

ABSTRACT (EN)

Research in the field of obesity, diabetes mellitus and their complications in recent years is increasingly focused on pathophysiological mechanisms of their onset and potential prevention and treatment. The aim of the present work was to evaluate the effects of two different interventions - sleeve gastrectomy and physical activity - on anthropometric, biochemical, hormonal parameters and mRNA expression of proinflammatory factors in subcutaneous adipose tissue along with mRNA expression in peripheral blood monocytes in patients who underwent sleeve gastrectomy.

A total of 15 obese women with hypertension were included into the physical activity study. These patients underwent a 3-month training program, which included 30 minutes of aerobic exercise three times a week. 13 obese women were included into sleeve gastrectomy study and were followed-up for 2 years after surgery.

Our results indicate that in both studies obese groups had at baseline significantly increased mRNA expression of proinflammatory cytokines, adipokines, chemokines and chemokine receptors relative to control groups. Both interventions decreased body weight and low-grade inflammation. Physical activity had no significant effect on blood pressure, lipid profile and mRNA expression of the components of the renin-angiotensin-aldosterone system and other proinflammatory factors in subcutaneous adipose tissue. Three months of exercise program significantly increased mRNA expression of aquaporin-3. In the laparoscopic sleeve gastrectomy study, a bariatric procedure improved metabolic profile of patients and reduced mRNA expression of up-regulated proinflammatory chemokine receptors, chemokines and other proinflammatory factors in subcutaneous adipose tissue. In contrast, laparoscopic sleeve gastrectomy did not affect up-regulated proinflammatory expression in peripheral blood monocytes even 2 years after operation. Ongoing inflammatory response in circulating monocytes thus may contribute to partial persistence of metabolic complications in obese patients after surgery.

Key words: obesity - subclinical inflammation - physical activity - Sleeve gastrectomy - chemokines - peripheral monocytes