

Oncology

Management of Leydig cell tumors of the testis-a case report

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ABSTRACT

We report 1 case of Benign Leydig cell tumor. A 45-year-old male was admitted to the Urology department with a large painless mass in the right testis of 1 year duration. The patient underwent radical high right orchiectomy, with a preliminary diagnosis of right testicular tumor. On the basis of the pathologic and immunohistochemical findings, the testicular mass was diagnosed as a benign Leydig cell tumor. Long-term follow-up is necessary to exclude recurrence or metastasis and also the endocrine profile and imaging investigations need to be repeated periodically.

Introduction

Testicular tumors represent 1%–1.5% of all tumors in men. Leydig cell tumors (LCT) are rare, constituting 1% of testicular tumors. There are limited small series of LCT reported in the literature. About 3% cases of LCT are bilateral, while 10% are malignant with metastatic forms, preferably to the inguinal lymph nodes and extranodal organs, including the liver, lungs, and bones. In male adolescents, these hormone-secreting interstitial tumors usually are associated with precocious puberty; the clinical features and hormonal levels of these tumors are varied in adults. Most Leydig cell tumors are benign; but still a radical orchiectomy is currently used as the standard therapy for these tumors. Histologically, the tumor consists of the proliferation of large polygonal tumor cells with granular eosinophilic cytoplasm. LCT has a range of imaging manifestations, some overlapping with other testicular tumors. Due to that, it is difficult to make accurate diagnosis without immunohistochemistry.

Case presentation

In April 2019, a 45-year-old male was admitted to the Urology department with a large painless mass in the right testis of 1 year duration. Accordingly to patient, one month before admission, the lesion started to grow. On physical examination, the right testis was 6.5 × 3.0 cm in size, with a palpable tumoral mass of approximately 3.5 × 2.0 cm in size, also the patient had a regular pulse of 78 beats/min, a

temperature of 36.9 °C, and a respiratory rate of 18 breaths/min. No other signs, including gynecomastia or swelling of superficial lymph nodes were observed. The penis and pubic hair were normally developed.

Patient's routine laboratory results such as complete blood cell count, renal function tests, liver function tests, and urinalysis were negative. Tumor markers such as alpha-fetoprotein (AFP), β-human chorionic gonadotropin (β-hCG) and lactate dehydrogenase (LDH) were negative, and hormonal investigations like testosterone, prolactin and follicle stimulating hormone (FSH) were in normal ranges. A testicular ultrasound examination demonstrated a mixed echogenic space occupying lesion involving the half of the right testis with increased vascularity and some cystic areas.

The patient underwent radical high right orchiectomy, with a preliminary diagnosis of right testicular tumor and the specimen has been submitted for histopathological examination. Postoperative pathology showed that the tumor had cells in nests and trabeculae with chailinized and edematous stroma, without hemorrhage and necrosis or vascular invasion. The tumor nuclei were monomorphic, oval-shaped with passing nucleoli, finely dispersed chromatin and no mitoses were found (Fig. 1). The spermatic cord, scrotal skin, and surgical margins were free of malignancy. The immunostaining showed that the tumor cells were positive for inhibin and negative for pan-cytokeratin, calretinin and sinaptophysin (Fig. 2). On the basis of the pathologic and immunohistochemical findings, the testicular mass was diagnosed as a benign Leydig cell tumor.

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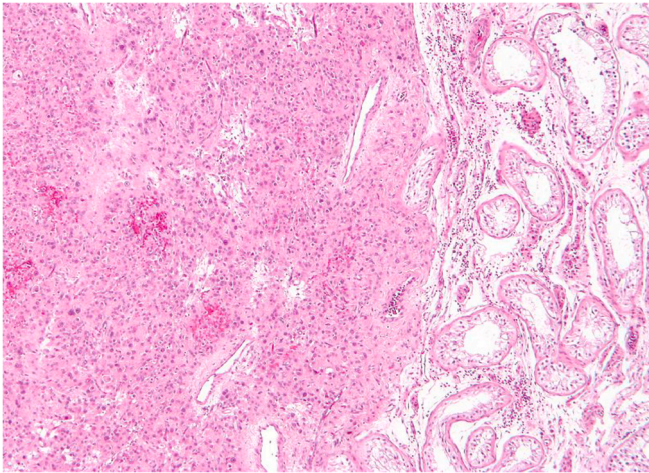


Fig. 1. Histology image of Leydig cell tumour.

