

Bronchiolitis in infants

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Abstract. – Bronchiolitis is a common disease of the lower respiratory tract of infants, resulting from inflammatory obstruction of the small airways. It is a predominant viral illness, in which the RSV (respiratory syncytial virus) is the agent in more than 50% of cases. It is not known how many children with genetic predisposition to atopy develop asthma symptoms after bronchiolitis, however the relationship between the two affections is not understood. We show that a major proportion of babies with a positive family history develops asthma at a younger age.

Key Words:

Bronchiolitis, Young babies, Positive family history.

Comment

Letters stressing an outburst of epidemics of bronchiolitis were recently published^{1,2}. More than 30 babies were admitted to intensive care units and the colleagues stressed the necessity of providing adequate pediatric intensive care facilities. While I praise the love for children and the foresight demonstrated by the doctors, as an allergologist I fear that most of these children will suffer from asthma in the following years. A significant rate of infants with bronchiolitis will manifest hyperreactive airways during childhood, but the relationship between these two disorders is scarcely understood.

In addition the reason by which children with genetic predisposition to atopy develop asthma symptoms after bronchiolitis has remained unanswered. Several studies have investigated this issue, however some failed to include a control group, others fixed the follow-up too many years after the initial illness³⁻⁶, and the role of atopy often remained in the background or the findings were contradictory⁷⁻¹¹.

In a retrospective study done in our division were reviewed the record-charts of 149 children admitted 6 years before to our department with the proven diagnosis of bronchiolitis and selected 70 of them with the tables of aleatory numbers. The following data were checked: family history and personal history from the day of discharge to the day of the visit. Twenty-eight children (40%) had asthma, 8 (11%) recurrent respiratory disorders in winter, 34 (48.5%) were in good health. Family history was positive in 16/28 asthmatic (57%) and in 4/42 not asthmatic children (4%). All children with asthma were subjected to prick test for inhalants and foods, which were positive in 22 for Dpt, in 2 for molds, and 2 for cow's milk (the parents of two children refused this examination). In all not asthmatic children the results were negative (Table 1 and 2)¹².

The data show a strong relationship between family history and asthma development in children with bronchiolitis, while the age at which the illness developed is equally stressed. The more younger were the infants the proner they were to develop acute bronchiolitis.

In conclusion, this study has selected a cohort of children with bronchiolitis, all admitted to a university pediatric clinic because of their acute disease. Therefore this group was not selected among atopic sufferers. It has been long known that little infants have a particular susceptibility to viral infections, which can favour the development of lower airway obstruction, perhaps due also to a poor and age-related airway functioning^{13,14}. An alternative hypothesis could be related to eosinophil degranulation in the respiratory tract during RSV bronchiolitis, which is also related to the development of virus-induced airway obstruction¹⁵.

Table I. Family history and asthma development in 70 children with bronchiolitis (Follow-up: 6 years).

	No of cases 70	Family History	
		+	-
ASTHMA +	28	16	2
ASTHMA -	42	4	38

p = 0.0001

Table II. Age of onset of 1st episode of bronchiolitis and asthma development in 70 children with bronchiolitis (Follow-up: 6 years).

	No of cases	Age at 1st episode	
		< 6 months	< 6 months
ASTHMA +	28	16	12
ASTHMA -	42	32	10

p < 0.0001

Although the number of children in this study was sufficiently ample (originally the sufferers of bronchiolitis were 149), further studies in unselected, hospital-based infants with bronchiolitis could evaluate whether the relationship between bronchiolitis and asthma should widened to comprise atopy.

References

- GIBBS T, HARPER JR. Epidemic of bronchiolitis in infants (letter). *BMJ* 1992; 304: 444.
- DOYLE E, BRITTO J, BEST C. Epidemic of bronchiolitis in infants (letter). *BMJ* 1992; 304: 638.
- WITTIG HJ, CRANFORD NJ, GLASER J. The relationship between bronchiolitis and childhood asthma. A follow-up study of 100 cases of bronchiolitis in infancy. *J Allergy* 1959; 30: 19-23.
- EISEN AH, BACAL JL. The relationship of acute bronchiolitis and childhood asthma: a 4-14 year follow-up. *Pediatrics* 1963; 31: 859-831.
- EVERARD ML, MILNER AD. The respiratory syncytial virus and its role in acute bronchiolitis. *Eur J Pediatr* 1992; 151: 638-651.
- TWIGGS JT, LARSEN LA, O'CONNELL ES, ILLSTRUP DM. Respiratory syncytial virus infection. *Clin Pediatr* 1981; 10: 187-190.
- MURRAY M, WEBB MSC, O'CALLAGHAN C, SWARBRICK AS, MILNER AD. Respiratory status and allergy after bronchiolitis. *Arch Dis Child* 1992; 67: 482-487.
- LAING I, RIEDEL F, YAP FL, SIMPSON H. Atopy predisposing to acute bronchiolitis during an epidemic of respiratory syncytial virus. *BMJ* 1982; 284: 1070-1072.
- MOK JYQ, SIMPSON H. Symptoms, atopy and bronchial reactivity after lower respiratory infection in infancy. *Arch Dis Child* 1984; 59: 299-305.
- CARLSON KH, LARSEN S, ORSTAVIK I. Acute bronchiolitis in infancy. The relationship to later recurrent obstructive airway disease. *Eur J Respir Dis* 1987; 70: 86-92.
- RYLANDER E, ERIKSSON M, FREYSCHUSS U. Risk factors for occasional and recurrent wheezing after RSV infection in infancy. *Acta Pædiatr Scand* 1988; 88: 711-715.
- BUSINCO L, RUBERTO U, BUSINCO E. Contributo allo studio dei rapporti tra bronchiolite ed asma nel bambino. *Riv Clin Pediatr* 1968; 81: 1-3.
- CANTANI A. Epidemiology and prevention of respiratory allergy in children. *Eur Rev Med Pharmacol Sci* 1990; 12: 147-157.
- MERTSOLA J, ZIEGLER T, RUUSKANEN O, VANTO T, KOIVIKKO A, HALONEN P. Recurrent wheezy bronchitis and viral respiratory infections. *Arch Dis Child* 1991; 66: 124-129.
- GAROFALO R, KIMPEN JLL, WELLIVER RC, OGRA PL. Eosinophil degranulation in the respiratory tract during naturally acquired respiratory syncytial virus. *J Pediatr* 1992; 120: 28-32.