# Undifferentiated-type sex cord-stromal tumor of the testis: a case report

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**ABSTRACT**

**Background:** Sex cord-stromal tumors are rare tumors of the testis and are often seen in the pediatric age group.

**Case Presentation:** Right testicular mass was detected in the ultrasonography of a 19-year-old male patient who complained of pain and enlargement of the testis for 2 weeks. Tumor markers such as β-human chorionic gonadotropin, lactate dehydrogenase, and alpha-fetoprotein were within normal levels. The patient was diagnosed as undifferentiated type sex cord-stromal tumor after orchiectomy.

**Conclusion:** Undifferentiated-type sex cord-stromal tumors are characterized by proliferations of incompletely differentiated sex cord or stromal elements. In the literature, reported cases histologically have predominantly spindle cell areas, but we did not identify any spindle cell areas in our case. Due to the limited number of published studies of these cases, the estimation of their frequency and behavior is difficult and their diagnosis may be challenging.

**Keywords:** Sex cord-stromal tumor, testis, indeterminate differentiation, prognosis, malignancy potential.

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## Background

Testicular tumors are rare and correspond to 1% of all tumors in males [1]. Most of these are germ cell tumors. Sex cord-stromal tumors are more prevalent in the pediatric age group, while germ cell tumors are common in adults [2,3].

In this article, we evaluated the clinical and histopathological findings of our patient who admitted to the hospital with painful testicular masses in the post-pubertal period and diagnosed as undifferentiated sex cord-stromal tumor diagnosis in the light of the literature.

## Case Presentation

A 19-year-old patient presented with the complaint of painful right testicular enlargement in 2 weeks. The patient underwent a scrotal ultrasound with the preliminary diagnosis of varicocele. Ultrasound demonstrated a well-circumscribed mass at the upper mediastinum of the right testis with a hyperechoic periphery and hypoechoic center. Doppler showed more vascularization at the periphery and less vascularization at the center of the mass (Figure 1). Serum tumor markers such as β-human chorionic gonadotropin (hCG < 0.5 mIU/mL, normal range: 0–5 mIU/mL), lactate dehydrogenase (LDH: 177 U/L, normal range: 125–220 U/L), and alpha-fetoprotein (AFP: 1.23 ng/mL, normal range: 0–9 ng/mL) were normal. The patient underwent right inguinal orchiectomy due to incidental testicular mass.

Macroscopic examination sections showed a partially irregularly circumscribed mass measuring 1.5 × 1.2 × 1 cm. 1 cm of the mass was in matt white color with a hemorrhagic surrounding tissue at the periphery (Figure 2). Microscopic evaluation demonstrated three adjacent areas; a nodular area containing cells with large eosinophilic cytoplasm with hyalinizing collagenous stroma, solid tumor areas with lipidized areas, and cells with mixed large eosinophilic cytoplasm, and a nodular area with similar cells which are aligned to form tubules (Figure 3). Microscopic evaluation also showed infiltration of the rete testis by the eosinophilic tumor cells in the lipidized areas (Figure 4). Presence of atypia and mitosis was remarkable only in the immature tumor cells of the tubule forming area. No areas of cyst formation or Call–Exner bodies were found. Also, there were no Reinke crystalloids or lipofuscin pigments in the tumor cells. Vascular invasion and necrosis were lacking. Immunohistochemistry studies showed diffuse staining of tumor cells with inhibin, calretinin, and AE1/AE3 cytokeratin. Areas with diffusely arranged tumor cells showed positive staining with melan-A, whereas tumor cells in the tubule forming area were negative for melan-A (Figure 5). No immunostaining was observed with Epithelial

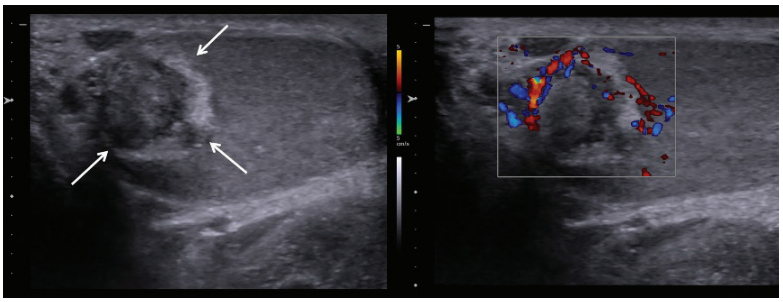

***Figure 1.*** *Ultrasound demonstrated a well-circumscribed mass at the upper mediastinum of the right testis with a hyperechoic periphery and hypoechoic center (arrows). Doppler showed more vascularization at the periphery and less vascularization at the center of the mass.*

