WOMEN ARE MORE SENSITIVE TO TOBACCO SMOKE - SOME INSIGHTS TO THE IMMUNE SYSTEM

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Background: The influence of tobacco smoke on human health is still an important problem worldwide. Complex inflammatory processes and changes in the immune system play a crucial role in the pathogenesis of smoking related diseases like chronic obstructive lung disease (COPD), lung cancer, atherosclerosis. We previously found elevated proportion of cytotoxic lymphocytes (CD8+), lymphocytes with expression of Fas receptor, depletion of regulatory cells population and elevated concentration of adiponectin in smokers with COPD.The aim of this study was to evaluate cellular immune response in asymptomatic smokers in men and women. **Methods:** In cross-sectional study 31 healthy, non-smoking volunteers and 38 asymptomatic smokers who met the criteria of daily smoker according to WHO were enrolled. There were 15 women in the mean age 51 years in the smokers group. The proportion of lymphocyte subpopulations was evaluated by flow cytometry method. Monoclonal antibodies against CD14/CD45, CD19, CD3, CD4, CD8, CD3/HLA DR,CD16/56, CD95 CD25and CTLA4 were applied. Adiponectin concentration was measured using ELISA method. A smoking cessation program was introduced to the smokers. **Results:** There were no significant differences in the proportion of major lymphocyte subpopulations between current smokers and never smokers. A significant influence of the duration of smoking on the increase of the proportions of CD4+ and CD8+ cells bearing CD95+ was observed. Non-smoking women compared with non-smoking men were characterized by significant variation in the proportions of CD4+95+ and CD8+95+ cells. We did not observe any significant influence of tobacco smoke on the proportion of CD25+ T cells and CTLA4+ cells in men, while in women these populations were reduced in the group of smokers (CD4+/CD25+: 13.9 vs 18.8%, CD8+/CD25+: 2,2 vs 2,4%, CD4+/CTLA4+: 1,4 vs 1,1%, respectively). The higher serum concentration of adiponectin was noted in smoking women when compared to the group of non-smokers and the group of men (10300 vs 8600 vs 5500 ng/mL). **Conclusions:** Changes in the immune system of women who are active smokers are similar to those observed in COPD and are more pronounced than in men.