



PARENTERAL SMOKING AN IMPORTANT RISK FACTOR FOR BRONCHIOLITIS IN CHILDREN

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ABSTRACT *Objective:* Bronchiolitis is one of the commonest causes of hospitalization of under 2 yrs age children in India. About 18% of under 2 children attending different hospitals of India have bronchiolitis. 70% men and 13-15% women of India are smokers. Parental smoking is an important risk factor for bronchiolitis. The aim of this study was to find out the relationship of parental smoking in development of severe bronchiolitis.
Design: Retrospective Case-control study.
Patients and Methods: 50 patients admitted into the ward with severe bronchiolitis were enrolled as cases and 50 suitably matched healthy children outpatient department presenting with nonrespiratory illness were enrolled as controls.
Results: The mean age of the patients was 8.48 (SD \pm 3.25) months. 32 patients were male and 18 patients were female. Male ratio was more than female. More than half of the cases (52%) were not exclusively breastfed babies. 29 cases and 17 controls were exposed to parental smoking. Result was quite significant.
Conclusion: Exposure to parental smoking causes a statistically significant (= 0.02, odds ratio = 2.6) increase in the risk of developing severe bronchiolitis in the first year of life.

KEYWORDS : bronchiolitis respiratory virus parental smoking immunization

1. Introduction

Bronchiolitis is an inflammatory disease of bronchioles. It causes significant morbidity and mortality in small children. It is the leading cause of respiratory distress of small children. Diagnosis of bronchiolitis is, characterized by cough and respiratory distress associated with wheeze, preceded by cold with or without fever in young children below 2 years of age. It is mainly a viral disease. Respiratory Syncytial Virus (RSV) is responsible for more than 60-80% cases. Other agents include parainfluenza virus, adenovirus, rhinovirus, and mycoplasma.

About 18% of under 2 children attending different hospitals of India have bronchiolitis. Worldwide, 150.7 million new cases occur annually; 14–20 million of these are severe enough to require hospital admission. 96% of all cases occur in developing countries.

Risk factors associated with the development of severe bronchiolitis include lack of breast feeding, overcrowded living conditions, male babies, parental smoking, and low socio economic status immunization [3, 4]. Environmental tobacco smoke is an important and established risk factor for both susceptibility and severity of bronchiolitis. Currently, there are more than 1 billion smokers in the world. In India, smoking prevalence is 70% among men and 13-15% among women. Passive smoking in the family is a major influence in the risk of lower respiratory infections in infants especially in bronchiolitis [6]. In various studies, it is seen that parental smoking has significant effect in the incidence and severity of acute bronchiolitis. Very few studies have been done in India regarding relation of parental smoking and bronchiolitis. The present study was designed to study the relation of parental smoking and development of bronchiolitis.

2. Materials and Methods

The study was conducted in the Department of Pediatrics, GS Medical College & Hospital, Pilkhuwa, Hapur from January 2017 to January 2018. It is retrospective case-control study. Its objective is to study the relation of parental smoking in the development of bronchiolitis.

Fifty patients admitted into the ward with severe bronchiolitis were enrolled as cases and fifty suitably matched apparently healthy children attending outpatient department presenting with nonrespiratory illness were enrolled as controls. Inclusion criteria included diagnosis of severe bronchiolitis, age 2 yrs or younger. Exclusion criteria included previous hospitalization for bronchiolitis or lack of clinical symptoms for respiratory infection.

3. Results

Fifty cases and fifty controls were enrolled for this study. The age of the patients ranged from 3 to 24 months with the mean age of 8.48 (\pm 3.25) months. 32 (64%) cases were male and 18 (36%) cases were female, prevalence was more in male babies.

24 (48%) babies were exclusively breastfed babies while 26 (52%) were top fed. 37 (74%) babies were fully immunized for their age while 13 (26) were not immunized.

Baseline characteristics between cases and controls did not vary significantly regarding mean age (= 0.333), sex (= 0.4142), breastfeeding (= 0.6882), and immunization (= 0.0575) (Table 1).

Among 50 cases, 29 had history of exposure to parental smoking. Among 50 controls, 17 had history of exposure to parental smoking. The value was highly significant: p value = 0.02, odds ratio 2.68. Thus parental smoking carried more risk in developing severe bronchiolitis (Table 2).

Discussion

The age of the patients ranged from 3 to 24 months: most frequent age group was 3–9 months with the mean age of 8.48 (\pm 3.25) months. Kabir et al. showed most of the children within 2–12 months (71.5%).

Sex distribution of the patients (male: female; 1.7: 1) was almost similar to the study of Farzana et al. who found male to female ratio 1.7: 1. Kabir et al. showed male: female ratio 2.7: 1. In a Canadian study, male sex was regarded as a strong and independent risk factor for Respiratory Syncytial Virus (RSV) related hospitalization [15].

Table 1

	Cases	Control	p value
Total number	50	50	
Age in months			
Mean (\pm SD)	8.48 (\pm 4.25)	9.28 (\pm 3.97)	0.3331
Sex			
Male	32 (64%)	28 (56%)	0.4142
Female	18 (36%)	22 (44%)	
Breast feeding			
Exclusively breastfed	24 (48%)	22 (44%)	0.6882
Top Fed	26 (52%)	28 (56%)	
Vaccination			
Immunization till date	37 (74%)	42 (84%)	0.0575
Unimmunised	13 (26%)	08 (16%)	

Table 2: Exposure to Parental Smoking.

Parental smoking	Cases	Controls	value	Odds ratio
Yes	29	17	0.02	2.68
No	21	33		

The reason could be due to boys having shorter and narrower airways and are more likely to develop bronchial obstruction in case of RSV infection [12].

The present study found exposure to parental smoking in 29 cases and 17 controls (= 0.02, odds ratio 2.68). Jones et al. [6] found that smoking by either parent or other household members increased the risk of bronchiolitis by an odds ratio of 2.51. Chatzimichael et al. [7] found that exposure to environmental tobacco smoke carried 2.2 times risk of having severe bronchiolitis (odds ratio = 2.2). Rida [9] found exposure to passive smoking 2.3 times increased the risk of developing bronchiolitis.

In the present study, all exposed cases of severe bronchiolitis (29 out of 50) had history of parental smoking. Farzana et al described a significant relationship between parental smoking and acute lower respiratory illness where odds ratios were 2.8 for smoking by either parent.

In present study 24 (48%) babies were exclusively breast fed and 26(52%) were mixed fed (p value-0.859),there wasn't any significant relationship between prevalence of bronchiolitis and breast feeding. Flores-Gonzalez J et al (16) found breastfeeding does not protect from bronchiolitis.

In present study 32 out of 50 (74%) children and 42 out of 50 controls (84%) were full immunized for their age (p value-0.057),immunization had no protective effect on bronchiolitis..Jan LL Kim pen [13] found that there is no specific vaccine for RSV.

Conclusion

Smoking, causes a statistically significant (= 0.02, odds ratio = 2.68) increase in the risk of developing severe bronchiolitis. Young children must be protected from parental smoking so as to prevent the occurrence of severe bronchiolitis.

Competing Interests

The authors declare that they have no competing interests. Medical Ethics committee of GS medical college & Hospital approved this research

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