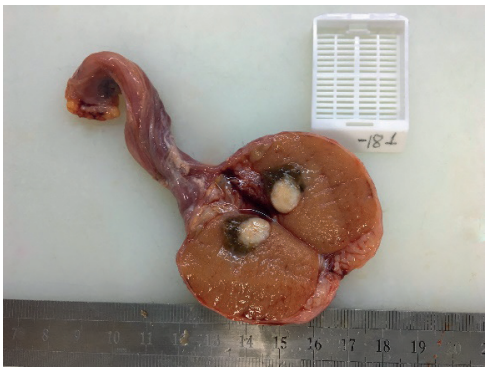

***Figure 2.*** *Macroscopic view of the tumor.*

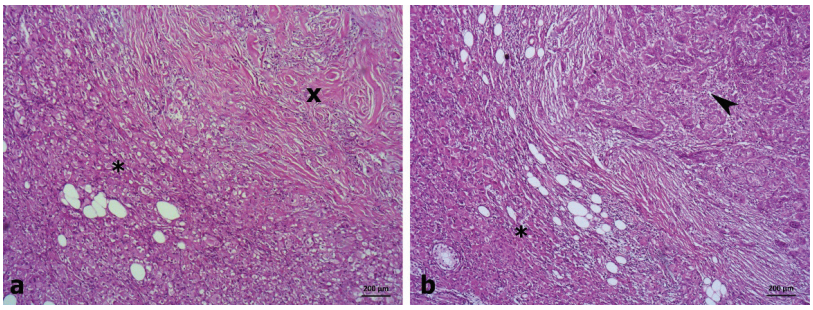


***Figure 3.*** *Hyalinized (x), solid (*), and tubular areas (arrow-head) (HEx50).*

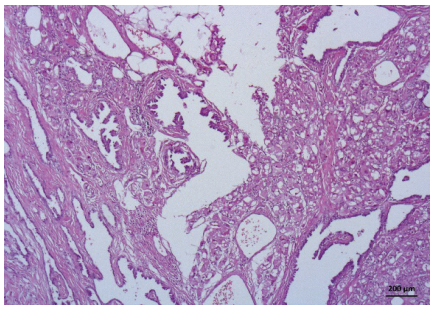

***Figure 4.*** *Rete testis invasion by the tumor cells (HEx50).*

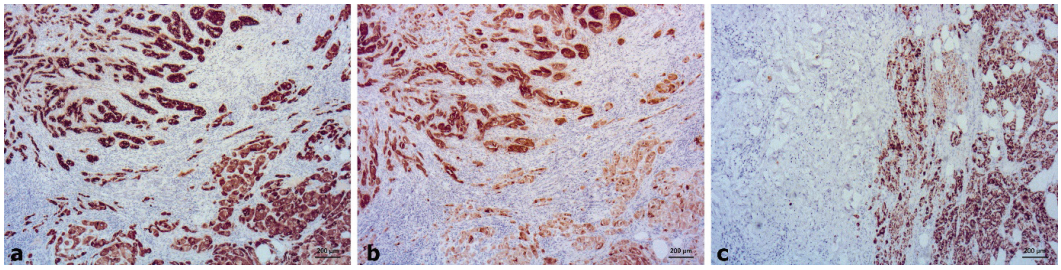


***Figure 5.*** *Inhibin (a), calretinin (b), and Melan A (c) positivity of the tumor cells (x50).*

membrane antigen (EMA), Common Acute Lymphoblastic Leukemia Antigen (CD10), Placental alkaline phosphatase (PLAP), OCT3/4 (Octamer-binding transcription factor), and α-fetoprotein (AFP). The area with diffusely arranged tumor cells was 10% positive for p53.

