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Association of Parental Smoking and Severe Bronchiolitis in Children at Bhuj, Kutch, Gujarat, India: Case Control Study

Tushar Parikh*, Alka Rao*

*Associate Professor, Dept. of Paediatrics, Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat, India.

Abstract

Aim: The aim of the present study was to find out out the function of parental smoking in severe bronchiolitis. *Material and Methods:* The Present Case-control study was conducted in the Department of Department of Pediatrics, Gujarat Adani institute of medical science, Bhuj. Sixty-four patients admitted into the hospital with severe bronchiolitis were registered as cases and sixty-four properly coordinated looking fit attending Department of Pediatrics with non-respiratory disease were tag as controls. *Results:* The mean age of the patients was 7.54 months. Sixty two point six patients were male and 37.4% patients were female. Nearly every one of the cases arrives from low economic setting. Least amount of hospital reside was 3 days and maximum was 10 days. Thirty nine cases and twenty one controls were exposed to parental smoking which was evident by highly significant results (p = 0.005). *Conclusion:* Exposure to parental smoking, chiefly paternal smoking, reason a statistically significant lift in the jeopardy of mounting severe bronchiolitis in the primary year of life.

Keywords: Bhuj; Bronchiolitis; Children; Smoking.

Introduction

Bronchiolitis is an inflammatory illness of the minimum airways and is the principal cause of respiratory distress of small children [1]. It is a clinical analysis, distinguished by cough and respiratory distress related with wheeze, preceded by runny nose with or lacking fever in young children underneath 2 years of age largely between 1 and 6 months of age. It is primarily a viral infection. Respiratory Syncytial Virus (RSV) is liable majority of cases. Other agents encompass parainfluenza virus, adenovirus, rhinovirus, and mycoplasma [2]. There is no authentication of bacterial source for bronchiolitis Based on bleakness of clinical features, bronchiolitis is classified into mild, moderate, and severe. Severe bronchiolitis is exemplified by being not competent to ingest or obtain nourish, severe respiratory distress, and severe hypoxemia.

Universal, 150 million fresh cases take place yearly; 11–20 million of these are stern ample to necessitate hospital admission. 95% of all cases occur in developing countries [4]. Risk factors troubled in the growth of severe bronchiolitis encompass adolescent age, male sex, parental smoking, low economic conditions utilization of wood ablaze tobacco smoke is an significant and documented hazard for both susceptibility and starkness of bronchiolitis [5-8].

Passive smoking in the family unit is a head control in the jeopardy of lower respiratory infections in infants predominantly on bronchiolitis [9]. introduction to environmental tobacco smoke had noteworthy connection with severe bronchiolitis and extended hospitalization [10]. From various studies and explanations, it is observed that parental smoking has significant effects in the incidence and severity of acute bronchiolitis. But very few studies are available in Kutch area in this regard. Thus the present study was designed to find out the consequence of parental smoking in the development of severe bronchiolitis at Bhuj, Kutch, India.

Corresponding Author: Alka Rao, Associate Professor, Dept. of Paediatrics, Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat 370001, India.
E-mail: trp_mindpower@yahoo.in, researchguide86@gmail.com

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Materials and Methods

The study was conducted in the Department of Pediatrics, Gujarat Adani institute of medical science, Bhuj, from December 2015 to January 2017. Ethical clearance was taken from the institutional ethics board. Aim of the study was to discover the role of parental smoking in the development of severe bronchiolitis. After fascinating a full history, clinical examinations were done and severity was assessed according to classification criteria. Chest radiograph was done for the verification of air trapping in both lungs .Complete blood counts were done in all the patients. To distinguish bronchiolitis frompneumonia and asthma, we measured clinical features, white blood cell and differential counts, chest radiograph, and response to bronchodilator.

No antibiotics were utilized for patients. Sixty-four patients admitted into the ward with severe bronchiolitis were enrolled as cases and sixty-four rightfully coordinated apparently healthy children attending outpatient department of pediatrics presenting with non-respiratory illness were enrolled as controls. Sample size technique was systematic random sampling. For describing socioeconomic grade, we randomly described low, lower-middle, and middle. The age group was subdivided into three groups: 1–6, 7–12, and 13–25 months.

