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Original Research Article

Study of correlation between breast feeding and wheezing in children

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ABSTRACT

Background: Wheezing is the most common chronic health problem in childhood. Many studies have found protective effect of breastfeeding on wheezing, while few others have not. Hence this study was taken up to find out the correlation between breastfeeding and wheezing in children.
Methods: Case control study done in a Medical College Hospital. Cases were children of 2-5yrs age with history of wheezing or who had received nebulisation. Controls were children without history of wheezing or nebulisation. Mothers were interviewed with a predesigned proforma. Results were analysed by Chi square test and Odd's ratio and p value <0.05 was considered significant.
Results: There were 92 cases and 184 controls. Sixteen (53.4%), 48 and 27 cases were breastfed less than 1year, till 2yrs and beyond 2yrs respectively. 14 (46.6%), 128, and 40 were the numbers in control group. Breast feeding duration till 1 year of age is statistically correlated with wheezing with p value of 0.02, higher proportion of children who were breastfed for less than 1 year had wheezing when compared to controls. 26 cases out of 69 were not exclusively breast fed till 6 months and 66 cases out of 207 were exclusively breastfed. Higher proportion of cases who were not exclusively breastfed had developed wheeze although it was not significant statistically. 45 cases (36.8%) were initiated on cow's milk before 1yr of age, 47 cases (30.5%) were initiated after 1year. Higher proportion of children who were initiated on cow's milk early had developed wheeze but was not significant statistically. 34 cases and 24 controls had family history of asthma. With family history wheezing episodes were 3.72 times more likely irrespective of breast-feeding duration.
Conclusions: Breast feeding gives protection against wheezing in children. Mothers should be encouraged to breast feed their children.

Keywords: Breastfeeding, Wheezing

INTRODUCTION

Wheezing represents a common disorder characterized by airways obstruction, it is the most common chronic health problem in childhood. Most common causes of wheezing in preschool children are bronchiolitis and asthma. About one third of school going children manifest the symptom during the first 5 years of life.[1] Antiviral antibodies and various bioactive substances in breast milk may reduce respiratory syncytial virus and other viral infections that predispose susceptible infants in early childhood to wheezing episodes. Immunological and nutritional factors in breastmilk may have anti-inflammatory functions and have protective effects on the development of allergy. Transforming growth factor in human breast milk promotes specific-IgA to foods and at high levels in breast milk is associated with a lower prevalence of infantile wheeze.[2] Many studies have found a protective effect of breastfeeding on wheezing.[3-6] While few others have not, some studies have found even increased risk of wheezing.[7-11]

Differences in methodological quality and design may account for some of these discrepancies and the true association is dependent on combination of factors which have been inconsistently assessed between studies. Hence this study was taken up to find out the correlation between breastfeeding and wheezing in children.

METHODS

This is a case control study done in a tertiary care hospital in children aged from 2 to 5 years who visited the OPD or admitted in hospital. Study duration was, 4 months from July 2018 to October 2018. Mothers were interviewed regarding the exclusive breastfeeding duration, total duration of breastfeeding, introduction of weaning, frequency of wheezing, age of cow's milk initiation and also history regarding family history of Asthma or history of smoking in family was obtained.

Inclusion criteria

- Cases were defined as children who presented with wheeze or had history of wheeze or received nebulisation in the past.
- Controls were children who never had wheezy episode or never received nebulisation.

Exclusion criteria

- Children with unreliable history were excluded.

Informed consent was taken from the mother.

Data was analysed by Chi square test and odd's ratio. P value of 0.05 was considered as significant.

RESULTS

A total of 92 cases and 184 controls were included in the study. 31females (33.7%) and 61 males (66.3%) were in case group. 84 females (45.7%) and 100 males (54.3%) were in control group.

Exclusive breast feeding for 6 months in cases versus controls

Exclusive breast feeding for 6 months was given in 66 cases (31.8%) and 26 cases (37.7%) were not exclusively breast fed till 6months.

Table 1: Exclusive breast feeding for 6 months in cases and controls.

Exclusive breast feeding (6 months)	Controls	Cases	Total
No	43 (62.3%)	26 (37.7%)	69
Yes	141 (68.2%)	66 (31.8%)	207
Total	184	92	276

OR:1.29 (95% CI:0.73-2.27), (χ^2:0.78, df-1, p value:0.37), NS

Among cases higher proportion of cases were not exclusively breastfed and it was not statistically significant (p value: 0.37) (Table 1). Children who were not exclusively breast fed till 6 months were found to be 1.29 times more likely to have wheezing as compared to controls, although it was not statistically significant.

Breast feeding duration in cases and controls and association with wheezing

Sixteen cases (53.4%) and 14 controls (46.6%) were breastfed for less than 1year, indicating higher proportion of children who were breastfed for less than 1 year had wheezing when compared to controls. One child in case group and 2 children in control were not breastfed at all (Table 2).

Table 2: Duration of breastfeeding in cases and controls.

Duration of breastfeeding	Controls	Cases	Total
<1 year	14 (46.6%)	16 (53.4%)	30
Till 2years	128 (72.7%)	48 (27.3%)	176
>2 years	40 (59.7%)	27 (40.3%)	67
Not breastfed	2	1	3
Total	184	92	276

(χ^2:9.77, df-3), (Cramer's v value:0.18, p value: .02), Significant

Breast feeding for less than 1year had shown higher proportion of children developing wheeze and found to be statistically significant.

