Visceral obesity in chronic pain patients: Adipokines and fitness

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Objective.– Adipokines are secreted by the adipose tissue and interact with metabolic, endocrine and immune functions. Moreover, adipokines may induce a state of insulin resistance in muscles. The aim of this study was to evaluate the levels of different adipokines and the correlations between the aerobic fitness in chronic pain patients with visceral obesity.

Methods.– One hundred and one patients with chronic musculoskeletal pain and visceral obesity (waist circumference > 88 cm in women and > 103 cm in men) were included and compared with 30 patients without these factors (control patients). All of them underwent the same evaluation as usual before a rehabilitation program. The body mass index (BMI) was measured. Serum samples were collected at admission after a 12-h fast. Levels of adiponectin, adiponectin and insulin were measured. A cycloergometer exercise test (EET) was performed which allowed VO2 measurements at the aerobic and anaerobic thresholds.

Results.– The patients with visceral obesity had significantly higher levels of leptin and insulin than control patients. The mean values of leptin and adiponectin were significantly lower in visceral obese men than visceral obese women. The leptin levels were more significantly correlated with all the parameters of obesity than those of adiponectin. We found negative correlations between the levels of leptin and all the parameters of the EET, particularly for the VO2 max at the aerobic and anaerobic thresholds. These results were not observed with the adiponectin levels and the BMI which was only correlated with the VO2 max at the aerobic and anaerobic thresholds.

Conclusions.– As in this study, previous studies in athletes have found a negative correlation between leptin levels and performance and the leptin levels and it was considered to be associated with the fat mass. We found a clear difference for the correlations between adiponectin and leptin levels and the VO2 max, irrespective of the sex and the age. This suggests a biological mechanism underlying the poorer fitness in high leptin patients.

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