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BRONCHOALVEOLAR LAVAGE IN THE DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS OF LUNG DISEASES

H. Ganchev, M. Kokoshyan, D. Kalev

Department of Internal Medicine, Clinic of Pulmology, Varna

Bronchoalveolar lavage (BAL) is an useful and safe method for sampling cellular and biochemical components of the bronchoalveolar units. A great number of investigators have discussed the clinical usefulness of BAL in various lung diseases and have revealed the value of this method in the diagnosis and differential diagnosis of patients with lung diseases (1). The aim of our study is to evaluate the diagnostic significance of BAL in the most frequent pulmonary diseases.

A standard BAL was performed in three groups of patients at the time of diagnostic fiberoptic bronchoscopy. In the first group there were 50 patients with lung cancer, in the second - 50 patients with lung tuberculosis, and in the third - 50 patients with pneumonia. BAL was performed with 80-120 ml (20 ml aliquots were recovered after inserting the tip of the fibrobronchoscope firmly into a segmental bronchus). The first 20 ml were not analysed. The lavage fluid was warmed to body temperature (37C) in order to avoid cough and deterioration of lung function. This method has proved better fluid recovery and increased cell yield of BAL than instillation of fluid at room temperature (4).

The differential cell counts were performed by smears after concentration in sedimentation chamber. BAL fluid was tested for Gram (+) and (-) microorganisms as well as for mycobacteria by cultures on Loewenstein's medium. The results concerning the differential cell count and the cytology of the washings obtained from the patients are shown on tables 1 and 2:

Table 1. Differential cell count of BAL fluid

Disease	Alveolar macroph. %	Lymphocytes %	Polymorpho-nuclears %	Eosinophils %
Lung cancer	84,14	2,10	13,51	0,25
Pneumonia	60,90	7,20	30,05	1,85
Tuberculosis	50,80	41,20	1,1	6,9

Table 2. Diagnostic value of the cytology of BAL

Method	Number of patients	Number of positive results	%
Biopsy	50	42	84
Brush	50	39	78
BAL	50	26	52

An increased proportion of lymphocytes was found in patients with tuberculosis and increased proportion of polymorphonuclear leukocytes (PMN) - in patients with pneumonia. Comparing the results of biopsy, brush and BAL we found that BAL alone was positive in 11 patients who had peripheral malignant lesions.

BAL specimens were cultured for aerobic bacteria. Gram (+) microorganisms were found in 17 (34%) of the patients, Gram (-) in 10 (20%) of the patients, and in 23 (46%) of the patients there was no bacterial growth. Seventeen (34%) of the patients had positive BAL fluid for *Mycobacterium tuberculosae* and the sensitivity of this method was found significantly higher than the investigation of sputum.

Bronchoscopy is traditionally the most effective method for morphological diagnosis of pulmonary diseases. Nevertheless the diagnostic value of the method is limited in peripheral lesions not accessible by fibrobronchoscope. In such cases BAL can provide valuable additional information especially in patients with lung cancer (3). At the same time the increased proportion of lymphocytes in BAL fluid can be used for the assessment of the immune response and the influx of PMN is a sensitive indicator of an inflammatory reaction. BAL can improve the etiological diagnosis of respiratory infections which leads to better therapeutic results.

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