Original Article

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Clinical Profile of Children with Severe Pneumonia at a Tertiary Care Hospital

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Abstract

Introduction: In India, ARI is one of the major reasons for which children are brought to the hospital and health facilities. According to WHO estimates, respiratory infections cause about 9.87 lakh deaths in India of which 9.69 lakh deaths were due to ALRTI. *Methodology:* This was a prospective clinical study of severe pneumonia conducted on 150 children who were admitted to pediatric wards in medical college hospital. Epidemiological factors affecting the same were studied and bronchoscopy was done whenever it was needed.Children in the age group of one month to 5 years with clinical features of severe pneumonia as per WHO recommendations for the control ARI were included. *Results:* In the present study, according to WHO ARI programme,83.33% had severe pneumonia and 16.67% has very severe pneumonia. *Conclusion:* Symptoms and signs mentioned in the WHO ARI control programme were very sensitive and can be applied to hospitalized children.

Keywords: ARI; Clinical Profile; Pneumonia.

Introduction

ARI is responsible for 19% of all deaths in children below five years of age and 8.2% of all disability as measured by Disability Adjusted Life Years (DALY). It is estimated that Bangladesh, India, Indonesia and Nepal together account for 40% of the global ARI mortality. About 90% of ARI deaths are due to pneumonia, which is usually bacterial in origin. The incidence of pneumonia in developed countries may be as low as 3-4%, its incidence in developing countries range between 20-30% [1].

On an average, children below five year of age suffer 5 episodes of ARI per child per year. ARI is responsible for about 30-50% of visits to heaths facilities and for about 20-40% of admissions to hospitals.

In India, ARI is one of the major reasons for which children are brought to the hospital and health facilities. According to WHO estimates, respiratory infections cause about 9.87 lakh deaths in India of which 9.69 lakh deaths were due to ALRTI [2].

Hospital record from states with high infant mortality rates show that, 13% of inpatients deaths in pediatric wards are due to ALRTI. The proportion of death due to ALRTI in the community is much higher as many children die at the home. The reason for high case fatality may be that children are either they are not brought to the hospital or brought too late.

Bacterial and viral pneumonias are most often preceded by several days of symptoms of an upper respiratory tract infection typically rhinitis and cough [3].

Tachypnoea is the most consistent clinical manifestation of pneumonia. Increased work of breathing accompanied by chest retraction nasal flaring and use of accessory muscles is common. Severe infection may be accompanied by cyanosis and respiratory fatigue especially infants.

Physical finding depends on the stage of pneumonia. Early in the course of illness, scattered crackles and rhonchi are commonly heard. With the development of increasing consolidation or completion of pneumonia such as effusion, empyema or pyopneumothorax, dullness on percussion is noted

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and breath sounds are markedly diminished. Rapid progression of symptoms is characteristic of most severe cases of bacterialpneumonia [4].

Methodology

This was a prospective clinical study of severe pneumonia conducted on 150 children who were admitted to paediatric wards in medical college hospital. Epidemiological factors affecting the same were studiedand bronchoscopy was done whenever it was needed.

Children in the age group of one month to 5 years with clinical features of severe pneumonia as per WHO recommendations for the control ARI were included.

Children with congenital anomalies of heart and lungs, anatomical defects like cleft lip and cleft palate, immunocompromised states like human immunodeficiency virus infection (HIV) and infants less than one month of age were excluded from the study.

A detailed history of the relevant symptoms such as fever, cough, rapid breathing, refusal of feeds, wheezing etc was taken.

Based on WHO ARI criteria, children were considered tachypnoeic if respiratory rate (RR);

-RR > 60 in < 2 months

-RR > 50 in 2 months-1 yr.

-RR > 40 in 1 yr-5 yrs.

A detailed examination of each child including anthropometry was carried out. During the general physical examination, emphasis was laid on assessing general condition of the child, respiratory rate (counted over 1 minute), presence of fever and other signs such as cyanosis and pallor. Detailed systematic examination of the respiratory, cardiovascular and central nervous system was done. Any associated illness such as septicemia, meningitis and congestive cardiac failure if present was noted. Socio economic history regarding the type of house (Pucca or Kutcha), family size (overcrowding), sanitary facilities and fuel based for cooking (LPG or non LPG) were recorded. Socio economic status was classified according to modified Prasad's classification. Other pertinent information such as immunization status (Immunized, partially immunized or unimmunized), feeding practices and degree of malnutrition (IAP classification) were also recorded.

According to WHO ARI criteria, children were classified into 2 groups: severe pneumonia and very severe pneumonia. For analytic purpose, risk factors were studied amongst severe and very severe pneumonia. Regarding risk factors for mortality, children who died during the course of hospitalization served as cases, while those survived were taken as controls.

Results

Table 1: Showing the age distribution of children.

Age group(months)	Female (%)	Male (%)	Total (%)
1 - 6	21(34)	36(40)	57(38)
7 - 12	07(12)	16(18)	23(15)
13 - 60	33(54)	37(42)	70(47)
Total	61(41%)	89(59%)	150

In the present study, majority of cases (53%) were less than one year of age.