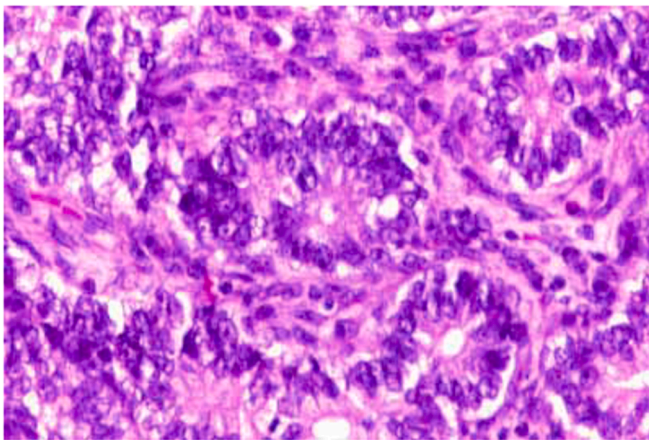


Fig. 2. Immunostaining image of Leydig cell tumour.

Six months after the surgery, the follow-up CT-scan found no local recurrence and distant metastases and hormonal investigations remains in the normal ranges.

Discussion

Primary testicular tumors are rare, accounting for 1%–1.5% of all tumors in men. There are 2 members of primary testicular tumors family: germ cell tumors and sex cord/stromal tumors.¹ Among the sex cord/stromal tumors, LCT is the most common histologic type, representing 1%–3% of all testicular tumors in adults and 0.4%–9% in pre-pubertal children.² LCTs are usually unilateral. Origin from testicular Leydig cells is demonstrable in most cases, but rarely they may originate from the epididymis. Although these tumors arise at any age, they affects mostly men between 20 and 60 years old. The etiology of LCT remains unclear and seems to be heterogeneous. The genetic risk factors for LCT in adult and child were different. Activating mutation in the guanine nucleotide binding protein α gene is a cause of adult LCT, by driving tumor development and sometimes causing hyperactivity of the testosterone biosynthetic pathway.³

LCT is presenting as a potentially malignant testicular mass with or without endocrine abnormalities such as loss of libido and gynecomastia. According to the review by Efthimiou et al., 480 cases of LCT have

been reported in the English literature and 29.2% of them are presented as testicular mass and in 12.5% of the cases the main symptom was gynecomastia. The mechanism of hormonal disorders is probably the high secretion of testosterone and estrogens by the tumor. About 10% cases of LCT are malignancy. Several authors suggested that 5 clinical features allow the identification of malignant LCT, including presence of endocrine changes, older patients (more than 40 years), tumor size greater than 5 cm, infiltrative margins, and areas of hemorrhage and necrosis extending beyond testicular parenchyma.⁴ In our current report, the tumor was 2 × 3.5 cm in size involving the half of the right testis, also the patient did not present with any endocrine changes and there are no positive surgical margins and no area of hemorrhage and necrosis were presented, so only 1 feature (patient's age) was consistent with the above criteria.

LCT arises from the interstitial cells of Leydig adjacent to the seminiferous tubules. Histological and immunohistochemical findings are crucial for the diagnosis of LCT. Histologically, LCT is characterized by the proliferation of large polygonal tumor cells with granular eosinophilic cytoplasm and prominent nucleoli arranged in sheets pattern. Immunologically, LCT is associated with an almost uniformly positive expression for inhibin and Melan-A. The expression of calretinin and vimentin varies. In contrast, LCT is distinguished from germ cell tumors by the negative immunostaining with lactate dehydrogenase (LDH), AFP, and HCG.^{1,5} In the presented case, the tumor cells were positive for inhibin and negative for pan-cytokeratin, calretinin and sinaptophysin.

Surgical orchiectomy the elected treatment decision for both benign and malignant LCT. Metastatic LCT responds poorly to additional systemic chemotherapy or radiation. Regular long-term follow-up with endocrine profile and imaging investigations repeated periodically, are recommended to exclude recurrence or metastasis.⁵ In our current case report, the 6-th month postoperatively CT scan shows no local recurrence and absence of distant metastases.

Conclusion

Leydig cell tumors are uncommon neoplasms arising from gonadal stroma. In Leydig cell tumors orchiectomy is the golden standard therapeutic decision. In the absence of any sign of malignancy, long-term follow-up is necessary to exclude recurrence or metastasis and also the endocrine profile and imaging investigations need to be repeated periodically. In addition, in our case we described the state-of-art management of this rare tumor.

Declaration of competing interest

The authors declare that they have no competing interests.

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