Leydig-cell tumor, a rare cause of LH-independent sexual precocity in boys.

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Introduction

Leydig-cell tumors in children are rare constituting only 4% to 9 % of all primary testis tumors in prepubertal males. These boys present with isosexual precocious pseudopuberty characterized by increased testosterone and low gonadotropin levels.
We will describe 2 cases and discuss differential diagnosis and pathogenesis.

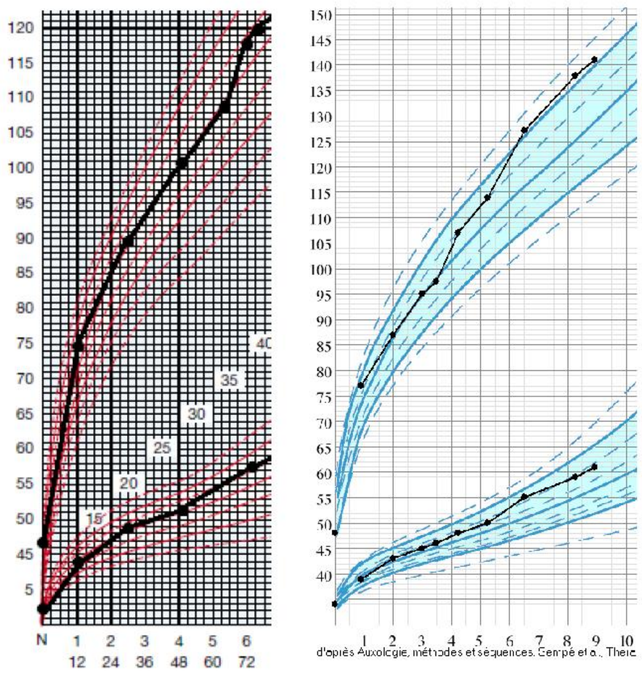
Case 1

Y. was first referred at 5,5 years old for premature pubic hair. Pubertal stage was A1P2G1, left testicular volume 4 ml, right 2 ml and penile length 40 mm. He showed no acne, no gynecomastia and no cafe-au-lait spots. Blood tests showed: FSH 0.17 UI/l, LH 0.04 UI/l, testosterone 1.04 ng/ml, total beta-hCG<2 UI/l, SDHA 146 ng/ml, Δ4 androstenedione 1,72 ng/ml. Scrotal ultrasound examination showed on the left testicle an hypervascularised solid tumor (size: 7*5 mm).

Case 2

C. was first referred at 8 years old for pubertal development with accelerated growth since 4 years of age. His voice had broken. Pubertal stage was A1P2G1, left testicular volume 4 ml, right 2 ml, penile length 60 mm. He showed no acne, no gynecomastia and no cafe-au-lait spots. Blood tests showed : FSH 0.74 UI/l, LH <0.07 UI/l, testosterone level 1.1 ng/ml, total beta-hCG level <2 UI/l, SDHA 609 ng/ml, Δ4 androstenedione 1,7 ng/ml. Scrotal ultrasound examination showed a left testicular hypervascularised solid tumor (size: 9*7 mm).

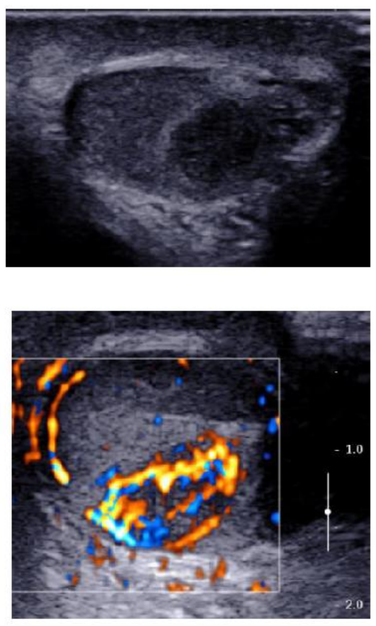
Growth chart case 1 (a) and 2 (b)



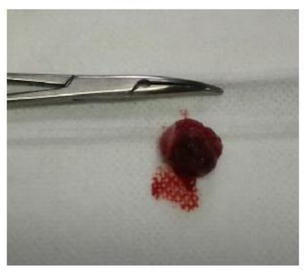
a) b)

Scrotal ultrasound case 2

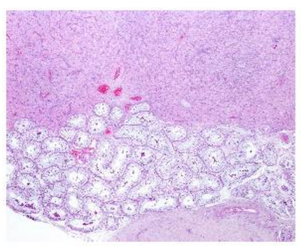
Left testicular solid tumor (size: 9*7 mm) with hypervascularisation.



Anatomopathological examination case 1 (a, b) and 2 (c, d)



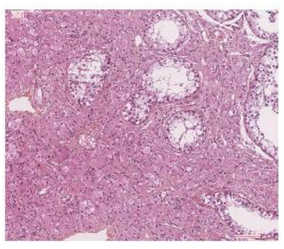
a)



b)

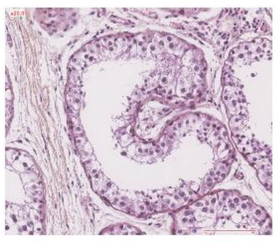
a) Surgical specimen

b,c) Leydig cell tumor : large polygonal and round cells with eosinophilic and granulous cytoplasm, and round nuclei, without atypia nor mitosis. Tumour cells displacing seminiferous tubules, forming trabeculae and sheets



c)

d) Seminiferous tubules with complete spermatogenesis



d)

Differential diagnosis

In case of high testosteronemia with low gonadotrophins levels in prebupertal boys, we have to discuss alternative diagnosis : hCG tumor (beta– hCG level), adrenocortical carcinoma (SDHA, Δ4 androstenedione levels), McCune-Albright syndrome, testotoxicosis (activating mutation in LHR gene), exogenous administration of testosterone.

Treatment

Tumor was surgically removed by enucleation without orchiectomy. Histological analysis supported the diagnosis of Leydig-cell adenoma. No abnormality in sequence of LH-receptor gene was found in blood or in tumor sample. After surgery, testosterone and gonadotrophins levels went back to prepubertal values.

Conclusion

Scrotal ultrasound examination should be performed in case of LH-independent sexual precocity in boys with testicular asymmetry in order to diagnose Leydig-cell adenoma. This tumor should be treated by enucleation without orchiectomy.

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Gonads
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