CASE REPORT

Epidermoid cyst of the testis

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Summary Testicular epidermoid cysts are rare, benign, keratin-containing intratesticular neoplasms. Preoperative sonography and biopsy are important criteria for the selection of testicular-preserving operations. More than 300 cases of testicular epidermoid cysts have been reported in the literature. We present a case of a 23-year-old man who complained of an asymptomatic right testicular mass, which, when examined, was found to be a firm, small-sized, mass lesion with a smooth surface. On ultrasonography, this mass appeared as a heterogeneous and well-demarcated intratesticular lesion. All laboratory investigations, including tumor markers, were normal. Histological diagnosis was an epidermoid cyst of the testis, and the obtained testicular tissue was normal.

1. Introduction

Extratesticular tumors are more common than intratesticular tumors, and more than 95% of intratesticular tumors are malignant.1 Benign intratesticular tumors are rare and represent less than 1% of all testicular tumors. Epidermoid cyst of the testis is a rare benign intratesticular tumor. Radical orchiectomy is the standard procedure of treatment for malignant testicular tumors. Therefore, determining modes for testis preservation is extremely important for benign intratesticular tumors. Ultrasonography is the modality of choice for the characterization of palpable testicular lesions. This study presents a case of an epidermoid cyst of the testis and a review of sonographic images and pathologic features of the epidermoid cyst reported in the literature.

2. Case report

A 23-year-old man, who denied any systemic disease, history of recent trauma, or history of urinary tract infection, noted a right testicular mass for more than 5 years. A physical examination showed a hard mass, measuring 2 cm × 3 cm, without pain and with a tender sensation. All laboratory investigations, including tumor markers, were normal. Histological diagnosis was an epidermoid cyst of the testis, and the obtained testicular tissue was normal.
markers (AFP, beta-HCG, and LDH) were normal. A scrotal ultrasound with Doppler was performed, which revealed a 2–3 cm well-circumscribed heterogenic intratesticular mass with an echogenic rim (Fig. 1). No blood flow to the mass was detected by the Doppler ultrasound imaging (Fig. 1). The patient underwent enucleation of the mass through a right inguinal incision. An intraoperative frozen section was interpreted, and the regular pathological examination showed an epidermoid cyst and no evidence of malignancy. Enucleation of the lesion was then performed. The final pathology report stated that the mass was an epidermoid cyst without teratoid elements (Fig. 2). No recurrence of the tumor was noted after a 1-year follow-up.

3. Discussion

Testicular cancer is relatively uncommon, with only approximately 5500 new cases being reported per year in the United States. Extratesticular tumors are more common than intratesticular tumors, and more than 95% of intratesticular tumors are malignant. Although benign intratesticular tumors are rare, its diagnosis is important to avoid unnecessary surgical intervention.

Since Dockerty and Priestley first described epidermoid cysts of the testis in 1942, approximately 300 cases have been reported in the literature. Testicular epidermoid cysts are benign keratin-containing tumors, comprising up to 14% of childhood testicular neoplasms and 2% of adult testicular neoplasms. They occur in any age group from young children to the elderly, but are most common in people between the ages of 10 and 40 years. A firm, nontender, testicular mass is palpable in most cases. Serum levels of germ cell tumor markers are normal. The keratinized epithelium interspersed with connective tissue may provide this lesion with the classic “onion peel” configuration on an ultrasound. Epidermoid cysts range from 1 to 3 cm in diameter. Ultrasound findings of epidermoid cysts include

![Figure 1](image1.png)  
(A) A well-circumscribed heterogeneous mass (B) with an echogenic rim (black arrow). (C) Color Doppler ultrasonography reveals no vascularity within mass (white arrow).

![Figure 2](image2.png)  
(A) A histological section of a lesion of the epidermoid cyst (H&E 50×). (B) Microscopically shown compressed normal testicular parenchyma (red arrow), stratified squamous epithelial cell (black arrow), and cyst lumen filled with keratin debris (white arrow) (H&E 100×). H&E = hematoxylin and eosin.
a well-circumscribed heterogeneous mass with an echo-
genic rim (keratin deposition), and the color Doppler ultrasound examination shows no vascularity within the mass. In addition, ultrasonographic appearance varies with the maturation, compactness, and quantity of keratin present within an epidermoid cyst. 

In histology, diagnosis of epidermoid cysts include the following characteristics: (1) a cystic lesion located in the parenchyma of the testis; (2) the cyst containing keratinized debris or amorphous material; (3) the cyst wall composed of a fibrous epithelium; (4) absence of any teratomatous elements or dermal adnexal structures such as hair follicles or sebaceous glands within the cyst wall or testicular parenchyma; and (5) absence of any scars in the remainder of the testicular parenchyma, which might represent a burnt out, malignant germ cell tumor. 

Although ultrasound examination can reliably confirm the intratesticular location of the lesion, the findings are insufficient in specificity to allow a definitive diagnosis, and surgical exploration is usually undertaken. Recent studies have shown that, in addition to an ultrasound examination, other imaging tools may help differentiate epidermoid cysts from other solid intratesticular lesions. By using magnetic resonance imaging, epidermoid cysts have been described to have a target or “bull’s eye” appearance, with a low signal intensity rim and a high intensity of inner structures in both T1- and T2-weighted images. With the use of a contrast-enhanced ultrasound, hyperenhancement is not found in the epidermoid cyst. 

In the pathogenesis of testicular germ cell tumors, the most consistent structural chromosomal abnormality is an isochromosome 12 p, which is a useful diagnostic tool for distinguishing testicular epidermoid cysts from teratoma. 

The treatment of choice is controversial; numerous investigators have considered orchiectomy using an inguinial approach as the standard procedure of treatment in both adults and children. In recent years, however, a number of investigators advocate local excision or enucleation as the treatment of choice in both adults and children. Others believe that patients with no local or metastatic recurrence of the testicular epidermoid cyst should undergo local enucleation. Heidenreich et al conducted a literature review of 300 cases treated by the conservative approach (enucleation or wedge resection) and showed that none of the patients experienced local recurrence of peripheral metastasis. Ross et al believe the testis-sparing operation to be more appropriate in the pediatric population for the following reasons: (1) a greater percentage of pediatric testicular tumors are benign, as compared with adult testicular tumors; (2) teratoma is uniformly benign in the pediatric population; and (3) the risk of contralateral disease (e.g., torsion) is greater in children. 

Some investigators think that the benefits of testis-sparing operation, compared with orchiectomy, include an increase in chances of fertility later in life, even in patients with oligospermia or contralateral disease. However, the cytotoxic effect of an antispermatic reaction on an animal model that received testicular surgery (e.g., orchiectomy or biopsy) induced infertility. Although Steele et al discovered that antisperm antibodies do not develop after biopsy, conflicting data exist for cryptorchidism, varicocele, and testicular biopsies as well. In a recent study, investigators reported that antisperm antibodies in semen are not associated with reproductive outcomes (fertilization and clinical pregnancy rate) after testicular biopsy or excision. 

4. Conclusions

Orchiectomy or testicle-preserving surgery poses a problem for surgeons when a testicular tumor is found. If no clinical or sonographic criteria are reliable for differentiating testicular epidermoid cysts from teratomas or malignant testicular tumors, orchiectomy is the first choice. In conclusion, when an ultrasound reveals an avascular and “onion peel”-like intratesticular tumor with a reference range of serum tumor markers, an epidermoid cyst may be the diagnosis. In addition, testicle-preserving surgery (frozen sections with local excision) may be considered for decreased psychological impact. However, the increased chance of fertility in the event of oligospermia or contralateral disease is controversial, which requires a long-term study.

References


