

## Chest physiotherapy in acute bronchiolitis

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**SUMMARY** Forty four children with acute bronchiolitis were given twice daily chest physiotherapy in addition to standard supportive measures and were compared with 46 controls who were not given physiotherapy. There was no clinically discernable benefit on the course of their illness.

Acute bronchiolitis, predominantly caused by respiratory syncytial virus, is the most common reason for hospital admission with lower respiratory tract infection in infancy.<sup>1</sup> It has been suggested that, apart from general supportive measures, oxygen is the only specific form of treatment that benefits infants.<sup>2</sup> We found that chest physiotherapy had gradually become the rule rather than the exception in our ward, the rationale being to assist the clearing of secretions in any lower respiratory tract infection. Of 10 standard paediatric textbooks reviewed, only one<sup>3</sup> mentions physiotherapy, and even then as possibly only helpful in the convalescent stages of the illness; most authors do, however, advocate minimal handling. We have attempted therefore to determine objectively whether chest physiotherapy is a helpful adjunct to treatment.

### Patients and methods

Random allocation of children with a clinical diagnosis of acute viral bronchiolitis<sup>4</sup> to treatment with or without chest physiotherapy was made on hospital admission. Each child had an initial chest radiograph and nasopharyngeal aspirate for virological study. Other management decisions (for example supplementary oxygen, nasogastric feeding) were made irrespective of treatment group. Chest physiotherapy comprised standard techniques applied by a trained paediatric physiotherapist (JAM or NAW)—chest percussion with a cupped hand for three minutes in each of five postural drainage positions followed by assisted coughing or gentle oropharyngeal suction performed twice each day while in hospital. Clinical assessment of illness severity was made at a fixed time each day by either MSCW, PHTC, or YKN (a prior pilot study showed no difference between them). Strictly speaking, this could not be 'blind' with respect to treatment status though in practice that status was not obvious at

each assessment. A score of 0 to 3 was allocated for each of heart rate, respiratory rate, hyperinflation, use of accessory muscles, recession, rhinitis, wheeze, cough, crepitations, and rhonchi (maximum total=30). At hospital discharge parents were asked to maintain a diary record of symptoms, and children were reviewed in outpatients after two weeks.

Informed consent was obtained from parents before entry into the study. Statistical analysis was by Mann-Whitney U test.

### Results

Ninety children (54 boys, 36 girls) with a mean age 4.6 months (range 0.5 to 15) were studied. There were 44 in the physiotherapy group compared with 46 in the control group, and the two groups were similar with regard to age, sex, score on admission, proportion who were respiratory syncytial virus positive (69% overall), proportion with a first degree family history of atopy (36% overall), and those with smokers in the household (66% overall).

There were no significant differences in daily score between the two groups for the first five days in hospital (Table 1) nor in the change in score between successive days. Similarly, comparison of length of the acute illness showed no difference (Table 2).

Twenty two children (11 in each group) had chest radiographs showing some degree of collapse/consolidation at the time of admission. Even in this

Table 1 *Daily clinical scores (maximum possible score=30). Values, median (range)*

	Control group		Physiotherapy group		Mann-Whitney U test
	No	Score	No	Score	
On admission	46	12 (4-24)	44	10 (4-22)	ns
After 1 day	45	10 (2-27)	42	7 (2-24)	ns
After 2 days	39	8 (2-17)	38	7 (2-21)	ns
After 3 days	31	6 (2-21)	28	7 (3-28)	ns
After 4 days	21	6 (2-17)	16	4 (2-18)	ns
After 5 days	18	5 (1-11)	11	6 (3-10)	ns

Table 2 Length of illness (days). Values, median (range)

	Control group (n=46)	Physiotherapy group (n=44)	Mann-Whitney U test
Before admission	3 (1-14)	3 (1-10)	ns
Hospital stay	4 (1-15)	4 (2-11)	ns
After discharge	4 (0-14)	4 (0-15)	ns
Total length of illness	14 (4-27)	13 (7-26)	ns

selected set of patients, in whom chest physiotherapy might be thought to be specifically indicated, there were no differences in daily scores or length of illness.

No child required immediate cessation of physiotherapy due to acute deterioration during a treatment session, although many children were noted to become more distressed during and immediately after treatment, albeit only temporarily.

## Discussion

Objective evaluation of chest physiotherapy is difficult, which may largely explain why there is so little published information available. Mellins,<sup>5</sup> in a review of pulmonary physiotherapy in children, describes data from an unpublished study by D C Shannon showing apparent improvement in ventilation and perfusion after physiotherapy in a 5 month old infant with bronchiolitis.

Using simple clinical criteria, however, we have been unable to show any positive benefit from chest physiotherapy on the natural course of acute viral

bronchiolitis. We did not attempt to make any assessment of changes in lung function that might have occurred during each treatment episode as we were more concerned to elicit any possible overall effect upon the child and his illness. Although no child was made so ill as to necessitate immediate cessation of physiotherapy during treatment, it is generally felt, and in our view correctly, that any form of handling during the acute illness upsets these babies, and that they seem to be least distressed if left undisturbed as far as is practicable. Chest physiotherapy requires considerable handling, and as we have been unable to show any benefit from its use, we recommend that physiotherapy should not be used routinely in the management of acute bronchiolitis.

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## White matter attenuation and megalencephaly

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**SUMMARY** The computed tomogram of a 6 month old girl with familial megalencephaly showed widespread attenuation throughout the white matter. She continued to be developmentally and neurologically normal. Her scan at age 3 years was normal apart from the megalencephaly. A tentative explanation for this unusual series of events is offered.

Generalised low attenuation of the white matter is

usually accompanied by an abnormal clinical picture. A child with megalencephaly who was otherwise neurologically and developmentally normal, and in whom this picture gave rise to a period of diagnostic uncertainty is reported. A tentative explanation is suggested.

## Case report

This girl, who is now aged 3½ years, was first seen at 6 months for evaluation of macrocephaly, her head