LETTER TO EDITOR (VIEWERS CHOICE)

BRONCHOALVEOLAR LAVAGE COMPOSITION OF GRAM NEGATIVE AND GRAM POSITIVE BACTERIAL PNEUMONIA

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Bronchoscopy and bronchoalveolar lavage (BAL) are valuable methods and intervention procedures in the diagnosis and treatment of children with respiratory diseases. The research question is whether pneumonia due to gram negative and positive bacteria has different BAL compositions. This result will be helpful to us in the effective diagnosis and treatment of our patients. This cross-sectional study was conducted in the Respiratory, Department of National Hospital of Pediatrics, Vietnam from January 2008-January 2010. Patients who had a confirmed diagnosis of pneumonia using WHO standards and all those who had bronchoscopy and BAL were included in the study. BAL was sent to the microbiology and biology departments for culture, cell typing and immunoassays. Patients will be divided in to two groups depending on whether BAL grew gram negative (Group 1) or positive (Group 2) organisms. Sixty four patients were included in the study of which 37 patients were in group 1 and 27 patients were in group 2. There is no difference in gender or age between the two groups. (Table 1) There was a significant difference in cell types in BAL. In group 1 neutrophil cells and alveolar macrophages were more frequent than group 2. However there was no difference in albumin as well as protein level in BAL in both the groups (Table 1). In group 1 the IgA level is lower (0.07 + 0.012 g/l) than that in group 2 (0.134 + 0.172) ($p < 0.05$).

Schellhase et al in 1998 researched BAL composition in wheezing children. (1) In that research macrophage cells accounted for > 91% of cells. Other cells included neutrophils- 1.7%, lymphocytes-7.5% and eosinophils 1%. de Blic et al had the same results. (2) But in sick patients, it has been shown that infectious cells (neutrophils, lymphocytes) have increased in BAL. (3) In our study, in patients with gram negative organisms, increase in neutrophils and macrophages is more than that of gram positive infections. Also they have a significantly lower IgA levels. Similar results have been found in other studies same results (4)

Thus, we conclude that BAL composition in gram negative pneumonia shows increased neutrophil and macrophage content and lower IgA levels as compared to gram positive bacterial pneumonia.

Table 1: Difference between gram negative pneumonia and gram positive pneumonia

	Gram negative pneumonia (n=37)	Gram positive pneumonia (n=27)	P value
Age groups 2 months- 12 months 12months - 5 years > 5 years	 19 (51.4%) 14 (37.8%) 4 (10.8%)	 12 (44.4%) 12 (44.4%) 3 (11.1%)	
Gender Male Female	 20 17	 15 12	
BAL cellular composition			
Alveolar macrophages (cells/cumm)	537 ± 416	890 ± 751	< 0.05
Neutrophils (cells/cumm)	5750 ± 2169	3885 ±2416	< 0.05
Lymphocytes (cells/cumm)	3800 ± 795	2862 ± 376	> 0.05
Eosinophils (cells/cumm)	1994 ± 816	1588 ± 785	> 0.05
BAL Biochemistry composition			
Protein (mg/l)	1897 ± 312	768 ± 298	> 0.05
Albumin (mg/l)	128 ± 88	98 ± 79	> 0.05
BAL Immunoglobulin composition			
IgA (g/l)	0.074 ± 0.012	0.134 ± 0.172	< 0.05
IgG (g/l)	0.184 ± 0.034	0.297 ± 0.178	> 0.05
IgM (g/l)	0.126 ± 0.018	0.136 ± 0.122	> 0.05

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