Family history of wheeze/asthma in cases and controls

Among cases 57.6% had family history of asthma (Table 3). Family history and wheezing were correlated statistically (p value: <0.001).

Table 3: Family history of wheeze/ asthma in cases and controls.

Family history of asthma	Controls	Cases	Total
Yes	25 (42.4%)	34 (57.6%)	59
No	159 (73.2%)	58 (26.8%)	217
Total	184	92	276

OR:3.72 (95% CI:2.05-6.77), (χ^2:9.93, df-1, p value:<0.001), HS

Children with positive family history of asthma were found to be 3.72 times more likely to have wheezing episodes irrespective of breastfeeding duration and found to be highly significant.

Exclusive breast feeding and family history in cases

Children who were exclusively breastfed for 6 months with family history of Asthma were 0.46 times less likely

to have wheezing, although it had not shown statistical significance (Table 4).

Table 4: Exclusive breast feeding and family history in cases.

Family history of asthma	Exclusive breast feeding for 6months		
	Not given	Given	Total
Yes	13 (38.3%)	21 (61.7%)	34
No	13 (22.4%)	45 (77.6%)	58
Total	26	66	92

OR:0.46 (95% CI:0.18-1.17), (χ^2:2.65, df-1, p value:0.10), NS

This shows that children who were exclusively breastfed for 6 months are less likely to develop asthma irrespective of positive family history.

Cow's milk initiation before 1 year in cases and controls

Cow's milk was initiated after 1year in many (Table 5). 45 cases (36.8%) were initiated on cow's milk before 1yr of age, 47 cases (30.5%) controls were initiated after 1year, higher proportion of children who were initiated on cow's milk before 1year of age had developed wheeze and it was not significant statistically (p value:0.26).

Table 5: Cow's milk initiation before 1 year in cases and controls.

Cow's milk initiation <1 year	Controls	Cases	Total
Yes	77 (63.2%)	45 (36.8%)	122
No	107 (69.5%)	47 (30.5%)	154
Total	184	92	276

OR:1.33 (95% CI:0.8-2.19), (χ^2:1.29, df-1, p value:0.26), NS

Children with cow's milk initiation before 1year of age were found to be 1.33 times more likely to have wheezing episodes and it was not statistically significant.

DISCUSSION

In present study 16 cases (53.4%) and 14 controls (46.6%) were breastfed for less than 1 year and breast feeding continued for 2 years in 48 cases (27.3%) and 128 controls (72.7%). Higher proportion of children who were breastfed for less than 1 year had wheezing when compared to controls. Breast feeding duration till 1 year of age had shown protective effect and it was statistically correlated with wheezing with p value of 0.02 and found that who were continued on breast feeding for 2 years were less likely to have wheeze. Authors have found that children who were not exclusively breast fed till 6 months were found to be 1.29 times more likely to have wheezing as compared to controls, though it was not statistically significant with p value of 0.37, Odd's ratio: 1.29 (95% CI:0.73-2.27). Watanabe J et al found that exclusive breastfeeding for >4 months was shown to be protective against wheeze, although it was not significant statistically with p value of 0.26. They found that compared with less than 10 months of breastfeeding duration, 10 to 14 months, 14 to 19 months and 19 months or more of breastfeeding duration were independently inversely related to asthma.[3] Similarly cross sectional study conducted by Amel Al Makoshi showed that increasing duration of breastfeeding was associated with reduced likelihood of mothers reporting her child having wheeze in 1-3 years old children.[4] Silvers KM et al have found each month of exclusive breastfeeding was associated with significant decrease in asthma from 2 to 6 years (p value <0.03), asthma at 2, 3 and 4 years was also reduced by each month of any breastfeeding (p <0.005). In atopic children, exclusive breastfeeding for >3 months reduced current asthma at ages 4, 5 and 6 years by 62%, 55% and 59% respectively.[5]

In present study breastfeeding for 1year had shown protective function against wheeze with significant p value and authors observed that children who were breastfed for 2 years were less likely to have wheeze, breast feeding for more than 2 years had no association with wheeze. In a prospective study done by Sonnenschein-Vander et al, they found the increase in risk of wheezing during the first 4 years in those who had never breast fed and also found strongest association was observed for wheezing at 1 and 2 years.[6]

Wright AL et al observed that breast feeding gives protection against recurrent wheeze early in life, but associated with an increased risk of recurrent wheeze at the age of 6 years, especially in atopic children with history of asthma in mother.[12] Kyung Suk Lee et al have found no significant relationship between breast feeding and the risk of wheeze in early childhood in Korea.[7] Similarly cluster randomised trial by Michael S Kramer et al showed that breast feeding did not reduce the risk of asthma at age 6 years despite large increases in the duration and exclusivity of breast feeding.[8]

Authors also have found that children with positive family history of Asthma were found to be 3.72 times more likely to have wheezing episodes irrespective of breastfeeding duration and found to be highly significant with p value of 0.001. However, children who were exclusively breastfed for 6 months with family history of Asthma were 0.46 times less likely to have wheezing, although it had not shown statistical significance with p value of 0.10, odd's ratio: 0.46 (95%CI: 0.18-1.17).

In summary breastfeeding protects against wheezing in children. Mothers should be encouraged to breast feed their children. Further studies with larger sample size are needed to further elaborate on the association.

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