Potential role of selected adipokines in chronicity of symptoms in adolescent anorexia nervosa

M. Tyszkievicz-Nwafort\textsuperscript{1}, A. Slopien\textsuperscript{1}, M. Dmitrzak-Weglarz\textsuperscript{2}, A. Rajewski\textsuperscript{1}, J. Hauser\textsuperscript{2}, F. Rybakowski\textsuperscript{3}

\textsuperscript{1}Poznan University of Medical Sciences, Department of Child and Adolescent Psychiatry, Poznan, Poland. \textsuperscript{2}Poznan University of Medical Sciences, Psychiatric Genetics Unit, Poznan, Poland. \textsuperscript{3}The Institute of Psychiatry and Neurology, Department of Child and Adolescent Psychiatry, Warsaw, Poland.

Aim of the study:

Anorexia nervosa (AN) is chronic illness of significant morbidity and mortality affecting about 1% of mainly young females. During treatment, despite normalization of the body weight, some symptoms of the disease persist, which may lead to frequent relapses and chronic course. Recently, a role of adipokines - hormones produced by adipose tissue in the pathogenesis of AN has been proposed. These proteins play a crucial role in peripheral and central regulation of food intake and energy balance. Adipokines contribute to the homeostatic control of feeding, and are also involved in non-homeostatic/hedonic regulation of food intake, acting via its receptors in the cortico-limbic system. Decreased body fat in anorectic patients can lead to impaired synthesis or secretion of adipokines. Abnormal plasma level of adipokines might influence certain psychopathological symptoms like: depressed mood, disturbed body image, obsessive-compulsive symptoms and thus might be important for etiopathogenesis of AN.

Several studies suggest an involvement of two regulatory adipokines - adiponectin and resistin in the pathogenesis of obesity and its metabolic consequences. However, the knowledge about their potential role in AN is insufficient. Most studies address adiponectin and resistin levels in acute stage of AN, however study samples are small and focused mainly on adult female patients. The aim of this study was to compare the adiponectin and resistin levels in adolescent underweight, and weight-recovered anorectic subjects and age-matched control group. Correlations between adiponectin/resistin levels and severity of certain symptoms of anorexia nervosa were also analyzed.

Methods:

Longitudinal controlled study was conducted on 76 adolescent anorectic patients and 30 age-matched healthy girls controls. Almost half of anorectic participants were excluded because they did not reach their target weight. Adiponectin and resistin levels were measured in anorectic patients before - ANp (BMI-14,4±0,9 kg/m\(^2\)) and after weight gain - ANw (BMI-17,6±0,9 kg/m\(^2\)) and in control group-GK (BMI-18,1±5,2 kg/m\(^2\)). The severity of selected symptoms in healthy controls, underweight and weight-recovery anorectic patients was assessed with Beck Depression Inventory, Eating Attitude Test and Yale-Brown Obsessive Compulsive Scale.

Results:

Patients suffering from AN before weight gain (ANp) had higher scores in BDI, EAT-26 and YBOCS than weight-recovered subjects (ANw) and healthy controls (GK).

Mean adiponectin level was higher in underweight anorectic patients-ANp (14,97±6,74 µg/ml) than in control group-GK (11,65±4,68 µg/ml). Despite the normalization of BMI, mean adiponectin level continued to increase and was significantly higher after weight restoration-ANw (20,35±7,12 µg/ml) (p=0,01).

Mean resistin level were significantly lower (p=0,00) in underweight-ANp (8,69±2,83 ng/ml) and weight-recovered anorectic patients-ANw (8,12±1,42 ng/ml) than in control group-GK (12,59±3,59 ng/ml). No significant difference in mean resistin levels before and after weight gain in anorectic patients was observed.

Negative correlation between adiponectin level and BDI scores (R=-0,33; p=0,01) as well as between adiponectin level and EAT-26 scores (R=-0,25; p=0,05) were found in anorectic patients.

Conclusions:

The results suggest, that in the course of AN, adiponectin and resistin secretion is impaired and weight recovery do not normalize their levels. Hiperadiponectinemia and hiporesistinemia which persist despite weight gain may cause chronicity of certain symptoms in patients with anorexia nervosa. Adiponectin levels correlate with severity of symptoms of eating disorders and depression, which may indicate their potential contribution in the regulation of emotions and behaviors.

References: