RELATION BETWEEN PROINFLAMMATORY CYTIKINES (IL-6, TNF-alpha) AND INFLAMMATION IN OBESITY

K. Popko[1], E. Gorska[1], R. Plywaczewski[2], B. Gorecka[2], M. Wasik[1], U. Demkow[1]

[1]Department ofLaboratory Medicine and Clinical Immunology of Developmental Age, Warsaw Medical University, Warsaw, Poland;
[2]Second Clinic of Pulmonary Diseases, Institute of Tuberculosis and Lung Diseases, Warsaw, Poland

The development of obesity and related disorders eg. Type II diabetes (T2D), hypertension, metabolic disturbances is strongly related to the increase of proinflammatory cytokines (IL-1, IL-6, TNF) level. Both IL-6 and TNF-alpha are secreted by adipocytes and their concentration correlates with percentage and distribution of fat tissue in the body. It is known that IL-6 plays important role in lipid's metabolism and energy expenditure. Increase of IL-6 level was found in serum of patients with lipid abnormalities and insulin resistance. TNF-alpha likewise IL-6 has a great impact on lipid metabolism and is connected to the development of insulin resistance. TNF acts as inhibitor of LPL expression on the level of mRNA as well as protein syntesis. Both cytokines are main factors responsible for the induction of acute phase proteins production (e.g. CRP) and in consequence lead to inflammatory state. The aim of the study was to compare of TNF-alpha and IL-6 concentration in serum from obese subjects to the control group with normal BMI and analysis of the relation between TNF-alpha, IL-6, BMI and inflammatory state measured by CRP rate.The study included 80 obese subject (54 males and 26 females) Body Mass Index (BMI) > 25. Control group included 53 healthy subjects (24 males and 29 females) with normal BMI < 25. To determine blood plasma concentration of IL-6 and TNF commercial ELISA assay kits were used.The concentration of IL-6 was lower in control group compared to obese patients but statistical significance was found only in group of women ($p=0,001$). TNF-alpha concentration was significantly higher in all obese groups ($p<0,001$). Higher level of this cytokine was also found in patients with obesity suffering from T2DM. Positive correlation was found between IL-6 and TNF-alpha concentration. Only IL-6 level correlated with the concentration of CRP in serum.It seems to be confirmed that increased level of inflammatory cytokines leads to the persistence of inflammation in obese subjects. However some other factors, perhaps gender related may contribute to the development of pathological conditions connected with obesity related inflammatory state.