district of Rajasthan state in India from July 2015 to December 2015. The Institute ethics committee approved the study protocol. Children aged 1 month to 15 years, who had been on admission for a respiratory illness, diagnosed from clinical history of symptoms such as cough, wheeze, stridor, breathlessness, fever, etc., and physical examination for typical signs such as chest in drawing, added or abnormal chest sounds with/without radiological/microbiological evidence, as seen in the case note were eligible for inclusion. Data from case files of children with respiratory diseases admitted to Paediatric hospital Bikaner over a six month period were extracted and total number of inpatients data extracted from hospital register book. All collected data was tabulated and statically analysed.

Results

Prevalence of respiratory diseases was 18.1%. Most of the respiratory illness affected during winter season. Most common age group affected were belongs to less than 6 months (25.4%) followed by 1-2 years (22.9%). The most common respiratory illness was acute bronchiolitis (33%) followed by Pneumonia (25.3%) and Asthma (16.3%). 38(4.9%) respiratory illness patients were had respiratory failure needed Mechanical Ventilators support, of these 18(2.3%) were expired. Post diptheric respiratory failure and congenital heart diseases are the main causes of mortality.

Discussion

Our study has shown respiratory illness is the important indication for admission in our paediatric hospital. In our study prevalence of respiratory illness was 18.1%. According to various studies respiratory illness are the most common cause of morbidity and mortality in under five children. The cause of high prevalence respiratory illness in our study is not known may be because of improved health consciousness and easy referral to tertiary care centres more number of cases are admitted in our hospital. In a study of admissions in hospitals in Hong Kong respiratory disorders constituted 37.5% of all diagnosis[9] in our study more number of cases are admitted in December(26.6%) followed by November(23.6%). Earlier study done in Nigeria recorded similar peak period in November. This seasonal variation was due to beginning of winter season in North West part of Rajasthan. The drastic change in temperature and cold weather are the contributing factors for seasonal variation of respiratory illness in our study. In this study majority of respiratory illness patients belongs to less than 6(25.4%) month age group. The cause is unknown, may be decreased practice of breast feeding is the major predisposing factor for respiratory illness. In our study most common respiratory illness was Acute Bronchiolitis (33%) followed by Bronchopneumonia (25.3%) and Asthma(16.3%). In developing countries Bronchiolitis and bronchopneumonia are the major contributing respiratory illness. Overcrowding, poor sanitation, poverty are main risk factors for Bronchopneumonia. In our study most of the acute Bronchiolitis patients had ricketic changes in wrist x-ray. Vitamin D deficiency is the predisposing factor for respiratory illness. Need further study to evaluate the relationship of vitamin D and acute respiratory illness. In our study childhood Asthma(16.3%) was the most common Non-communicable respiratory illness. Poor compliance of drug, inadequate Knowledge about using meter dose inhaler, wrong diagnosis, frequent shifting of physician for treatment and poor avoidance of allergen are the major risk factors for repeated admissions of Asthma patients in hospital. In our study few cases of microscopically diagnosed pulmonary Tuberculosis (0.91%) cases was found. In our study congenital heart diseases are the major co morbidity factors for respiratory illness (4.68%). In our study respiratory illness are treated with parenteral antibiotics, oral salbutamol, anti-histamines, nebulisation with salbutamol, oxygen and Mechanical ventilation. Majority of patients successfully treated and discharged from hospital. In this study 18 (2.3%) patients were expired. Post diptheric respiratory failure and congenital heart diseases are the main causes of mortality.

Table 1: Monthly Distribution of Total and Respiratory illness inpatients in the Pediatric Hospital

Month	Total Inpatients	Respiratory Illness Inpatients
July	525(12.3%)	86(16%)
August	602(14.2%)	72(11.9%)
September	689(16.2%)	102(14.8%)
October	787(18.5%)	96(8.7%)
November	769(18.1%)	182(23.6%)
December	863(20.3%)	230(26.6%)
Total	4235(100%)	768(18.1%)

Table 2: Age Wise distribution of admissions and respiratory illness in Pediatric Hospital

Age Group	Total no. of Inpatients	Respiratory Illness Inpatients
1-6 months	511(12%)	130(25.4%)
6-12 months	920(21.7%)	168(18.2%)
1-2years	680(16%)	156(22.9%)
2-5 years	738(17.4%)	132(17.8%)
5-10 years	768(18.1%)	90(11.7%)
10-15 years	618(14.5%)	92(14.8%)
total	4235(100%)	768(18.1%)

Table 3: Frequency of respiratory illness by categories

Diagnosis	Frequency	Percentage
acute bronchiolitis	254	33.0%
pneumonia	194	25.3%
croup	8	1.0%
suspected pertusis	20	2.6%
acute epiglottitis	1	0.13%
pulmonary tuberculosis	7	0.91%
bronchiectasis	0	0.0%
asthma	125	16.3%
foreign body	16	2.08%
pneumothorax	14	1.82%
hydropneumothorax	16	2.08%
pleural effusion	38	4.94%
cystic fibrosis	1	0.13%
metastatic lung malignancy	1	0.13%
kerosene oil ingestion	8	1.0%
aspiration pneumonitis	6	0.78%
Others		
-chd	36	4.68%
-primary immune deficiency	1	0.13%
-post diptheric respiratory failure	8	1.0%
-gbs	12	1.56%
-sle	2	0.26%

Table 4: Number and percentages of variety of medications used for respiratory illness inpatients

Medications Used	Number	Percentage
antibiotic parenteral	664	86.4%
oral brochodilator	472	61.4%
paracetamol	512	66.6%
antihistamine	186	24.2%
nebulisation with salbutamol	426	55.5%
oxygen	212	27.6%
others		
-digoxin	28	3.6%
-furosamide	66	8.6%
-mechanical ventilation	38	4.9%

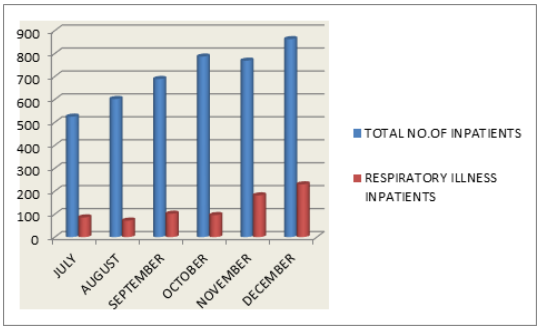

Fig. 1: Bar chart showing monthly distribution of total and respiratory illness inpatients in the pediatric hospital

Conclusion

In developing countries Respiratory tract illness contribute to most common cause of under-five mortality in children. In India paediatric critical care is advancing in tertiary care centres but, due to lack of health professional activities in remote areas, health services not reaching to sick children. Our study concludes Developing countries need better health policy to control respiratory tract illness in children.

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