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IgG Subclass Levels in ELF in COPD

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Abstract: Objective: Deficiency of immunoglobulin (Ig) may be responsible for recurrent infections in chronic obstructive pulmonary disease (COPD). Our aim was to investigate the level of IgG subclass (IgGsc) in the epithelial lining fluid (ELF) and to try to find a possible relation between these levels and serum or bronchoalveolar lavage (BAL) IgGsc levels in COPD patients with recurrent acute exacerbation. Methods: Twenty-four clinically stable non-smoking COPD patients who had developed recurrent exacerbations three or four times a year and 17 individuals without COPD were enrolled as the experimental and control groups (Group I and II) respectively. The BAL procedure was performed on the groups by bronchofiberoscope. In order to calculate ELF Ig values, IgGsc and urea levels in sera and BAL fluids were measured. Results: Total Ig levels did not differ between the groups. All serum IgGscs except IgG1 increased in Group I versus the control group [mean values (mg/L)]: IgG2=3734, IgG3=1119, IgG4=405; $p<0.05$). However, in the ELF, mean IgG1 and IgG2 levels significantly decreased (367.3mg/L and 201.7mg/L respectively; $p<0.05$). BAL IgGsc/urea ratios significantly were correlated with ELF IgGsc levels ($p<0.0001$, $r>0.8$) suggesting that only BAL urea and IgGsc measurements were sufficient when comparing the groups. Conclusion: Immunologic response may be impaired in COPD due to the deficiency of IgGsc. The decrease in IgG1 and IgG2 in ELF, which impairs the local pulmonary response, may be responsible for the recurrent exacerbations in patients with COPD.

Key Words: Bronchoalveolar lavage (BAL), epithelial lining fluid (ELF), chronic obstructive pulmonary disease (COPD), immunoglobulin deficiency, immunoglobulin subclass deficiency.

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