



STUDY ON DIAGNOSIS AND OUTCOME OF RESPIRATORY DISTRESS IN INFANTS OF AGE 1 TO 6 MONTHS

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ABSTRACT

Introduction: Respiratory distress due to acute respiratory infections (ARI) are the most common human ailment. ARI are a substantial cause of morbidity and mortality in children.

Aim: To study the diagnosis and outcome in infants hospitalized with respiratory distress due to ARI during 1 - 6 months of life.

Methods: Infants of age 1-6 month who presented with respiratory distress according to WHO criteria for the first time are included in the study, diagnosis and outcome was analysed.

Results: The study enrolled 100 infants of which 82 were bronchiolitis, 18 were pneumonia. Bronchiolitis was the leading cause of hospitalization in both preterm and term infants. Duration of hospital stay was more for pneumonia when compared to bronchiolitis. There was no mortality due to both disease in our study group.

Conclusion: Bronchiolitis was the leading cause of hospitalization in infants of 1-6 month age group. Child admitted with pneumonia has prolonged hospital stay when compared to those admitted with bronchiolitis.

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INTRODUCTION

Acute respiratory infections (ARI) are a substantial cause of morbidity and mortality in children. They are perhaps the most common human illness. ARI is responsible for 3.9 million deaths worldwide¹. ARI is responsible for about 30-50% of visits to health facilities and for about 20-40% of admissions to hospitals¹. Hospital records from states with high infant mortality rate has 13% of deaths due to ARI¹. This study is done to evaluate the diagnosis and outcome of respiratory distress in infants of age 1 to 6 months.

MATERIALS AND METHODS

This study was conducted in Department of Pediatrics, Rajah Muthiah Medical College and Hospital between January - 2015 to June - 2016.

Inclusion Criteria

Children with first episode of respiratory distress (due to respiratory infection) according to WHO criteria admitted

during the above period in the age group of 1 to 6 months were included for the study.

Exclusion Criteria

- Children aged <1 month and >6 months
- Previous episodes of respiratory distress
- Children with respiratory distress due to non respiratory causes (sepsis, acidosis, cardiovascular and central nervous system causes).

A thorough clinical examination was done at the time of admission and management details were recorded into the proforma. Clinical diagnosis is made followed by confirmation with complete blood count and chest X-ray.

RESULTS

Total of 100 infants were included in the study. Bronchiolitis was the most common cause of respiratory

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distress in study group irrespective of gestational age with male predominance in both disease group.

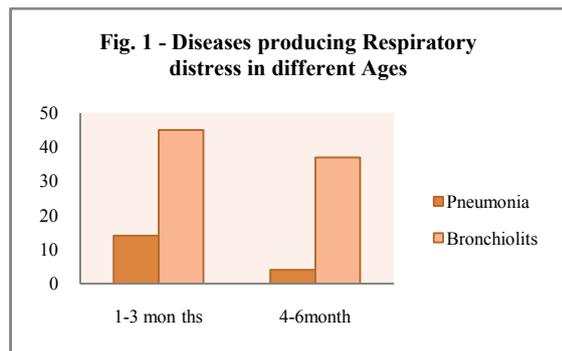


Table 1 Duration of Hospital Stay In Infants With Respect To Diagnosis

Duration of Hospital stay	DIAGNOSIS				Total	
	Pneumonia		Bronchiolitis		N	%
	N	%	N	%		
5-8days	2	11.1	79	96.3	81	81.0
>8 days	16	88.9	3	3.7	19	19.0
Total	18	100.0	82	100.0	100	100.0

Infants admitted with bronchiolitis had less hospital stay compared to those admitted with pneumonia and it was statistically significant. Mean duration of stay in bronchiolitis and pneumonia were 6.97 ± 1.9 and 9.5 ± 1.5 respectively.

Preterm admitted with respiratory distress has longer duration of stay compared to term infants with respiratory distress.

