



STUDY ON CLINICAL PROFILE AND RISK FACTORS 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 responsible for 3.9 million deaths per year in young children according to World Health Organization (WHO).

Aim: To study the clinical profile and risk factors for hospitalization in infants with respiratory distress due to ARI during 1 - 6 months of life.

Methods: Infants of exclusive breast feeding age group who presented with respiratory distress according to WHO criteria for the first time are included in the study, case proforma with risk factors completed and appropriate investigations done. Results are analyzed.

Results: The study enrolled 100 infants with male predominance of which 82 were bronchiolitis, 18 were pneumonia. Risk factors for hospitalization includes prematurity, low birth weight, lack of breast feeding, bad child rearing practices, passive smoking, overcrowding and infection in sibling.

Conclusion: Decreasing the risk factors decrease the risk of respiratory infections

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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 clinical profile and risk factors 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.

RESULTS

Total of 100 infants were included in the study. Incidence of respiratory distress was more common in 1-3 month age group (59). The most common cause of hospitalization in infants of 1-6 months age group was bronchiolitis. Males were commonly affected with respiratory distress with a male to female ratio of 1.3:1 irrespective of gestational age of an infant.

Table 1 Symptoms With Regard To Gestational Age

Complaints	Gestational age	
	Preterm N=38	Term N=62
Cough	38	62
Coryza	23	39
Fever	24	38
Shortness of breath	38	62
Poor Feeding	29	26

Most common symptom was respiratory distress and cough (100%) followed by fever & coryza and finally poor feeding (55%). Symptoms with regard to gestational age is given in table 2.

Bottle feeding increases the incidence of respiratory distress irrespective of gestational age. Risk of getting respiratory distress increases if number of risk factors increases.

Table 2 Correlating Risk Factors With Respect To Gestational Age

Risk factors	GESTATIONAL AGE				Total
	PRETERM N=38		TERM N=62		
	N	%	N	%	
Aspiration	24	63.16	14	22.58	38
Bottle feeding	26	68.42	40	64.52	66
Parental asthma	2	5.26	6	9.68	8
Type of family/ overcrowding	26	68.42	19	30.65	45
Passive smoking	25	65.79	32	51.61	57
Bad child rearing practices	22	57.89	23	37.10	45
Uri in family	17	44.74	26	41.94	43

In both term and preterm bottle feeding was the significant risk factor for respiratory distress due to respiratory infections.

DISCUSSION

According to the study the most common cause of respiratory distress in infants requiring hospitalization is Bronchiolitis. This correlates with AAP guidelines of bronchiolitis².

Male: female ratio of admission in case of respiratory distress due to respiratory infection is 1.3:1 which was slightly less than study conducted by Lanari *et al*⁴.

Symptom Presentation of Respiratory Distress

Our study population is hospitalized infants who invariably presents with respiratory distress. Cough (100%), fever (62), coryza (62) and poor feeding (55) is present in cases admitted due to respiratory distress.

Table 3 Other studies which correlate with our study is shown in below table

Symptoms	Kabra SK et al ⁵	Kumar N et al ⁶	Present study
fever	82%	88%	62%
cough	98%	100%	100%
Poor feeding	42%	22%	55%

Analysis of Various Risk Factors

Preterm and term infants admitted for respiratory distress have bronchiolitis as the leading cause of hospitalization as per our study. Premature infants are known to be at increased risk for severe RSV illness. Lung maturity occurs in the 37th week of gestation, so lung weights and volumes are significantly lower in preterm infants compared with term infants⁷. Premature lungs also have fewer and narrower alveoli compared with those in term babies⁷. Given that much of the RSV-related morbidity can be understood as stemming from airway occlusion secondary to inflammation, epithelial sloughing and edema it is clear that those with the smallest and narrowest airways would be the most vulnerable.

Preterm infants also suffer from immature immune systems⁷. Neutrophilic and complement functions are less developed than in than in term babies. It has been hypothesized that complement activation serves to neutralize RSV, thus preterm infants are left with fewer defense against the virus. Canadian PICNIC⁸ study and Spanish FLIP-2⁹ suggest prematurity as a significant risk factor for lower respiratory tract infection. In Italy, a multicentre study enrolling over 1200 children younger than 2 years hospitalized for lower respiratory tract infection (LRTI) found that two-thirds of hospitalizations occurred in children with low gestational age. Moreover, among children with bronchiolitis, RSV infection was particularly prevalent in those born at lower gestational age.

Tobacco Smoking and Respiratory Distress

In our study exposure to tobacco smoke is present in more than 50% of term and preterm infants admitted with respiratory distress.

Tobacco smoke exposure increases the risk and severity of respiratory distress due to respiratory infection. Strachan and Cook¹⁰ first delineated the effects of environmental tobacco smoke on rates of lower respiratory tract disorder in infants in a meta-analysis including 40 studies.

Breastfeeding and respiratory infection

In our study bottle feeding increases the risk of respiratory infection. Clinicians should encourage exclusive breast feeding for at least 6 months to decrease the morbidity of respiratory infections. In developing countries children who are exclusively breast fed for 6 months had 30%-42% lower incidence of ARI compared to children who did not received same duration of feeding. A recent research report from longitudinal cohort by Mhrshahi *et al*¹¹. Reported the increased risk of ARI among children not breast fed adequately. Breast feeding is included under one of the life saving tool in prevention of various childhood illness. Hence, breast feeding is among the WHO/UNICEF¹² global action plan to stop pneumonia. In 2012, the AAP presented a general policy on breast feeding¹³ for at least 6 months. Respiratory infections were significantly shown to be less common in breastfed children. A primary resource was a meta-analysis from the Agency for Healthcare Research and Quality¹⁴ that showed an overall 72% reduction in the rate of hospitalization secondary to respiratory distress in infants who were exclusively breast fed compared to formula fed.

Lanari *et al*⁴ proved that incidence of bronchiolitis is less in breast fed infants. Partially breastfeeding infants has less duration of stay.

Overcrowding and respiratory distress

In our study overcrowding increases the risk of respiratory infection. A meta analysis done by Stewart Jackson *et al*¹⁵ reported an association between crowding and respiratory infection.

Summary

Good antenatal care decreases the incidence of low birth weight/prematurity which in turn decreases the incidence of respiratory infection.

Promotion of exclusive breast feeding for first 6 months decreases the incidence of respiratory infection.

Avoiding bad child rearing practices, overcrowding and passive smoking decreases the incidence of respiratory infection.

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