

An unusual form of precocious puberty: Van Wyk and Grumbach syndrome

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Introduction: The association of precocious puberty and/or polycystic ovaries, delayed bone age and hypothyroidism is known as the Van Wyk and Grumbach syndrome (VWGS). Clinically this syndrome is a diagnostic challenge because hypothyroidism usually leads to pubertal and growth delay, whereas in case of VWGS hypothyroidism it leads to growth delay and precocious puberty.

Case Report: A boy aged 7 years and 4 months presented to our clinic for follow up. His medical history revealed congenital hypothyroidism diagnosis and irregular levothyroxine treatment since his birth. There was no compliance to levothyroxine treatment and the patient did not take his medication for last seven months. He was born of nonconsanguineous marriage at full-term, normal vaginal delivery. His birth weight was 3.7 kg and he had normal gross motor development. There was no history of headache, vomiting, visual symptoms, and gelastic seizures.

Physical examination revealed obesity with height 113 cm (-1.9 SDS, target height of 159 cm) and weight 30.5kg (1.4 SDS), body mass index 23.8 (> 95 p). His pulse rate was 78/min and blood pressure 98/60 mmHg. He had dry scaly skin. There was no goiter. There was no axillary hair and pubic hair was Tanner stage 1. Stretched penile length was 5 cm and testicular volume were 6 ml bilaterally (Figure 1 and 2). Levels of thyroid stimulating hormone (TSH) were elevated (443 mIU/l, normal range 0.35–4.94 mIU/l) and levels of free thyroxin (fT4) were decreased (fT4 0.43 ng/dl, normal range 0.7–1.48 ng/dl). Basal gonadotropin levels were pre-pubertal as FSH: 0.35 mIU/ml (N, 1.37-13.5), LH: 0.09 mIU/ml (1.14–8.75) and total testosterone: < 0.45 nmol/L. Serum prolactin level was 18.8 ng/ml (N, 2.58-18.12) and bone age was 4 year according to Greulich and Pyle's atlas. Peak LH and FSH response to intravenous LHRH was prepubertal as 4.1 and 1 mIU/ml, respectively. Visual acuity and fields and hypophysis magnetic resonance imaging were normal. The Van Wyk and Grumbach syndrome was diagnosed based on the co-occurrence of hypothyroidism, precocious puberty and delayed bone age.

After levothyroxine therapy serum thyroid hormone levels normalized in 2 months.



Discussion: Hypothetically early puberty in hypothyroidism is mainly caused by stimulation of the gonadal FSH receptor by TSH, and elevation of prolactin which slows GnRH pulses and preferentially lead to suppression of LH and production of FSH.