Table 2: Showing various symptoms

Symptoms	Number	Percentage
Cough	150	100
Fever	149	99.3
Hurried breathing	150	100
Refusal of feeds	29	19.3
Wheeze	22	14.7
Convulsions	07	4.6
Cyanosis	05	3.3

In our study, hurried breathing (100%), cough (100%), fever (99.3%) were the most common symptoms. Refusal of feeds was present in 19.3% of cases. In our study, hurried breathing (100%), cough (100%), fever (99.3%) were the most common symptoms. Refusal of feeds was present in 19.3% of cases.

Table 3: Showing various signs

Signs	No.	Percentage
Chest retractions	150	100
Crepitations	112	74.67
Ronchi	77	51.33
Abnormal breath sounds	38	25.33

Table 4: Showing mean duration and range of symptoms/signs

Symptoms/signs	At admission	Duration in Hospital (m±s.d)	Range
Cough	150	6.5±4.40	2-28
Fever	149	5.67±4.26	1-20
Tachypnoea	150	2.38±1.40	1-10
Chest retractions	150	2.12±1.14	1-10
Added sound (crepts/ronchi)	113	4.78±1.42	0-14

In our study, chest retractions were present in all cases (100%), crepitations were heard in 74.67%, ronchi in 51.33% and abnormal breath sounds (bronchial breathing diminished breath sounds) in 25.33% of cases.

In the present study, mean duration of cough(6.5±4.40), fever(5.67±4.26), tachypnoea (2.38±1.40) and chest retractions(2.12±1.14) during hospital stay.

In the present study, tachypnoea was present in all cases(100%), 60.2% had respiratory rate of >60 cycles per min. Mean duration of tachypnoea was 2.12±1.15 days.

In the present study, a previous history of similar illness was present in 10.8%(36 cases). A family history of ALRT was present in 6% (20 cases).

Table 5: Respiratory rate at admission

1m-12m	>80	60-80	<60
	01	69	10
13m-60m	>60	50-60	40-50
	46	23	01

Table 6: Associated illness

Illness	Number	Percentage
Septicemia	05	3.3
Meningitis	03	2
Diarrhoea	10	6.6
CCF	02	1.3

In our study pneumonia was associated with diarrhea in 6.6%, septicemia in 3.3% cases, meningitis in 2 cases and congestive cardiac failure (CCF) in 1.3 cases.

In the present study, according to WHO ARI programme,83.33% had severe pneumonia and 16.67% has very severe pneumonia

Table 7: Classification according to WHO ARI programme

Classification	No.	Percentage
Severe pneumonia	125	83.33
Very severe pneumonia	25	16.67
Total	150	100

Discussion

Pneumonia continues to pose a threat to health children in developed and developing countries despite improvements in socioeconomic status, immunization and early diagnosis and treatment. Universality, vulnerability and frequency of occurrence of ALRTI in children are well recognized all over the world.

Age is an important predictor of morbidity and mortality in pediatricpneumonias.In the present study, conducted between the age group of one month to five years, majority (53%) were less than one year. This was in comparison with studies done by Reddaiah VP et al [11] (63.2%) and Sehgal V et al [5] . (52.2%)

In our study it was observed that male (59.33%) outweighed females (40.67%). Male: female ratio was

1.45.This was in comparison with studies done by Sehgal V et al [5] (58.25) and Drummond P et al [6] (58%).

Table 8: Symptomatology

Symptoms	Kabra SK et al[7]	Kumar N et al[4]	Present study
Fever	82%	88%	99.3%
Cough	98%	100%	100%
Hurried	90%	100%	100%
Refusal of feeds	42%	22%	19.3%

The incidence of presenting symptoms in our study are comparable with studies conducted by Kabra SK et al [7] and Kumar N et al [4].

Tachypnoea has been improved to be a sensitive and specific indicator of the presence of pneumonia. Also the traditional, method of making a clinical diagnosis of pneumonia has been by the recognition of auscultatory signs, in particular crepitations, in a child with cough.

In our study, tachypneoa (100%) and chest retractions (100%) were the important signs for making a clinical diagnosis of pneumonia. Crepitations (74.67%), ronchi (51.33%) and abnormal breath sounds (14.6%) were the other associated signs. Gupta D et al [3] , Margolis P et al [8] , PalafoxM et al [9], and Gadomski AM et al [10] have observed that tachypnoea and chest retractions were highly specific signs in detecting pneumonia. Reddaiah VP et al [11], have reported that crepitation were found in 76% and ronchi in 23.2% of patients with pneumonia.

In our study, pneumonia was associated with diarrhea in 6.6% (10 cases), congestive cardiac failure in 1.3%(1 cases), and septicemia in 2%(3 cases). This was in comparison with studies done by Deivanayagam N et al [12], and Sehgal V et al [13].

Conclusion

ARI, especially pneumonia is one of the major causes of morbidity and mortality in children. Bronchopneumonia is the predominant form of presentation in infants and preschool children.

The WHO protocol puts forward two signs as the "entry criteria" or basis for examining a child bellow five years of age for possible pneumonia: cough or difficult breathing.

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