TREGS PROFILES AND HLA-DR EXPRESSION IN INDUCED SPUTUM CELLS OF COPD PATIENTS TREATED WITH TIOTROPIUM

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Tiotropium bromide improves clinical symptoms in patients with COPD and exerts anti-inflammatory effects but the specific mechanism remains unclear. Immune response is important in development and progression of COPD and recent evidences indicate that immune cells expressing activation markers–HLA-DR, CD25 and regulatory T cells (Tregs) may be involved in regulation of chronic inflammation in COPD. We analyzed sputum cells from twenty two stable COPD patients receiving formoterol (F) or formoterol + tiotropium (F+T) for 3 months. To evaluate specific immune cells sputum induction was performed, cells were isolated and were examined on Coulter flow cytometer using fluorescent antibodies (Coulter) specific for CD3, CD4, CD8, CD14, CD19, CD25, CD127 and HLA-DR antigens. Cell profiles and cell activation was assessed in particular cell subtypes by analysis of HLA-DR, CD25 and CD127 co-expression using specific antibodies in different double-stained samples. Tregs were defined as $CD4(^{+})CD25(^{high})$ $CD127(^{low})$ cells. In patients receiving both drugs significantly improved FEV1 and lung volumes were observed comparing to F monotherapy. At baseline HLA-DR was expressed in less than 10% of sputum T or B cells and on monocytes and HLA-DR expression was lower in patients treated with F+T. Considering Tregs, the percentage of activated [CD4(+) CD25(+)] cells were significantly lower in combined therapy group except for subpopulation of $CD4(^{+})CD25(^{high})$ $CD127(^{low})$ cells which was not significantly altered. Our data indicate that analysis of sputum cell profiles and immune activation may provide an information about individual response of the patient to the therapy.