In this case, tumor cells do not exhibit specific histological and immunohistochemical properties congruent with sex cord-stromal cell tumors such as Leydig cell tumors, Sertoli cell tumors, or granulosa cell tumors. With positive immunostaining for sex cord-stromal tumors and evaluation of the morphologic properties, we diagnosed this case as an undifferentiated sex cord-stromal testis tumor.

## Discussion

Sex cord-stromal tumors of the testis are rare. They are more commonly seen in the pediatric age group than adults and represent the second largest group of primary testicular tumors after germ cell tumors [2,4–6]. This group consists of (a) pure tumors consisting of Leydig cell tumors, Sertoli cell tumor, granulosa cell tumors, tumors in the fibroma thecoma group, and (b) mixed and unclassified type sex cord-stromal tumors [2,3].

Sex cord-stromal tumors may cause gynecomastia, Cushing's syndrome, or isosexual pseudoprecocity puberty, or present as a component of Peutz Jegher or Carney syndromes [2,5,6]. In our case, we found no additional clinical findings other than testicular mass which was diagnosed in ultrasonography. Both Leydig cell tumors and Sertoli cell tumors may have intracytoplasmic vacuoles due to the lipid content of the cytoplasm [2,5,6]. 30–35% of cases with Leydig cell tumors may present with Reinke crystals in the eosinophilic cytoplasm [6,7]. Immunohistochemistry may help if the morphology is not characteristic or diffuse spindle or clear cell formations are

present. In sclerosing Sertoli cell tumors, more than 50% of the tumor volume has hypocellular collagenous stroma [2,6]. Intratubular large cell hyalinizing Sertoli cell neoplasia is the intratubular neoplastic proliferation of large Sertoli cells with eosinophilic cytoplasm with prominent deposits of the extracellular basement membrane [2,6].

Tumors having two or more distinct forms of sex cord-stromal elements and tumors showing indeterminate differentiation of the tumor cells are classified as mixed and unclassified sex cord-stromal tumors, respectively, by the WHO-2016 classification system [2]. The undifferentiated sex cord-stromal tumors reported in the literature histologically have predominant spindle cells [4,8–10]. In our case that has solid, nodular, and tubular areas, we did not identify any spindle cell areas.

Sex cord-stromal tumors are rare, and they usually have a good prognosis. However, in 10% of the cases, metastases can be seen [3,11,12]. Pathological risk factors have been defined to determine the malignancy potential. These criteria are defined based on the evaluation of orchiectomy specimens: (a) tumor size (tumors larger than 5 cm diameter), (b) infiltrating margins, (c) cytologic atypia, (d) greater than 5 mitotic features per 10 high-power fields, (e) lymphovascular invasion, and (f) necrosis [7]. Patients with two or more of these criteria may require close clinical follow-up, as the potential for malignancy may be high.

Thoracoabdominal computed tomography scans were done for tumor staging which showed no distant metastasis or pathologic lymph nodes. After radical inguinal orchiectomy, the patient was interpreted as "limited to the testis (pT1)" according to the cancer classification of TNM (TNM classification system. T: extent of the primary tumour, N: the absence or presence and extent of regional lymph node metastasis, M: the absence or presence of distant metastasis) [13]. After pathologic diagnosis and tumor staging, the patient was informed about the rarity of his disease and suggested treatment strategies with their complications. Lymph node sampling was suggested; however, the patient refused the surgery due to its complications (possibility of retrograde ejaculation). Therefore, the patient was taken into close follow-up. The patient was not a high-risk patient for detecting contralateral carcinoma in situ (CIS), i.e., with a testicular volume of less than 12 ml, no history of cryptorchidism, and any ultrasonographic abnormalities. No biopsy or fixation was done to the other normal testis. The patient is disease-free in the post-operative 7th month of the surgery.

## Conclusion

Although sex cord-stromal tumors of the testis are rare, there are no standardized treatments and follow-up models for undifferentiated types in the literature because these studies are usually short-term clinical follow-ups and case reports. In our opinion, advances in molecular genetics, immunohistochemistry in combination with larger clinical series, will help the diagnosis and treatment of these cases in the future.


### Acknowledgement

None.


### List of abbreviations

| | |
|---|---|
| AFP | Alpha-fetoprotein |
| hCG | β-human chorionic gonadotropin |
| LDH | Lactate dehydrogenase |

### Consent for publication

Informed consent was obtained from the patient.

