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Orexigenic and anorexigenic hormones in adolescents with obesity in the dynamics of treatment

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Introduction: About 20 thousand of new cases of obesity (Ob) are first registered in children and adolescents in Ukraine annually (morbidity 2.72/1000, prevalence 13.50/1000 of the corresponding population on 01.01.2016). Adolescent Ob shows catastrophic rise (prevalence 8.9/1000 in 2001 vs 28.3/1000 in 2015). The role of Ghrelin (Ghr) is completely unclear in the etiopathogenesis of obesity in adolescents.

Methodology: A total of 39 obese children with hypothalamic dysfunction (HD) (14 boys, 15.1±1.4 y.) and 14 healthy controls (mean age 14.6±1.2 y.) were included into the study. Among patients with HD-16 patients (41.03 %) had visceral abdominal obesity (VAOb), 23 patients (58.97 %) had gluteofemoral obesity (GFOb). Serum Leptin, Ghrelin, Insulin level, HOMA-IR were studied. Such studies are conducted in Ukraine for the first time.

Results: Overweight was revealed in 15 (38.5 %) patients, ObI- in 8 (20.5 %) people, ObII – in 10 (25.6 %) persons, ObIII-in 6 people (15.4 %). The signs of insulin resistance (HOMA-IR > 2.77; IRI>20 µIU/mL) were noted in 60% patients. Level of leptin in children with obesity VAOb was 47.2±5.54 ng/ml (BMI 35.2±5.07 kg/m²) and was significantly higher (26.5±7.13 ng/ml, p<0.05) than in children in the group with GFOb, in combination with similar metabolic disorders, BMI at the same time was 28.7±2.4 kg/m²). Serum Ghr level was found significantly lower in obese adolescents compared to that of control group and was dependent on the degree of Ob. The level of Ghr was the lowest (582.58±59.37 ng/mL) in patients with ObIII. The level of Ghr was significantly lower (p<0.05) in patients with VAOb than with GFOb (656.63±113.16 vs. 1212.13±114.6 ng/ml, respectively). The levels of hyperinsulinemia and insulin resistance were increased with an increase of the obesity degree. In six months of treatment level of Ghr was the same to Ghr level in adolescents with normal weight (1224.25±75.05 ng/ml). Thus, Ghr is the specific marker of control of efficiency of treatment.

Summary: Obesity in adolescents is accompanied by a high level of leptin and a low serum Ghr level in the blood plasma. A high degree of obesity is accompanied by a greater higher Leptin level and decrease in the Ghr level. A significantly higher Leptin level and lower Ghr level was registered in abdominal Ob comparing to gluteofemoral type of obesity. Further studies the relationship of Leptin and Ghr level, insulin resistance and hyperinsulinemia in obese adolescents are required.

Biography

Olga A Vyshnevskaya was a medical doctor since 1993 at Medical University named after Pirogov and after graduation at Medical University she is working in "V P Komisarenko Institute of Endocrinology and Metabolism of the National Academy of Medical Sciences of Ukraine" in the department of pediatric endocrinology.

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