RELATIONSHIP BETWEEN SINGLE NUCLEOTIDE POLYMORPHISMS IN ADIPONECTIN, LEPTIN AND RESISTIN GENES AND THEIR EXPRESSION IN MORBIDLY OBESE SUBJECTS

Borges, D.O.¹; Ramos, M.J.²; Meinhardt, N.G.²; Gasparotto, A.S.¹; Zandoná, M.R.¹; Agnes, G.¹; Mattevi, V.S.¹

¹ Programa de Pós-Graduação em Ciências da Saúde, Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, Brazil; ² Centro de Atenção ao Obeso Classe III, Hospital Nossa Senhora da Conceição, Grupo Hospitalar Conceição, Porto Alegre, Brazil.

Obesity is a complex disease, caused by the interaction between several genetic and environmental factors. The adipose tissue is no longer considered as an inert lipid storage depot, due to the increasing number of molecules that it is able to secrete, collectively known as adipokines. Genetic studies have been conducted to identify the contribution of adiposity signal genes to the development of obesity. We performed the present study with the objective to detect if genetic variants located in the promoter region of the genes encoding three adipokines, adiponectin (ADIPOQ), leptin (LEP), and resistin (RETN), are associated with their expression in subcutaneous SAT and visceral adipose tissue (VAT) depots and with their circulating levels in morbid obese individuals. Sixty morbid obese individuals undergoing bariatric surgery were included. The mRNA levels of ADIPOQ, LEP and RETN were measured in VAT and SAT through quantitative real-time polymerase chain reaction and detection with hydrolysis probes. The same methodology was used to determine the genotype of the following single nucleotide polymorphisms (SNPs): LEP -2548 G>A (rs7799039), RETN -420 C>G (rs1862513), ADIPOQ -11377 C>G (rs266729) and -11391 G>A (rs17300539). Ninety-two percent of patients were female, and their mean age was 42.3±8.9 years. All adipokines showed a higher expression in SAT than in VAT. The ADIPOQ -11377 C>G variant was associated with lower expression of adiponectin in SAT and the -11391G>A change was associated with higher adiponectin circulating levels. In summary, our results suggest that the subcutaneous fat depots are the main source of circulating leptin, adiponectin and resistin. In addition, both ADIPOQ promoter variants are associated with the adiponectin expression or secretion.

Acknowledgements: This work was supported by Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Fundação de Amparo à Pesquisa do Estado do Rio Grande do Sul (FAPERGS), PRONEX-FAPERGS/CNPq and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), Brazil.

Keywords: adipokines; obesity; polymorphism.