Epidermoid Cyst Of The Testis: A Case Report and Review Of The Literature

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Article ID: WMC001388
Article Type: Case Report
Submitted on: 19-Dec-2010, 04:19:22 PM GMT   Published on: 20-Dec-2010, 04:35:00 PM GMT
Article URL: http://www.webmedcentral.com/article_view/1388
Subject Categories: UROLOGY
Keywords: Epidermoid cyst; Testis; Onion Ring appearance; bull's eye appearance; target appearance; squamous epithelium; keratinisation.

How to cite the article: Venyo A, Kattedath M, Benatar B. Epidermoid Cyst Of The Testis: A Case Report and Review Of The Literature . WebmedCentral UROLOGY 2010;1(12):WMC001388

Source(s) of Funding: None

Competing Interests: None
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Abstract

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Abstract:
“Background”
Epidermoid cyst of the testis is a rare benign tumour. Controversies have existed with regard to the management of epidermoid cyst of testis. Whilst some surgeons have performed radical orchidectomy, others have adopted a conservative approach.

“Objectives”
* To report a case of epidermoid cyst of right testis treated by radical orchidectomy.
* To review the literature on the management of epidermoid cyst of testis in order to suggest the appropriate method of treatment.

“Case Report”
* A 22-years old man presented with a painless hard mass in the lower pole of the right testis. His serum B–HCG, AFP and LDH were normal. Ultrasound-scan of the testes revealed a 15 mm hypo-dense ring shaped mass in the lower pole of the right testis with no evidence of Doppler flow within the right testicular mass compatible with an epidermoid cyst and subsequent further scan was recommended by the radiologist. However, a multi-disciplinary team decided that a radical orchidectomy should be performed. A trans-inguinal radical orchidectomy was performed and the histology confirmed epidermoid cyst of the testis.

Literature review has revealed no recurrence following treatment of epidermoid cyst of testis by radical orchidectomy or conservative surgery.

Conclusion
If ultrasound scan confirms features of epidermoid cyst of testis provided the serum levels of AFP, β-HCG and LDH are normal, a conservative approach should be adopted (partial orchidectomy or observation and follow-up ultrasound).

Key Words: Epidermoid cyst; Testis; Onion Ring appearance; bull’s eye appearance; target appearance; squamous epithelium; keratinisation.

Introduction
Epidermoid cyst of the testis is a rare benign lesion without report of metastasis. It cannot be differentiated reliably from the more common malignant testicular mass on clinical examination. Because of the rarity of the lesion the unaccustomed practitioner may be unfamiliar with its diagnosis and management. A case of epidermoid cyst of the right testis is reported with a review of the literature.

Case Report

A 22 years old gentleman presented with an incidental finding of a painless right testicular swelling of two months duration. He had no past history of torsion, trauma, vasectomy, testicular surgery urinary tract infection or epididymitis.

Clinical examination of the patient revealed a normal left testis, epididymis and cord structures on the left. A 1.5 centimetre irregular hard mass was found at the lower pole of the right testis. It was difficult to differentiate the right testicular mass from the epididymis. The upper pole of the right testis and the right spermatic cord structures were found to be normal.

His serum alpha-feto protein (AFP), beta human chorionic gonadotrophin (β-HCG) and lactic dehydrogenase (LDH) levels were normal (serum AFP...
He had an ultrasound scan of testes and scrotal contents which revealed the following: a 15mm hypodense ring shaped mass in the lower pole of the right testicle (see Illustration 1); no evidence of Doppler flow within the right lower pole testicular mass (see Illustration 2); a normal left testicle (see Illustration 3); normal epididymi on both sides. The radiologist who performed the ultrasound scan concluded that there was a mass in the right testis and the appearances were more compatible with epidermoid cyst. The radiologist recommended that a follow-up ultrasound scan should be performed in 3 months and clinical correlation with tumour markers was required.

The case was discussed at a Multi-Disciplinary Team (MDT) meeting. Despite the ultrasound scan report and the normal tumour marker levels, the MDT recommended that a right radical orchidectomy should be performed. In view of the recommendation of the MDT, a right radical orchidectomy was performed and a right testicular prosthesis was inserted at the same time. The patient has had no post operative complications.

Histology of the right radical orchidectomy specimen was reported as follows:

Macroscopic examination of the specimen revealed a testis measuring 50x30x25 mm with paratesticular tissue (110x30x15 mm). On opening a laminated rounded tumour was noted at one pole measuring up to 18x15x13mm. Block sections were taken for microscopic examination from: vas deferens; vascular resection margin; cord close to testis; epididymis; normal testis; tumour.

