Spermatogenesis in a Prepubertal Boy

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A 7.5 year old boy was evaluated for presence of sparse unilateral scrotal hair. No somatic growth spurt, acne, voice changes, adult body odor or enlargement of penis was observed. Testicular volumes were 4ml on the right and 2ml on the left. Bone age was 6 years. Basal and stimulated gonadotropins and testosterone were in the pre-pubertal range. Adrenal androgens, 17-hydroxyprogesterone and a urinary steroid profile were normal. At review six months later, no pubertal progression or growth acceleration was seen. Repeat ultrasound revealed a 2 x 3 x 3 mm hypoechoic mass. He underwent excision and histopathology confirmed the presence of a Leydig cell tumor with evidence of spermatocyte maturation ([Figure 1](#))

Leydig cell tumours are rare accounting for 4-9% of testicular tumors in pre-pubertal males ([1](#)). Unless identified pre-symptomatically they are universally associated with pseudoprecocious puberty mediated by the *systemic* effects of testosterone. FSH, once thought fundamentally important for spermatogenesis is not universally required ([2](#)). Intra-testicular testosterone (I-TT) levels may be 84-fold increased relative to serum levels ([3](#)) and are more critical for spermatogenesis. Accordingly, quantitatively normal spermatogenesis without spontaneous virilisation has been reported in an adult male with very low serum testosterone ([4](#)). Spermatocyte maturation in a boy with a Leydig cell tumor without clinical evidence of puberty has been described once previously ([5](#)) however no hormone profile was obtained pre-operatively. Our patient had spermatogenesis in the setting of pre-pubertal gonadotrophin and testosterone levels as a result of the paracrine effects of I-TT produced by the tumor. Venous drainage of the testis communicates with posterior scrotal veins via gubernacular veins at the caudal pole ([6](#)). Retrograde flow can occur as this system is valveless, permitting exposure of scrotal hair follicles to I-TT, accounting for the presence of scrotal hair on the affected side

Figure 1. Hematoxylin and eosin stain of seminiferous tubule adjacent to tumor showing germ cells in various stages of spermatogenesis.

Figure 2. Leydig-cell adenoma with positive immunohistochemistry for inhibin-α

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