E-QUID: ANSWER / Genito-urinary imaging

Epidermoid cyst. Answer to the e-quiz “A testicular mass”☆

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Case report

A 23-year-old man consulted for swelling of the left testis. He did not present pain, functional urological signs or general signs. He was referred by his doctor for an ultrasound examination of his testes (Fig. 1). This was followed by a testicular MRI in order to specify the diagnosis (Fig. 2).

Figure 1. Ultrasound assessment. Ultrasound of the left testis.
What is your diagnosis?

After reading the case report, what diagnosis would you choose from the following proposals:
- seminoma;
- epidermoid cyst;
- teratocarcinoma;
- intratesticular haemorrhage;
- abscess.

Discussion

Epidermoid cyst of the testis is a rare and benign lesion. The histological origin is debatable: monodermic development of a teratoma, or pavimentous metaplasia of a surface mesothelium. This cyst accounts for 1 to 2% of all testicular lesions in patients, most of them in their 1920’s to 1940’s. The clinical presentation is indistinct from germ cell tumours: most patients are asymptomatic, with a smooth, firm and painless mass of 2 to 3 cm detected during a medical
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Figure 3. Ultrasound assessment. Ultrasound of the left testis: rounded non-liquid hypoechoogenic mass, where alternating hypo then hyperechoogenic rings are distinguished. Hyperechoegenic centre. The adjacent testis is normal.

Figure 4. Testicular MRI: surface loop antenna, Siemens Magnetom symphony 1.5 T. (a) Axial section T2. (b) Sagittal section T1 without injection of gadolinium. (c) Sagittal section T1 after injection of gadolinium and fat saturation, T1 TSE Fat Sat. (d) Axial section in diffusion mapping (ADC). Well-defined, oval mass in global hyposignal T1 with a centre in hyper T1 not eliminated by fat saturation. In T2, it is relatively heterogeneous, in hypersignal and presents a capsule in hyposignal. In diffusion mapping, the lesion is homogenous with a reduced apparent diffusion coefficient (0.76×10⁻³ mm²/sec). There is no enhancement of the lesion after injection of contrast product. Only a fine contrast of the edge is noted.

Figure 5. Macroscopy.
examination or self-palpation. The ultrasound in the choice examination for the presurgical diagnosis of epidermoid cysts [1–4]. Although non pathognomonic, the appearance is highly characteristic: well-defined, intra-testicular lesion with a normal adjacent testis. The centre is hyperechogenic and the intermediate part presents an alternation of hypo- and hyperechogenic layers making it look like an onion. There is no Doppler flow. Central calcifications as well as a hyperechogenic edge/capsule may be noted [5–7]. Roughly, we have found three types of MRI presentations in the literature:

• target aspect with an alternation of concentric rings in hyper/hypo T1 and T2 related to deposits of epidermoid cells in a water and lipid rich environment. A central zone often stands out in hyposignal T2 and hypersignal T1 Fat Sat, corresponding to keratin debris;
• cystic appearance (hypo-T1 and hyper-T2);
• intermediate heterogeneous appearance in T2, sometimes of lobular form [8, 9].

In any case, the lesion is always well-defined by a fibrous capsule of compact keratin, in hypo-T1/hypo-T2. This capsule is often fine and regular. A thin rise at the edge of the lesion is often described. The ultrasound appearance in our report was especially suggestive. The MRI was less suggestive, although the only basic information provided by the MRI are the well-defined nature of the lesion and, above all, the absence of intraslesional enhancement after injection. We currently do not have a sure account of the behaviour of the cyst in diffusion. The reduction in the diffusion coefficient may be due to its biochemical nature, even though the homogenous character may appear a little surprising. A comparison with the literature was not possible since, as far as we are aware, the literature does not provide any data on this subject. The studies carried out on intracerebral epidermoid cysts give rise to the hypothesis that the restriction of diffusion in these lesions is due to the bonding of water and cholesterol molecules [10]. Finally, the patient benefited from an enucleation and avoided an orchidectomy. As regards the other diagnoses proposed, the haemorrhage secondary to a testicular infarction may also in rare cases resemble a solid mass with internal hypo and hyperechogenic zones. The abscesses may also resemble cysts, even though the edges are often irregular with peripheral hypervascularisation. Tumours, teratocarcinoma or another malignant tumour may also have a similar appearance. In the ultrasound examination, they may sometimes have a target aspect thereby resembling an “onion”. If is therefore necessary to scrupulously look for an irregular and/or poorly defined edge or even a Doppler signal indicating a malignant lesion. PRISE has drawn up anatomo-pathological recommendations for the identification of an epidermoid cyst:

• the lesion should be an intraparenchymatous cyst;
• the light should contain keratin or an amorphous material;
• the wall of the cyst should contain fibrous tissue, fully or partially edged by the pavimentous epithelium. Two surgical biopsies of the neighbouring testicular parenchyma should not reveal intra-epithelial neoplasia: no teratoma-tous element, no cutaneous annexes should be found in the adjacent testicular parenchyma. No hyalin scar (probable vestige of a germ tumour) should be found in the adjacent testicular parenchyma. In our patient, the anatomo-pathology report suggested a typical epidermoid cyst.

The highly specific ultrasound aspect (onion-like appearance and absence of Doppler flow) should be known and call to mind the diagnosis. We think that the MRI should then be systematic. When the ultrasound and remnography criteria (the well-defined nature of the lesion and the absence of contrast enhancement) indicate an epidermoid cyst, the tumoral markers (AFP and BHCG) are negative and the lesion measures less than 3 cm, conservative surgery such as enuc-leation should be discussed. In case of the slightest doubt or dubious radiological appearance, since the epidermoid cyst is much less common than malignant tumours and none of the radiological signs are pathognomonic, the consensual attitude in a young man remains an orchidectomy.

Disclosure of interest
The authors declare that they have no conflicts of interest concerning this article.
References