Microscopic examination of sections from the testis, showed the presence of a benign epidermoid cyst (see Illustrations 4 and 5). The cyst was observed to be lined by flattened squamous epithelium showing keratinisation, and the cyst was filled with laminated keratinaceous material. The surrounding testicular tissue was noted to be normal, and there was no evidence of intratubular germ cell neoplasia. The adnexal tissues of the testis were within normal limits. The above histological findings would clearly be consistent with epidermoid cyst of testis.

The patient has remained well without any evidence of recurrence after two years and has been discharged from follow-up.

Discussion

Epidermoid cyst of the testis, which accounts for 1% to 2% of all testicular lesions, was first described in 1942 by Dockerty and Priestley1. Epidermoid cyst of the testis is a rare benign lesion which has a controversial histological origin; in view of this the clinical management of the cyst has remained controversial over a number of decades 2, 3.

Epidermoid cysts of the testis have been reported in Asians and white men. The reported ages of patients with epidermoid cysts of the testis range from 3 years to 77 years, with the majority of cases occurring in the 2nd to the 4th decades of life 2; 3; 4.

It has been suggested that epidermoid cyst of the testis is slightly more prevalent in the right testis in comparison with the left testis 2; 4; 5.

One case of bilateral epidermoid cysts has been reported. On the other hand, four cases of multiple epidermoid cysts have been reported 2; 4.

**Multiple epidermoid cysts have been found in association with:**

* Gardner syndrome (one case)
* Klinefelter syndrome (two cases)
* Microscopic focus of primary carcinoid tumour in the cyst wall 2; 3; 4.

Multiple epidermoid cysts have occasionally been reported in cryptorchid testes 2; 3.

Clinically one cannot differentiate epidermoid cyst of the testis from the more common malignant tumour of the testis. The majority of patients present with an asymptomatic testicular lump which is detected either during physical examination or at self examination as a painless, firm and smooth mass with a mean diameter of two to three centimetres 1-8. Nevertheless, a minority of patients have reported scrotal pain, vague scrotal discomfort, or scrotal enlargement1-5. Five patients have been reported in which a palpable mass had been present for a variable period between one month and five years 7.

Ultrasound scan remains the most commonly used radiological tool in the pre-operative diagnosis of epidermoid cysts of the testis. Ultrasound scan usually reveals an intratesticular lesion, which is well-circumscribed, with a normal surrounding testis. In the case of epidermoid cyst of testis Ultrasound scan may reveal:

* alternating hypoechoic and hyperechoic concentric rings (onion ring appearance) or
* hypoechoic concentric ring surrounding an echogenic centre, with or without a hyperechoic rim (“bull’s eye” or “target” appearance 7; 8.

It has been reported that in some studies, investigators have incorporated magnetic resonance imaging (MRI) in the diagnosis of epidermoid cyst of testis 7; 9; 11. Langer and associates 7 described alternating concentric rings of low and high signal intensity on T1- and T2- weighted images. Fu and associates 9, reported that the cyst had a peripheral
rim with low signal intensity on both T1- and T2-weighted images as well as a circumferential zone of higher intensity; surrounding a low-signal-intensity central zone.

Loya and associates 10 have stated that:
* The central echogenic center seen at ultrasound scan corresponds with the lower-signal-intensity zone seen at MRI and this is thought to represent keratin debris.
* The hypoechogenicity or alternating echogenicity seen at ultrasound corresponds to the surrounding higher signal intensity seen at MRI and this represents the lipid- and water – containing material of the cyst.
* The squamous cell-lined capsule creates a hyperechogenic rim at ultrasound and a low-signal-intensity rim at MRI.
* No contrast material enhancement has been demonstrated at MRI, nor has the lesion been shown to be vascular at ultrasound.
* The unique onion ring appearance first described by Malvica 8 in 1993 may be used to distinguish epidermoid cyst from other possible masses in the testis.

Loya and co-workers 11 also stated that:
* Epidermoid cysts of the testis may be differentiated from simple and tunica albuginea cysts which are completely anechoic.
* Like tumours, granulomatous and chronic inflammatory processes may have a rim or capsule, but they are more likely to have increased vascularity.
* The lack of enhancement at MRI may also help differentiate epidermoid cysts from neoplasms.
* Abscesses may also have a cystic appearance, although other ultrasound findings include “irregular borders with increased vascularity of the surrounding parenchyma”.

