

## **ABSTRACT (EN)**

GH/IGF-1 axis components (GH, growth hormone receptor (GH-R), IGF-1, IGF-1 receptor (IGF-1R), IGF-binding proteins (IGFBPs)) participate in the control of glucose metabolism, inflammatory processes as well as cell proliferation and differentiation, including adipocytes and monocytes. The aim of the present study was to evaluate the role of local mRNA expression of GH/IGF-1 axis components in subcutaneous adipose tissue (SCAT) and peripheral monocytes (PM) in the development of insulin resistance and differences of adipose tissue mass in following groups of patients: obese females with and without type 2 diabetes mellitus and subjects with active untreated acromegaly.

A total number of 66 subjects were included in the study: obese females without type 2 diabetes mellitus (OB), obese females with type 2 diabetes mellitus (T2DM), acromegalic patients (AC) and healthy lean control subjects (C). T2DM underwent 2 weeks of very-low-calorie diet (VLCD – energy content 2500 kJ/day).

According to our results we suggest that decreased mRNA expression of IGF-1, IGF-1R, IGFBP-2 and IGFBP-3 in adipose tissue of T2DM subjects may contribute to changes of fat differentiation capacity and the increased IGF-1R mRNA expression in peripheral monocytes in these patients may play a role in the regulation of subclinical inflammation by peripheral monocytes. The increase of SCAT and circulating IGFBP-2 and of IGFBP-3 in PM after VLCD in these subjects may participate in metabolic improvements after this intervention. In SCAT of acromegalic patients we found GH-stimulated increase of IGF-1 and IGFBP-3 mRNA expression, that was not independently associated with percentage of whole body or truncal fat or with HOMA-index (homeostasis model assessment). However, IGFBP-3 may still have a local effect in the regulation of insulin sensitivity in adipose tissue in acromegaly.