Case report

Testis-sparing surgery for a post-pubertal testicular dermoid cyst: A case report and literature review

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Abstract

Testicular dermoid cysts are extremely rare. They are classified as benign tumors, and although a radical orchiectomy is the standard procedure for clinically suspicious malignant tumors, if the preoperative prediction is a benign lesion, testis-sparing surgery is a feasible option. We report a testicular dermoid cyst in a 27-year-old male with the clinical presentation of a painless, hard, testicular mass. Testis-sparing surgery was performed, and no tumor recurrence was noted during 6 months’ follow-up. We review the literature on the clinicopathologic features of this rare testicular tumor and the therapeutic recommendations.

1. Introduction

Most intratesticular masses are malignant and require radical orchiectomy. In young patients, testis-sparing surgery for preservation of a testicle is an important issue, for reproductive and psychological reasons. If a benign lesion is predicted before surgery, testis-sparing surgery is an alternative to radical orchiectomy. Testicular dermoid cysts have been classified as benign testicular tumors in previous reports.1,2 Conservative management of a testicular dermoid cyst has been previously reported, and no recurrence was found.3,4 We report a patient with a testicular dermoid cyst who presented with a painless right testicular mass.

2. Case report

A 27-year-old previously healthy male presented with a painless right testicular mass of 5 years’ duration. The mass had not progressively enlarged. There was no history of trauma or infection. Physical examination revealed a right testicular mass of approximately 2.0 × 2.0 cm, the mass was hard in consistency, with a smooth surface, and no tenderness. No palpable lesion was found in the left testicle. Levels of serum α-fetoprotein and human chorionic gonadotrophin were within normal limits. Scrotal ultrasound showed a well-circumscribed mass measuring 2.0 × 2.0 × 1.5 cm with a heterogeneous echotexture and a large calcified area (Figure 1A). There was no evidence of increased flow in the right testicular tumor on color Doppler ultrasonography. Abdominopelvic computed tomography showed a calcified right testicular mass without enhancement after contrast medium administration and no lymph node enlargement (Figures 2A and 2B). A chest radiograph revealed nothing remarkable.

Testis-sparing surgery was suggested for this patient, because a benign testicular cystic tumor was the first choice diagnosis. Subsequently, testis-sparing surgery was performed by inguinal access. The spermatic cord was isolated and occluded before tumor excision. The mass was then palpated, and excised with a grossly negative margin. An intraoperative biopsy of the adjacent testicular parenchyma was performed; pathologic examination demonstrated a benign tumor with no malignant change. The final pathology report revealed an attenuated lining of mature squamous cells (Figures 3A and 3B), covered by fibrotic tissue with focal eosinophilic glands (Figures 3C and 3D). Some calcified spots were also observed. No malignant change or immature component was found. The histological diagnosis of a dermoid cyst was confirmed on the basis of these findings. After 6 months of follow-up, the patient remained asymptomatic. The operated testis was normal on palpation with a normal parenchyma on ultrasound (Figure 1B).

3. Discussion

Testicular dermoid cysts are rare testicular tumors that require a pathological diagnosis. The pathological features are:
Figure 1. (A) Testicular ultrasound showing a round heterogeneous and hypoechoic intratesticular cystic mass with a regular border, which contains a large calcified area associated with distal acoustic shadowing. (B) Postoperative ultrasound showing normal parenchyma of the right testis.

Figure 2. Computed tomography showing (A) a right calcified testicular mass (black arrow); (B) no enhancement after contrast medium administration (white arrow).

Figure 3. Testis showing a cystic lesion lined by attenuated stratified squamous epithelium. The cystic wall shows diffuse hyalinization (A: hematoxylin and eosin ×40; B: hematoxylin and eosin, ×100). Sweat glands (C) and sebaceous glands (D) are present in the wall (hematoxylin and eosin, ×100).
ectodermal derivatives only, with no mesodermal or endodermal tissue; and (2) a fibrotic layer on the external wall of the cyst, which is lined internally with squamous epithelial cells.1 Dermoid cysts are also known as mature or benign cystic teratomas. Postpubertal teratomas, however, have malignant potential, and radical surgery is generally recommended. Ulbright and Srigley suggested that dermoid cysts of the testes should be separately classified from mature testicular teratomas, because of the benign natural history of testicular dermoid cysts.1 Mostofi et al demonstrated that testicular dermoid cysts consist of a squamous epithelial lining with skin appendages, such as hair and sebaceous glands.2 They also classified testicular dermoid cysts as a specialized form of mature teratoma, and no metastasis was found in their patients.5 The pathogenetic pathways also differ for postpubertal testicular teratomas and dermoid cysts. Dermoid cysts are directly transformed from a nonmalignant germ cell, while postpubertal mature teratomas are differentiated from an invasive malignant cell tumor through intratubular germ cell neoplasia of the unclassified type.1 According to previous reports, testicular dermoid cysts should be separated from postpubertal mature teratomas.

In most reported cases of testicular dermoid cyst treated by testis-sparing surgery or orchiectomy, no metastatic lesion was present.1,3,6 The only exception was that of a 52-year-old patient diagnosed with a large testicular dermoid cyst and metastatic adenocarcinoma of the skin, reported by Kasai et al.7 They found that the skin mucinous adenocarcinoma originated from the gastrointestinal epithelium in the dermoid cyst of the testis. In ovarian dermoid cysts, secondary malignancies may occur in older patients with a long-standing dermoid cyst. Similar to the patient reported by Kasai et al.,7 the size of the right scrotal mass is similar to that of a child’s head. As metastatic lesions have been reported in a few cases of ovarian and testicular dermoid cysts, secondary malignant change should be considered in patients who have a long-standing dermoid cyst.

Preservation of a testicle is an important issue for a young patient, because of the psychological and reproductive implications. Organ-sparing surgery can be attempted in particular situations, such as synchronous bilateral testicular tumors, a tumor in a solitary testis, or metachronous contralateral tumors with a small tumor volume. In recent years, testicular-sparing surgery has been successfully performed in cases where the preoperative likelihood of benign disease was high.8,9 In patients with small, malignant germ cell tumors, testicular-sparing surgery coupled with local adjuvant therapy showed good oncologic control in most cases.10 An intraoperative frozen-section examination can accurately diagnose testicular cancer,9 and radical orchiectomy should be performed if an equivocal lesion is found. Because of the benign nature of testicular dermoid cysts, testis-sparing surgery can be attempted in young patients with a small tumor if the intraoperative frozen-section examination shows a benign lesion.

4. Conclusion

Testicular dermoid cysts are rare, benign testicular tumors that are distinct from mature teratomas. If the clinical diagnosis and intraoperative frozen-section examination show a benign lesion, testis-sparing surgery may be appropriate for young patients.

References