Dogra and associates 10 stated that on rare occasions, infarction with internal haemorrhage has been described as a solid mass with internal hypoechoic region.

There are a number of postulates regarding the embryonic origin of epidermoid cyst of testis 9. The prevailing opinion has been that the lesion represents monodermal development of a teratoma 2. Other authors have suggested metaplasia of the rete testis or seminiferous epithelium to be the aetiology 1-9.

**The guidelines set out by Price 6 for the identification of an intratesticular lesion as an epidermoid cyst include:**

1. The lesion must be an intraparenchyma cyst
2. The lumen must contain keratin,
3. The cyst wall should contain fibrous tissue with a complete or incomplete inner lining of squamous epithelium,
4. The cyst must contain no teratomatous components (sebaceous glands, hair), and
5. No scar may be seen in the remaining testicular parenchyma.

The presence of teratomatous components and a parenchymal scar signify a burnt-out malignant germ cell tumour.

Dickmann and Loy 5 observed that if testicular intraepithelial neoplasia (carcinoma in situ of the testis) is present in the adjacent tissue, the lesion should be regarded as a true teratoma and not a benign epidermoid cyst.

Controversies exist regarding the management of epidermoid cyst of the testis. Previously the consensus of opinion was that orchiectomy was necessary to arrive at a histologic diagnosis of the lesion. Nevertheless, numerous reports now have stated that epidermoid cyst can be properly diagnosed on the basis of the specific radiological features described in a patient with negative tumour markers (α-fetoprotein and β-human chorionic gonadotrophin) and a lesion smaller than 3 cm. It has been suggested that in cases like these as long as frozen sections of the lesion demonstrate it to be an epidermoid cyst and two biopsies of the surrounding parenchyma show no testicular intraepithelial neoplasia, the patient may undergo conservative surgery 11. To our knowledge, there has been no report of a subsequent recurrence in any patient with epidermoid cyst of testis, who had undergone organ-preserving surgery; with the longest follow-up being 23 years 3; 4; 5; 7; 8; 11.

In our patient the radiologist diagnosed epidermoid cyst of the right testis and he recommended a repeat ultrasound scan to be performed in three months but the Multi-Disciplinary Team decided that orchiectomy was the best way to ensure that a malignant tumour of testis was not missed. Perhaps in this case the best approach should have been a frozen section for histological confirmation of epidermoid cyst of testis followed by preservation of the testis. Ultrasound scan in this case clearly revealed approximately a 15 millimeter, hypo-dense ring shaped mass in the lower pole of the right testis with no evidence of Doppler flow within the testicular mass (no increased vascularity). The ultrasound findings are very typical of epidermoid cyst of the testis. In addition the serum levels of β-human chorionic gonadotrophin, α-fetoprotein and lactic dehydrogenase were normal. Histological examination in this case also revealed a right radical orchiectomy specimen which was found on opening to be macroscopically a laminated tumour at the lower pole of the testis measuring 18x15x13mm. (Figure 1) Sections taken from the tests, showed the presence of a benign epidermoid cyst. This cyst was lined by
flattened squamous epithelium showing keratinisation, and the cyst was filled with laminated keratinaceous material. The surrounding testicular tissue was normal without any evidence of intratubular germ cell neoplasia. The adnexal tissues of the testis were within normal limits.

We would conclude that if ultrasound scan of a testicular lump reveals typical features of epidermoid cyst of the testis and serum germ cell tumour marker levels are normal then a conservative approach / testis preservation procedures (frozen section) should be undertaken rather than radical orchidectomy. Perhaps such lesions could also be followed up by serial further ultrasound scans.

References

11. Loya A G, Said J W, Grant E G. Epidermoid Cyst of the Testis: Radiologic-Pathologic Correlation. RSNA 2004; can be found at http://radiographics.rsna.org/content/24suppl_1/S243.f
Illustrations

Illustration 1

Illustration 1: Hypo-dense onion ring shaped lesion in lower pole of right testis

Illustration 2

Illustration 2: Hypo-dense lesion in lower pole of testis with no flow on doppler scan
Illustration 3

Illustration 3: Hypo-dense ring shaped lesion in right testis. Left testis is normal

Illustration 4

Illustration 4: Cyst on right, with testicular tissue left (H&E x 100)
Illustration 5

Illustration 5: Cyst on top right, with Seminiferous tubule bottom left (H&E x 400)
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