Effects of Breast Feeding Practice in Respiratory Syncytial Virus Positive Bronchiolitis in Early Infancy

Abstract
Background: Bronchiolitis is a common respiratory illness. It can be diagnosed clinically, as well as by a few costly laboratory tests. It has no specific treatment except supportive measures. Respiratory Syncytial Virus (RSV) related Bronchiolitis carries near about 1% mortality and involve an economical load. The objective of this study was to compare effecte of breast feeding practice in relation with RSV positivity among bronchiolitis in early infancy.

Material and methods: This case control study is designed to evaluate the effects of breast feeding practice among the RSV positive bronchiolitis patients during a period of 1 year. A total 40 patients of bronchiolitis were evaluated who have exclusive breast feeding and non exclusive breast feeding. RSV positivity were analyzed among both groups and compared. Patients were selected after taking consent from guardians, patient diagnosed as bronchiolitis, age 2 month to 2 year and all tests are done in Department of Microbiology, Chittagong Medical College Hospital (CMCH). Results were evaluated to find out the effects of breast feeding practice in relation with RSV positivity bronchiolitis in early infancy.

Results: Among all 40 patients, male was 25(62.5%) and female was 15(37.5%). Male to female ratio was 1.67:1. Majority of guardians were workers 18(45%), service holder 11(27.5%) and businessman 10(25%). Regarding socioeconomic conditions of the parents where 26(65%) were poor and 14(35%) were rich. Twenty five (62.5%) were from rural areas and 15(37.5%) were from urban locality. Different history related with risk factors of bronchiolitis were evaluated where 11(27.5%) patients had H/O prematurity, 10(25%) had parental smoking history, nonexclusive breast feeding 13(32.5%) and supplemental feeding had 13(32.5%) cases. Regarding pattern of breast feeding 27(67.5%) were given exclusive breast feeding and non exclusive breast feeding were 13 (32.5%) of which only formula milk was given to 1(2.5%) case and cow’s milk and formula milk jointly was given in 12(30.0%) cases. Findings of clinical histories revealed that all 40 patients had cough, respiratory distress and excessive cry, cyanosis was present in 39(97.5%) cases and cent percent patients had chest in drawing and all of were categorized as severe bronchiolitis. Regarding RSV testing 15 (37.5%) cases were found to having RSV positive and remainder portion were negative. Significant association was found regarding RSV status and exclusive breast feeding where more negativity was found among those who were exclusively breast feed.

Conclusion: There is significant association between RSV positivity bronchiolitis and non-exclusively breast feed children.

Key words: Breast feeding; Effect; RSV positivity in early infancy.

INTRODUCTION
Bronchiolitis is the most significant respiratory illness of infants and young children. It is an acute inflammatory illness of children that occurs in the first 2 years of age.
and is characterized by coryzal symptoms followed by rapid onset of fever, wheeze, tachypnea, chest recession and crepitation, with radiological evidence of hyperinflation.

Seasonality of bronchiolitis caused by Respiratory Syncytial Virus (RSV) is striking and predictable. The incidence peaks during winter and early spring and reaches near zero in late summer and autumn in both hemispheres, in tropical climates, occurrences of RSV bronchiolitis tends to coincide with rainy season. Bronchiolitis caused by other agents occur throughout the year. The age for peak incidence of RSV bronchiolitis is between 2 and 6 months, approximately 80% of all cases occur during the first year of life. Two sub types (A and B) of RSV exist sub type A is more common cause of bronchiolitis and is associated with more severe disease. The age for peak incidence in urban areas may be earlier from 2 to 3 months of age. Bronchiolitis is seen in children as old as 2 years in more remote localities and in areas where risk of exposure is reduced1.

The burden of disease is significant. Around 70% of all infants will be infected with RSV in their first year of life and 22% develop symptomatic disease. Since RSV is associated with only 75% of bronchiolitis cases, it may be estimated that around a third of all infants will develop bronchiolitis (From all viruses) in their first year of life2.

For Scotland this translates to approximately 15,000 infants. Around 3% of all infants younger than one year are admitted to hospital with bronchiolitis3. Based on Scottish morbidity recording for the years 2001 to 2003 a mean of 1,976 children per year (Aged up to 12 months) were admitted to hospital with bronchiolitis as the principal diagnosis4.

