165 IMPACT OF BODY FAT ON CHANGES IN HEIGHT SD SCORE DURING GROWTH HORMONE TREATMENT

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The aim of this study was to investigate the occurrence of polymorphisms of the β-adrenergic receptor gene in short children and to evaluate the possible influence of leptin on changes in height in response to GH treatment. Of the 85 children enrolled in the study, 10 chirdren completed leptin & IGF-1 measurements before and at 1,2,3,6,12 months of GH treatment. The genotype distribution of the β2 and 3-adrenergic receptor polymorphisms in the study population did not differ significantly from those reported in non-obese subjects. There were no significant differences in the SD score for height at any given time-point between the group with and without the Trp64Arg mutation of the β3-adrenergic receptor gene. In relation to the Gly16Arg polymorphism of the β2-adrenergic receptor gene, the mean SD score for height increased from -2.0SD to -2.0SD significantly during one year of GH treatment in children with Arg16Arg and Gly16Arg . In those with Gly16Gly, the score did not show any significant increase during all 1 years of GH treatment. Serum leptin levels increased by +27.9% in children with Arg16Arg & Gly16Arg and by -15.8% with Gly16Gly during 1 year. But there were no significant differences in IGF-1 levels at any given time-point during 1 year between the group with and without the Gly16Arg mutation of the β2-adrenergic receptor gene. Thus, when the impact of the polymorphisms of these two receptor genes was studied simultaneously, it appeared that only the β2-adrenergic receptor polymorphism had an important role to play in modulating the regulation of growth rate and leptin influenced the growth rate during GH treatment in short children.

166 A CASE OF CONGENITAL LIPOID ADRENAL HYPERPLASIA WHOSE TESTES WERE DIFFICULT TO DETECT

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We report a case of genetic male with congenital lipoid adrenal hyperplasia(CLAH) whose testes were detected by MRI and laparoscopy at 25 years of age. Case Report: A 26 years old female with CLAH has been treated in our hospital since her birth. Her karyotype is 46,XY but her external genitalia are that of normal female. The uterus and ovary are not detectable by MRI and ultrasound, and the testes are impalpable. She is receiving replacement therapy with hydrocortisone, estrogen and progesterone. MRI and ultrasound was performed periodically in order to detect of testes, but not detected. Therefore laparoscopy was performed at 25 years old. The intraabdominal testis was not found but the structure like a spermatic cord was entering the internal ring. It suspected that the testes remain at inguinal region. After that, the structure like testis was detected at bilateral groin, so that bilateral orchiectomy will be performed. Conclusion: For CLAH with 46,XY karyotype, detection of the testes and orchidectomy are important, but, in case of impalpable testis, it is often difficult. In our case as well, the testis could not be detected by serial MRI and ultrasound, so that it was done by laparoscopy and MRI at 25 years old finally. In fact she does not know her true disease and karyotype because her parents hope that. Therefore the explanation of the examination worried us and it was late to perform examination.

167 A CASE REPORT: TREATMENT WITH ESTROGEN AND PROGESTERONE FOR EIGHT MONTHS FAILED TO DECREASE THE SIZE OF OVARIAN CYST IN 20-YEARS-OLD 46,XX PATIENT WITH STEROIDGENIC ACUTE REGULATORY PROTEIN GENE (*StAR*) ABNORMALITY

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【Background】Female individuals with *StAR* abnormality were reported to have menstruation and subsequently develop ovarian cyst which may lead to torsion of ovary. Treatments with progesterone (P) with or without estrogen (E) were reported to reduce the size of ovarian cyst or prevent to develop ovarian cyst. 【Aim】 We reported a 46,XX patient with *StAR* abnormality in whom treatment with P and E for eight months failed to decrease the size of ovarian cyst. 【Case】 She was treated with hydrocortisone and fludrocortisone from 14 days of age. She had menarche at 11.3 years of age. Pelvic ultrasonography and CT scan showed normal ovaries (rt 48×46×42mm, lt 36×30×38mm) at 12.3 years of age. Bilateral polycystic ovaries (cyst; below 10 to 60mm) observed from 15.6 years of age. Treatment with P was started because of menoxenia at 18.3 years of age. Right ovarectomy was performed due to torsion at 18.9 years of age followed by treatment with P and E. Diameter of left ovary was 79×50×52mm (cyst; 42×31×35mm) two months later, and 94×63mm (cyst; 36×21mm) eight months later. Basal LH level was 31.2～39.7 mIU/m and FSH level was 4.7～6.7 mIU/ml befor treatment with P and E. Basal LH level was 9.5～21.5 mIU/ml and FSH level was 4.5～10.2 mIU/ml after treatment with P and E. 【conclusion】 A 46,XX patient with *StAR* abnormality underwent right ovarectomy due to torsion followed by treatment with P and E for eight months. However, left ovarian cyst was increased with the size.

168 A frameshift mutation and a familial deletion mutation of the *DAX1* gene in patients with X-linked adrenal hypoplasia congenita

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Adrenal hypoplasia congenita (AHC) is a rare inherited disorder with estimated frequency of one per 12500 live births. Mutations in the gene encoding DAX1 cause X-linked AHC, which is associated with hypogonadotropic hypogonadism (HHG) as a characteristic phenotype. Here we report two cases of AHC in which we identified mutations in the *DAX1* gene.

Case 1: 30-year-old male. No family history of adrenal insufficiency or hypogonadism. At the age of 8 years, he was admitted to our hospital for the evaluation of general pigmentation and diagnosed with adrenal insufficiency by the biochemical examinations of elevated plasma ACTH, subnormal level of cortisol and unresponsiveness to ACTH provocative test. He was begun on hydrocortisone, and fludrocortisone treatment. At the age of 9 years, LHRH stimulation showed minimal rises in LH and FSH, while continuous stimulation test revealed an increase in their levels. Thereafter the diagnosis of HHG was made because of the absence of pubertal signs. Treatment with LHRH or hCG+hMG gave no apparent improvement. Mutation identification with direct sequence method revealed 548-549insG which resulted in a stop codon at position 184.

Case 2: 24-year-old male. Two brothers were diagnosed with AHC in infancy. At the age of 2 weeks, he was admitted to our hospital for failure to thrive and diagnosed with adrenal insufficiency by the biochemical markers. At the age of 13 years, the examinations were made because of the absence of pubertal signs, which revealed no increase in LH and FSH to single LHRH stimulation and hyporesponsiveness to continuous stimulation test. hCG stimulation test increased the level of testosterone. He was diagnosed with HHG and given hCG+hMG administration with no apparent clinical improvement. For mutation identification, a deletion of the *DAX1* gene was suggested because the exons of the gene were not amplified by PCR with appropriate primers.

Discussion: In addition to the previously reported cases of the same mutation, these patients suggest the earlier onset of adrenal insufficiency with the deletion of the *DAX1* gene. Concerning HHG, the LHRH stimulation test showed a difference in its responses between two cases, however, clinical course of these patients was similar.