HORMONAL AND CYTOKINE STATUS IN ADOLESCENT GIRLS WITH OBESITY

Liudmila Alekseevna Firsova[1], Laura Dzhumberovna Shogiradze[1], Nina Viktorovna Evdokimova[1], Alevtina Alekseevna Pokhlebkina[3], Olga Petrovna Gurina[1], Aleksandr Evgenievich Blinov[1], Olga Nikolaevna Varlamova[1], Valeria Pavlovna Novikova[1], Vitaliy Fyodorovich Bezhenar[2]

[1] Saint-Petersburg State Pediatric Medical University. 2 Litovskaya str., Saint-Petersburg, Russia, 194100

[2] Pavlov First Saint-Petersburg State Medical University. L. Tolstoy's str., 6–8, Saint-Petersburg, Russia, 197022

[3] «AVA PETER» LLC. Liteyny Ave., 55a, litera A, room 3-N com. 31, fl. 1, Saint-Petersburg, Russia, 191014

E-mail: ludmila.firsova@list.ru

KEY WORDS: adolescent girls; obesity; hormonal status; cytokine status.

Background and Aims. Reproductive health diseases in adolescent girls can be associated with hormonal disorders and inflammatory status.

The aim of the study is to evaluate hormonal and cytokine status in adolescent girls with obesity.

Materials and Methods. 20 adolescent girls with obesity aged 14–17 years (group 1) and 34 girls of the same age with a normal body mass index (group 2) were examined. The levels of hormones which have effects on reproductive system were determined by ELISA: luteinizing hormone (LH), follicle stimulating hormone (FSH), estradiol, progesterone, prolactin, liothyronine (T3), thyroxine (T4), thyroid stimulating hormone (TSH), adrenocorticotropic hormone (ACTH), cortisol, leptin, ghrelin, serotonin, C-peptide and homocysteine. Also, the content of interleukin (IL)-10, IL-6, IL-8, IL-1ß, IFNγ and TNF-α was found by ELISA. All girls were examined by pediatric gynecologist. Statistical data processing was carried out using licensed computer programs Microsoft Excel 2016 and Statistica 12. For analyzing the distributions of quantitative data the Student's t-test was used; $p < 0.05$ was considered statistically significant.

Results. Significant differences between the groups were found in the levels of ACTH (26, 17 ± 7.41 pg/ml and 7.89 and 3.69 pg/ml, $p < 0.001$), leptin (48.82 ± 34.6 ng/ml and 18.9 ± 13.8 ng/ml, $p < 0.001$) and IL6 (6.92 ± 2.61 pg/ml and 4.18 ± 1.83 pg/ml; $p < 0.05$). The time of menarche onset and characteristics of a menstrual cycle in both groups was the same.

Conclusions. Elevated levels of ACTH, leptin, and IL-6 in adolescent girls with obesity can be used as an early risk markers of future reproductive disorders.