Younger infants have a higher risk of hospital admission with bronchiolitis than older infants5. Infants born prematurely have a modestly higher rate of RSV-associated hospitalisation compared with full-term healthy babies6.

To compare effect of breast feeding practice in relation with RSV positivity among bronchiolitis in early infancy.

MATERIALS AND METHODS

This case control study is designed to evaluate the effects of breast feeding practice among the RSV positive bronchiolitis patients. A total 40 patients of bronchiolitis were evaluated who have exclusive breast feeding and non exclusive breast feeding. RSV positivity were analyzed among both groups and compared.

Inclusion criteria:

i. Patients diagnosed as bronchiolitis

ii. Age after 2 month to 2 year.

Exclusion criteria:

i. Patients with known congenital heart disease
ii. Guardian of the subject who will not provide written consent to participate in the study.

All tests were done in Department of Microbiology CMCH, Results were evaluated to find out the effects of breast feeding practice in relation with RSV positivity of bronchiolitis in early infancy.

RESULTS

Table I : Gender distribution.

|        | Case | Control | Total | Percent (%) | OR   | p     |
|--------|------|---------|-------|-------------|------|-------|
| Male   | 11   | 14      | 25    | 62.5%       | 1.45 | .042  |
| Female | 8    | 7       | 15    | 37.5%       | 1    |       |
| Total  | 19   | 21      | 40    | 100.0%      |      |       |

Table I showing gender distribution of bronchiolitis patients where male was 25(62.5%) and female was 15(37.5%). Male to female ratio was 1.65:1

Table II : Breast feeding history.

|                 | Frequency | Percent (%) |
|-----------------|-----------|-------------|
| Exclusive breast feeding | 27        | 67.5        |
| Non-exclusive breast feeding | 13       | 32.5        |
| Total           | 40        | 100.0       |

Table II showing pattern of breast feeding where 27(67.5%) were given exclusive breast feeding and 13(32.5%) were given non-exclusive breast feeding cases.

Table III : RSV testing.

|                | Frequency | Percent (%) |
|----------------|-----------|-------------|
| RSV positive   | 15        | 37.5        |
| RSV negative   | 25        | 62.5        |
| Total          | 40        | 100.0       |

Table III showing 15(37.5%) cases were found to having RSV positive.

Table IV : Association between RSV status and exclusive breast feeding.

| Breasts feeding status | RSV Positivity | Total | OR(CI) | p value |
|------------------------|----------------|-------|--------|---------|
|                        | RSV positive   | RSV negative |        |         |
| Exclusive breast feeding| Yes            | 6     | 21     | 27      |
|                        | % within RSV positivity | 40.0% | 84.0% | 67.5%   |
|                        | No             | 9     | 4      | 13      |
|                        | % within RSV positivity | 60.0% | 16.0% | 32.5%   |
| Total                  |                | 15    | 25     | 40      |
|                        | % within RSV positivity | 100.0%| 100.0%| 100.0%  |

Table IV showing significant association was found regarding RSV status and exclusive breast feeding where more negativity was found among those who were exclusively breast fed (OR=0.127, p=0.004).
evident for the protection of exclusive or predominant breast-feeding against respiratory morbidity as opposed to the introduction of formula milk. Another study shows, the longer duration of exclusive breast feeding was associated with the shorter length of hospital stay and oxygen-use. Breast feeding for less than one month increased the incidence of respiratory syncytial virus-associated infection.

LIMITATIONS
There are several limitations of our study. First, as it is a small sample size study so actual population parameter may not be represented. Second, it is a single centre study so actual overall scenario could not be concluded from this study. Third due to absence of long term follow up problems could not be characterized adequately. Lastly, due to lack of logistic support all type of evaluation could not be done.

CONCLUSION
Bronchiolitis is a common respiratory viral illness. Most commonly associated with Respiratory Syncytial Virus (RSV). It is seen that the babies who are exclusively breast feed suffer less likely from bronchiolitis. Breast milk plays a protective role against Respiratory Syncytial Viral (RSV) bronchiolitis. Present study revealed children who were exclusively breast feed had less chance to be infected with Respiratory Syncytial Viral (RSV) bronchiolitis than non-exclusive breast feed infants. So these studies further justify the role that there is no compromise in exclusive breast feeding.

RECOMMENDATIONS
A study with multicenter large sample needed tobe done to find out the national scenario.

DISCLOSURE
All the authors declared no competing interest.
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