Statistical Analysis

The data was coded and entered into Microsoft Excel spreadsheet. Analysis was done using SPSS version 15 (SPSS Inc. Chicago, IL, USA) Windows software program. Descriptive statistics included computation of percentages. For all tests, confidence level and level of significance were set at 95% and 5% respectively.

Results

Sixty-four cases and sixty-four controls were registered for the present study. The ages of the patients were from 1 to 25 months and mean age was 7.54 months. Most frequent age group was 1 to 6 months after that 7–12 months and thenafter 13–25 months. Sixty two point six percentages of cases were male and remaining 37.4% cases were female. Majority of the cases came from low economic setting. Least days spent in hospital was 3 days and maximum stay was 10 days. There was statistically significant difference between baseline characteristics of cases and controls concerning mean age, Gender, Economic conditions status and breastfeeding. ($p > 0.05$)

Between all cases, 39 had history of experience to parental smoking. All exposed cases had account of only fatherly smoking and there was no history of maternal smoking or both. Among all controls, 21 had history of contact to parental smoking. The values were found to be statistically significant. ($p \leq 0.05$) (Table 1).

Table 1: Exposure to parental smoking among cases and controls

Parental smoking	Cases	Control	P value
Yes	39	21	0.003*
No	25	43	

* indicates statically significant difference at p=0.05, Test of significance- Student t test,

Discussion

The age of the patients varies from 1 to 25 months: the mainstream age group was 1–6 months with the mean age of 7. 54 months. This outcome was reasonably steady with a study done at the same institute [11]. Rida [12] establish age group 1–6 months as the most recurrent (60%) exaggerated group in bronchiolitis. Bradley et al. found age as a noteworthy object in sternness of infection; the younger the infant, the extra severe the infection [13].

Gender distribution of the patients was in consistent with findings of Bashar et al [11]. Denicola [14] find out that males were 1.6 times superfluous probable to be hospitalized with bronchiolitis than females, male to female relation was 1.5 : 1, and death was 1.5 times more probable in males. Semple et al [15] ruled out that males were significantly allied with severity of the disease. In a Canadian study, male sex was observed as a sturdy and sovereign risk factor for Respiratory Syncytial Virus (RSV) related hospitalization have shorter and thin airways and are more likely to put up bronchial obstruction in case of RSV infection [16,17].

Mean hospital stay in the present study was 6.39 days which was relavent with findings of Kabir et al. in which participants mean span of hospital stay 4.14 (±1.79) days. The extensive duration of hospital stay found in the present study may be due to divergent

situation of the study area where both physician and parents of the patient's requisite to be more ensured about revival of the disease.

The present study revels exposure to parental smoking in 39 cases and 21 controls. Jones et al [9]. described that smoking by any parent or additional household members inflamed the hazard of bronchiolitis by an odds ratio of 2.51. Semple et al [15] described the infants from tobacco smoking households at superior jeopardy of severe bronchiolitis requiring supplemental oxygen ($p < 0.001$) and mechanical ventilation ($p < 0.001$) which was supported by findings of study done by Sritippayawan et al [18].

In the present research, every out case of severe bronchiolitis had the history of purely paternal smoking and there was no description of maternal smoking or both. Strachan and Cook [19] described a causal connection between parental smoking and acute lower respiratory illness where odds ratios were 1.57 (95% CI 1.42 to 1.74) for smoking by both parent and 1.72 (95% CI 1.55 to 1.91) for maternal smoking. Schvartsman et al [20] also established that children were more embellished by maternal smoking than paternal one.

Present research had restriction that was not to rough calculation urinary "cotinine" level. Cotinine, a main metabolite of nicotine, has been utilized as a biological indicator of smoke assimilation to strengthen the verification of exposure to tobacco smoke

Conclusion

Exposure to parental smoking, mainly paternal smoking, grounds a statistically significant raise in the jeopardy of mounting severe bronchiolitis in the primary year of life. Defending young children from parental smoking should be the momentous progress in the direction of turn away the morbidity and mortality created by severe bronchiolitis.

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