Table 2 Duration of Hospital Stay In Infants Admitted With Respiratory Distress In Various Age Group

Duration of Hospital stay	Age				Total	
	1-3 months		4-6 months		N	%
	N	%	N	%		
5-8days	44	74.6	37	90.2	81	81.0
>8 days	15	25.4	4	9.8	19	19.0
Total	59	100.0	41	100.0	100	100.0

Duration of hospital stay is more in young infants admitted with respiratory distress compared to older infants and it is statically significant.

DISCUSSION

Bronchiolitis is the leading cause of hospitalization irrespective of gestational age in our study group. This coincide with American Academy of Pediatric guidelines² and SIGN³ (Scottish Intercollegiate Guidelines Network) on bronchiolitis.

Investigations

Complete blood count (CBC) is done in all infants admitted with respiratory distress who satisfied the inclusion criteria. White blood cell count is elevated in all cases of pneumonia and it is inconclusive in cases of bronchiolitis. Blood culture and sensitivity is done in all cases of pneumonia and it is inconclusive. Kabra SK et.al⁴

and Bahl R *et al*⁵ have reported positive blood culture in 16% and 11% of patients respectively and it does not correlate with our study. Limitation of our study is small number of pneumonia positive cases. Chest x-ray showed features of bronchiolitis in 70 cases out of 82 cases and it does not predict the severity of bronchiolitis. AAP guidelines on bronchiolitis² also correlates with our study. It states that although many infants with bronchiolitis have abnormality on chest radiography, data are insufficient to demonstrate chest radiography correlates with disease severity. Chest radiograph is done in all patients in our study since it is difficult to distinguish clinically viral and bacterial infections in young infants.

AAP said that radiography may be useful when the hospitalized child does not improve at the expected rate, if the severity of disease requires further evaluation, or if another diagnosis is suspected in cases of bronchiolitis.

Visible radiographic manifestations of bronchiolitis include diffuse lung hyperinflation with increased lung volume, hyperlucency, flattening of the diaphragms and prominent bronchovascular markings with an interstitial infiltrate pattern. Atelectatic areas from mucoid plugging and low density infiltrates are often seen, and pleural thickening may also be evident.

Wang EE *et al*⁶ and Shaw *et al*⁷ suggested that the presence of consolidation and atelectasis on a chest radiograph is associated with increased risk for severe disease. One study showed no correlation between chest radiograph finding and baseline severity of disease.

In prospective studies (Swingler *et al*⁸) including one randomized trial, children with suspected LRTI who received radiographs were more likely to receive antibiotics without any difference in time to recovery. Current evidence does not support radiography in children with bronchiolitis. However, chest x-rays may be obtained as clinically indicated when the diagnosis of bronchiolitis is not clear and when subtle worsening of the respiratory status occurs, or with preexisting cardiac or lung disease.

Treatment

As per AAP Guidelines on Bronchiolitis² oxygen remains the mainstay of therapy in bronchiolitis. Nebulisations with bronchodilators, epinephrine and hypertonic saline provide symptomatic relief and it does not have any effect on duration of stay. Even though antibiotics has no role in bronchiolitis we administered antibiotics in 60 out of 82 cases of bronchiolitis taking into account young age, difficulty in distinguishing viral and bacterial infection in that age group and in fear of secondary bacterial infection.

Infants who were breastfed during the hospital stay had shorter duration of stay compared to those on intravenous fluids.

Management of pneumonia includes antibiotics and supportive care. Because definite information about causative agent is seldom available, treatment of pneumonia is most often empiric. Majority have responded to third generation cephalosporin or amoxicillin and potassium clavulante combinations.

Mean duration of hospital stay in bronchiolitis and pneumonia are 6.97 ± 1.9 and 9.5 ± 1.5 days respectively. Study done by Weisgerber *et al*⁹ on duration of hospital stay in bronchiolitis was around 5 days. Study done by Mishra *et al*¹⁰ reported mean duration of hospitalization as 9.35 days.

CONCLUSIONS

Bronchiolitis is the leading cause of hospitalization in infants irrespective of gestational age.

Chest x-ray is not routinely recommended in a typical case of bronchiolitis. It is done if the disease course is prolonged or if there is deterioration.

Antibiotic is recommended in infants with respiratory distress due to ARI empirically since it is difficult to distinguish bacterial and viral infections clinically in early infancy.

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