

### Cellular profile of bronchoalveolar lavage fluid in pulmonary tuberculosis

EDITOR, — Bronchoalveolar lavage (BAL) has been used to study the immunopathogenesis of several respiratory diseases. The aim of our study was to determine the inflammation changes occurring at the site of a tuberculous lesion in the lung in children.

Eighteen children (mean (SD) age 5.1 (3.2) years, range 1.5 -12 years) attending the tuberculosis clinic at the Institute of Child Health and Hospital for Children, Madras who had signs and symptoms suggestive of pulmonary tuberculosis with a persistent radiographic abnormality had early morning gastric lavage and bronchoscopy and BAL done under local anaesthesia. The bronchoscope (3.5 mm Pentax) was wedged into the involved segment and BAL was performed by instilling 2 ml/kg sterile saline in three equal aliquots. There were no complications encountered and informed consent was obtained from the parents. The study was approved by the institutional ethics committee.

The total cell count showed wide variation between cases and the mean (SD) count ( $74 (45) \times 10^6/100$  ml) was not significantly different from reference values ( $80 (81) \times 10^6/100$  ml).<sup>1</sup> The percentage of macrophages was significantly reduced in those with tuberculosis compared with reference values (56 (25)% v 81 (8)%,  $p < 0.01$ ). The BAL fluid from cases of tuberculosis compared with reference values had a greater mean number of lymphocytes ( $22 (17) \times 10^6 (6) \times 10^6/100$  ml,  $p = 0.02$ ) and eosinophils ( $10 (17.5) \times 10^6 (0) \times 10^6/100$  ml,  $p = 0.001$ ). Bronchial epithelial cells accounted for 6 (4.5)% of total cells. Due to the obvious ethical limitation of enrolling controls, we have used the BAL data on healthy children of Ronchetti *et al* for comparison.<sup>1</sup>

Several studies looking at BAL cellular profile in adults with pulmonary tuberculosis have demonstrated increased lymphocyte counts.<sup>2,3</sup> Nowakowski *et al* found that the CD4/CD8 lymphocyte ratio was decreased in BAL fluid but increased in blood in children with pulmonary tuberculosis. In this study, we have found a relative lymphocytosis and eosinophilia at the site of the lesion in children with pulmonary tuberculosis. There was a proportionate decrease in the percentage of alveolar macrophages in BAL fluid. More research into the local immunopathology of tuberculosis is required.

SOUMYA SWAMINATHAN  
P VENKATESAN  
K SANKARAN  
R PRABHAKAR  
V K VIJAYAN  
Tuberculosis Research Centre,  
ICMR, Spur Tank Road,  
Chetput, Madras 600031,  
India

N SOMU  
D VIJAYASEKARAN  
Institute of Child Health and Hospital for Children,  
Egmore, Madras 600008, India

- 1 Ronchetti R, Villani A, Dotta A, *et al*. Pediatric BAL - reference values. *Am Rev Respir Dis* 1992; 145: A556.
- 2 Ainslie GM, Solomon JA, Bateman ED. Lymphocyte and lymphocyte subset numbers in blood and in bronchoalveolar lavage and pleural fluid in various forms of human pulmonary tuberculosis at presentation and during recovery. *Thorax* 1992; 47: 513-8.
- 3 Hohelsel GB, Tabak I, Teschler H, Erkan F, Kreegel C, Costabel U. Bronchoalveolar lavage cytology and immunocytology in pulmonary tuberculosis. *Am J Respir Crit Care Med* 1994; 149: 460-3.
- 4 Nowakowski M, Chan SP, Steiner P, Chice S, Durkin HG. Different distributions of lung and blood lymphocyte subsets in pediatric AIDS or tuberculosis. *Ann Clin Lab Sci* 1992; 22: 377-84.