Growth and development disorders in children and adolescents with various neuroendocrine abnormalities

Yu.M. Urmanova

Laboratory of Neuroendocrinology, Scientific-Research Institute of Endocrinology, Uzbekistan Public Health Ministry, Tashkent, 56 Kh. Abdullaev Street, 100125 (Director - Prof. S.I. Ismailov),

Aim: to perform comparative analysis of physical and sexual development retardation (PSDR) degree in children and adolescents with various infant neuroendocrinological disorders.

Materials and methods: we examined 96 children and adolescents with various neuroendocrine abnormalities and concurrent PSDR, 37 boys and 59 girls among them, (mean age 12.5 ± 0.7 years) referring to the Department Pediatric Neuroendocrine Pathology at the Scientific-Research Institute of Endocrinology, Uzbekistan Public Health Ministry within the period from 2001 to 2006. A part of them was studied retrospectively at the Scientific Neurosurgery Center, Uzbekistan Public Health Ministry, where 22 patients with craniopharyngioma and concurrent PSDR were examined within the period from 1989 to 1999. 25 patients of the same age were included into the control group. To examine the patients, clinical-hormonal, biochemical, anthropometric and roentgenologic methods were used. Levels of tropic hormones (STH, TTH, FSH, LH and ACTH and prolactin if necessary) as well as those of peripheral glands (thyroxin, triiodothyronine, cortisol, testosterone, estrogens) were measured in all patients who underwent the brain MRI or CT. In addition all patients were examined neurophysiologically (electro- and rheoencephalography).

Results and Discussion: radioimmunoassays performed by the radioimmune laboratory allowed establishing confident decrease in the levels of STH, FSH and LH and as well as of sex hormones, such as, testosterone, estradiol, progesterone and thyroid hormones, such as, T3 and T4 in patients with cerebral-hypophysial nanism. In patients with empty Turkish saddle syndrome and craniopharyngioma confident decrease in blood STH, FSH and LH was observed too. ACTH in patients with Cushing’s disease was confidently high, while in those with Cushing’s syndrome its reduction was observed against high mean values of blood cortisol. We performed comparative analysis of PSDR degree in the examinees with SDS calculation.

Conclusions:
1) Complex assessment of hypothalamo-hypophysial-adrenal system with clinical-hormonal investigations, cranial roentgenography, electroencephalography as well as brain and adrenal MRI and CT in children and adolescents with PSDR allows early diagnosing various neuroendocrine abnormalities.
2) Study on correlation of PSDR degree in various neuroendocrine abnormalities showed the most marked growth and puberty stage SDS in hypopituitarism.