LETTER

Does tidal exhaled nitric oxide reflect mucosal airway inflammation in infants?

Exhaled nitric oxide (FeNO) has been proposed as a surrogate of airway inflammation in asthma. The measurement of FeNO may be important to distinguish conditions characterised by eosinophilic inflammation from those which are non-eosinophilic, the former being more likely to respond to steroid treatment. Studies in adults and school-aged children have shown that FeNO levels correlate to some extent with airway mucosal eosinophilia quantified in endobronchial biopsies. However, no such studies exist in infants. In this observational study, we assessed whether infants with recurrent respiratory symptoms, in whom bronchoscopy had been undertaken for clinical evaluation, showed evidence of a relationship between mucosal airway inflammation quantified in endobronchial biopsies and levels of FeNO measured during tidal breathing.

The study consisted of 36 infants, aged between 3.4 and 25.9 months, referred for clinical evaluation of recurrent lower respiratory tract symptoms (wheeze, cough and dyspnoea), and who underwent both FeNO measurement and bronchoscopy with an endobronchial biopsy specimen suitable for assessment of inflammatory cells. None had received corticosteroids within 6 weeks of the assessment. The study was approved by the local ethics committee, and written informed consent was obtained from parents. Details of patient characteristics, methods, statistical analyses and results are available as supplementary material online.

During tidal breathing, infants inspired room air with ambient NO < 10 ppb, exhaled air was collected with a face mask placed over the infants’ mouth and nose, and the fraction of NO was analysed of endobronchial cell counts of eosinophils, neutrophils, mast cells and plasma cells. Thus, although it seems unlikely that FeNO,TB would be a useful predictor of corticosteroid responsiveness in unselected infants with severe recurrent respiratory symptoms, its usefulness in selected infants with recurrent wheeze remains to be studied further.

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Ethics approval: This study was conducted with the approval of the Ethics committee of Helsinki University Central Hospital.

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Figure 1 Distribution of exhaled NO levels by the endobronchial cell counts of eosinophils, neutrophils, mast cells and plasma cells. Low = count < 50th percentile; high = count ≥50th percentile.
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