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Myeloperoxidase (MPO) activity study in obese and subjects with metabolic syndrome

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PURPOSE / OBJECTIVES

The aim of the study was to examine the activity of the enzyme myeloperoxidase in the serum of obese and subjects with metabolic syndrome and to test the relationship between MPO activity and other indicators of inflammation in the blood of subjects, as well as the relationship between MPO activity and blood lipid concentration.

MATERIALS & METHODS

The study included 175 first and second year students of the Faculty of Medicine in Foča who were divided into three groups according to the criteria of the International Diabetes Federation: normally fed (N = 106), subjects with abdominal obesity (N = 37) and the third group consisted of subjects with metabolic syndrome.

RESULTS

During the study, significant differences in the activity of MPO were found in all three groups of subjects, and the highest activity was measured in subjects with metabolic syndrome. We established a significant positive correlation between the indicators of inflammation such as erythrocyte sedimentation rate ($r=0.147$, $p<0.001$), fibrinogen ($r=0.204$, $p<0.001$) and hsCRP ($r=0.563$, $p<0.001$) and the MPO activity, which indicates that with increasing amounts of adipose tissue and the accumulation of macrophages in it, there is an increased production of acute phase proteins in obese subjects.

Obesity is one of the most common modern health problems worldwide. Numerous studies indicate the association of low-grade chronic inflammation and obesity. Myeloperoxidase (MPO) and its reactive oxidants contribute to tissue damage during inflammatory processes in the human body. The aim of the study was to examine the activity of the enzyme myeloperoxidase in the serum of obese and subjects with metabolic syndrome and to test the relationship between MPO activity and other indicators of inflammation in the blood of subjects, as well as the relationship between MPO activity and blood lipid concentration.

RESULTS

Also, we revealed a significant positive correlation between MPO activity and uric acid levels in our subjects ($r=0.312$, $p<0.001$). A positive correlation was found between MPO activity and atherogenic index, as well as between MPO and LDL-cholesterol concentration, while a negative correlation was found between MPO and HDL-cholesterol concentration. The study showed that MPO activity progressively increases with obesity and metabolic syndrome.

SUMMARY/CONCLUSION

Based on the obtained results, it can be concluded that the activity of MPO in the serum of the subjects progressively increases with obesity and metabolic syndrome, so the obtained results may be important in the pathophysiological mechanisms and complications of obesity and metabolic syndrome.