### Ethical approval

Ethical approval is not required at our institute to publish an anonymous case report.


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### References


1. Smith ZL, Werntz RP, Eggener SE. Testicular cancer epidemiology, diagnosis, and management. Med Clin North Am 2018; 102(2):251–64. https://doi.org/10.1016/j.mcna.2017.10.003
2. Idrees MT, Ulbright TM, Oliva E, Young RH, Montironi R, Egevad L, et al. The World Health Organization 2016 classification of testicular non-germ cell tumours: a review and update from the International Society of Urological Pathology Testis Consultation Panel. Histopathology 2017; 70(4):513–21. https://doi.org/10.1111/his.13115
3. Silberstein JL, Bazzi WM, Vertosick E, Carver BS, Bosl GJ, Feldman DR, et al. Clinical outcomes of local and metastatic testicular sex cord-stromal tumors. J Urol 2014; 192(2):415–9. https://doi.org/10.1016/j.juro.2014.01.104
4. Sewell J, Osborne JR, Basto M, Sapre N, Kostos P, Raj M. Unclassified sex cord-stromal tumour of the testis—how to diagnose the unclassified. J Clin Urol 2017; 11:372–5. https://doi.org/10.1177/2051415817739715
5. Bremmer F, Behnes CL, Radzun HJ, Bettstetter M, Schweyer S. Tumoren des Gonadenstromas. Pathologe 2014; 35(3): 245–51. https://doi.org/10.1007/s00292-014-1901-7
6. Roth LM, Lyu B, Cheng L. Perspectives on testicular sex cord-stromal tumors and those composed of both germ cells and sex cord-stromal derivatives with a comparison to corresponding ovarian neoplasms. Human Pathol 2017; 65:1–14. https://doi.org/10.1016/j.humpath.2017.04.009
7. Kim I, Young RH, Scully RE. Leydig cell tumors of the testis. A clinicopathological analysis of 40 cases and review of the literature. Am J Surg Pathol 1985; 9:177–92.

8. Brekelbaum CE, Abreo F, Fowler M, Kubricht WS, Eastham JA. Undifferentiated sex cord/stromal testis tumor. Urology 2000; 55(3):436. https:doi.org/10.1016/S0090-4295(99)00482-3
9. Tarjan M, Sarkissov G, Tot T. Unclassified sex cord/gonadal stromal testis tumor with predominance of spindle cells. Acta pathologica, microbiologica, et immunologica Scandinavica 2006; 114(6):465–9. https://doi.org/10.1111/j.1600-0463.2006.apm_400.x
10. Magro G, Gurrera A, Gangemi P, Saita A, Greco P. Incompletely differentiated (unclassified) sex cord/gonadal stromal tumor of the testis with a 'pure' spindle cell component: report of a case with diagnostic and histogenetic considerations. Pathol Res Pract 2007; 203:759–62. https://doi.org/10.1016/j.prp.2007.05.011
11. Sesterhenn IA, Cheville J, Woodward PJ, Damjanov I, et al. Sex cord/gonadal stromal tumours. In pathology and genetics of tumours of the urinary system and male genital organs. In: Eble JN, Sauter G, Epstein JI, et al., editors. World Health Organization classification of tumours. Lyon: IARC Press; 2004, p 251.
12. Rove KO, Maroni PD, Cost CR, Fairclough DL, Giannarini G, Harris AK, et al. Pathologic risk factors for metastatic disease in postpubertal patients with clinical stage I testicular stromal tumors. Urology 2016; 97:138–44. https://doi.org/10.1016/j.urology.2016.06.066
13. Brierly JD, Gospodarowicz MK, Wittekind C, eds. TNM classification of malignant tumours. 8th ed. Oxford: Wiley; 2017 (e-book).

## Summary of the case

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|---|---|---|
| **Patient (gender, age)** | 1 | 19 years-old, male |
| **Final Diagnosis** | 2 | Undifferentiated sex-cord stromal tumor of the testis |
| **Symptoms** | 3 | Painful enlargement of the testis |
| **Medications** | 4 | Radical orchiectomy |
| **Clinical Procedure** | 5 | Close clinical follow-up |
| **Specialty** | 6 | Urologic oncology |