

Neutrophil CD64 Expression and other Laboratory Biomarkers in Discriminating Bacterial versus Non Bacterial Acute Exacerbation Chronic Obstructive Pulmonary Disease

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Discriminating bacterial from nonbacterial acute exacerbation chronic obstructive pulmonary disease (AE-COPD) is difficult. In this study, we evaluated T/NK-cells' subsets in peripheral blood of both stable COPD and AE-COPD patients for identifying their rule in the pathogenesis of the disease and highlighting rule of laboratory biomarkers as total and differential leukocytic count, different T/NK lymphocytes' subsets, CD64 neutrophil expression and high sensitive C-reactive protein (CRP) in discriminating bacterial versus nonbacterial AE-COPD to limit overuse of antibiotics. The studied groups were divided into 30 patients with stable COPD disease (control group) and 30 patients with AE-COPD; of which 22 were classified as bacterial and 8 as non-bacterial AE-COPD groups. Total and differential leukocytic count (TLC), high sensitive-CRP and flow-cytometric immunophenotyping using monoclonal antibodies against CD3, CD4, CD8, CD16, CD56 and CD64 were analyzed for each group. Parameters that were significantly different between control and AE-COPD groups included peripheral blood CD64 percent expression, cytotoxic-T cells (Tc), T-helper (Th), NK, NK-T and total lymphocytes' percentages. Using same parameters to further differentiate between bacterial and non-bacterial AE-COPD patients; CRP and CD64% were highly significant between 2 groups ($P < 0.001$), with higher CRP level and CD64 expression in the bacterial group with mean value; 22.27 mg/L and 83.89%, respectively. A cutoff of 15mg/L and 59.5% for both CRP and CD64 expression were used to discriminate between bacterial and non-bacterial COPD patients. In conclusion, CD64 expression and high sensitive-CRP performed better than several leukocytes concentrations in discriminating bacterial versus non-bacterial AE-COPD. The percentage of CD3CD8 (Tc), CD3CD4 (Th), CD16CD56 (NK) cells were higher in AE-COPD than stable COPD.