Case report

Medical Ultrasonography
2010, Vol. 12, no. 2, 163-166

Focal, asymptomatic epididymal masses – B-mode and color Doppler sonographic evaluation. Case report

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Abstract

We reported the case of an adult male with an extratesticular mass prove to be postoperative a chronic inflammatory process. The importance of B-mode and color Doppler sonography in the differential diagnosis and literature regarding epididymal nodules and tumors of the paratesticular structures (epididymis) is reviewed and discussed.

Keywords: epididymitis, paratesticular mass, ultrasonography

Rezumat

Prezentăm cazul unui pacient cu un nodul extratesticular dovedit a fi postoperator un proces inflamator cronic. Discutăm importanţa ecografiei B-mode şi a ecografiei color Doppler în diagnosticul diferenţial al nodulilor epididimali şi a tumorilor structurilor paratesticulare (epididim) însoţit de o trecere in revistă a datelor din literatură.

Cuvinte cheie: epididimita, masă paratesticulară, ecografie

Introduction

High-resolution real-time sonography with color Doppler imaging is the technique of choice for imaging the epididymitis. Although only 3% of all solid extratesticular masses are malignant [1], previous studies have shown the malignancy rate for solid epididymal masses, to be as high as 16% [2], whereas the rate for neoplastic processes within the epididymis was as high as 25% [3].

Recent studies have suggested that scrotal sonography plays an important role in distinguishing solid masses from inflammatory masses of the epididymis. A small size, the presence of a hyperechoic or hypoechoic rim circumscribing the lesion and little or absent blood flow are important findings when comparing benign neoplastic lesions with inflammatory lesions [4]. However, because of the very low prevalence of epididymal malignancies, the sonographic characteristics of malignant epididymal lesions have not until recently been adequately studied.

Received 6.04.2010 Accepted 14.04.2010
Med Ultrason
2010, Vol. 12, No 2, 163-166
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Presentation of the case

A 34-year old male was referred to the Emergency Urological Department with sudden, painless, swelling of the right scrotum. Clinical examination revealed a small, solid, well defined palpable nodule attached to the external surface of the right testis. The patient reported no fever, and no history of trauma. Ultrasonography by B-mode and color Doppler, of the scrotum, detected a well circumscribed, ellipsoid, mass of mixed echostructure (with distinct calcifications) at the tail of the right epididymis. The mass measured 3.5/1.9 cm and had an increased vascularization. There was also a small con-

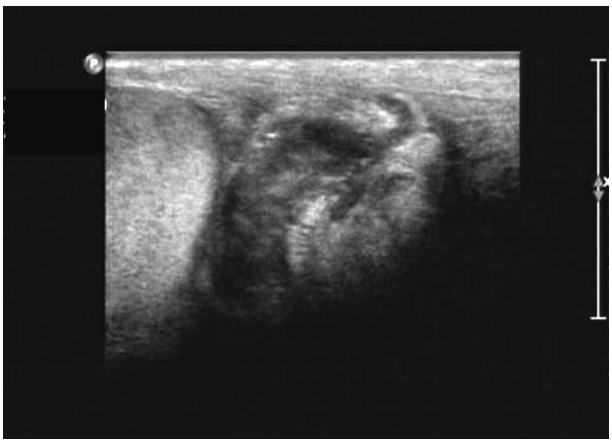


Fig 1. Gray scale ultrasonography of epididymal tale (longitudinal scan): the nodule is well circumscribed, ellipsoid, 3.5x1.9 cm, with mixed echostructure (with distinct calcification).

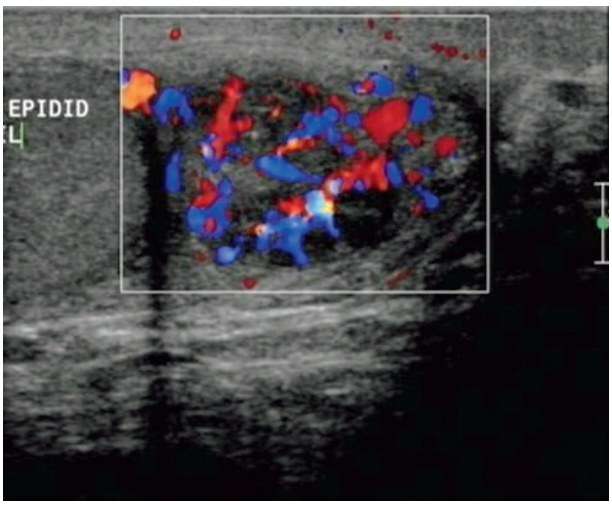


Fig 2. Color Doppler sonography reveal increased vascularity of the epididymal nodule.

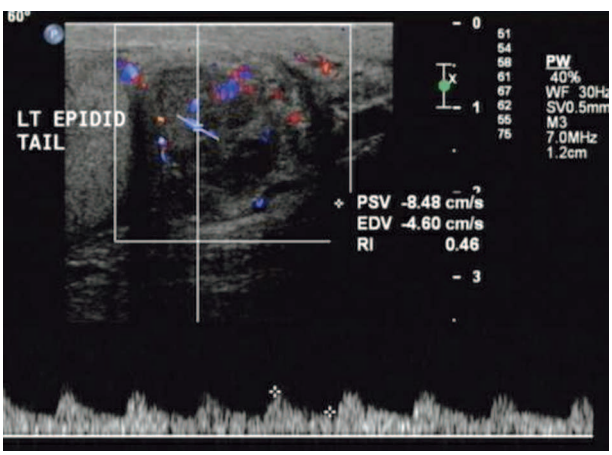


Fig 3. Duplex ultrasonography depicting the tumoral monophasic arterial blood flow with low resisence index.

tralateral hydrocele (fig 1–3). Both testis and the left epididymis (head, body, and tail) were depicted with normal size echogenicity and vascularisation.

Surgical excision was performed and a bulky right epididymis was revealed. Histological examination reported hyperplastic epithelial lining of the epididymis, with some areas of dilated ducts, suggestive of a chronic inflammatory process (chronic epididymitis).

Discussion

According to a recent report by Alleman WG et al [5] most of the epididymal mass are benign. The most common is the cyst, reported in 20%-40% of asymptomatic individuals. They vary in size and almost always arise from the epididymal head. Spermatoceles (retention cysts), which appear in the same region, are more frequent but indistinguishable from the epididymal cysts at US. Spermatocele represents cystic dilatation of tubules of the efferent ductules in the head of the epididymis, and usually occur in middle aged men. They are often associated with a prior vasectomy. When the dimensions are large and the aspect is multilocular, differential diagnosis should be made from a large septated hydrocele (cysts displace the testis, whereas a hydrocele envelopes it) [6]. Sperm granuloma (in 42% of men with a previous vasectomy interpretated as an inflammatory masses resulting from a foreign body giant cell reaction to extravasated sperm) may be another cause of scrotal pain [7].

Adenomatoid tumors, the most common benign neoplasm of the epididymis, account for approximately 30% of tumors, arise from the paratesticular region, usually at the lower pole, and may be solid or cystic [8]. Adenomatoid tumors have also been reported in the spermatic cord and tunica albuginea, where they can grow intratesticulary (indistinguishable in this case from testicular germ cells neoplasm) [6].

Leiomyoma, the second most common benign tumor of the epididymis, may be solid or cystic, with or without calcifications. The tumor adheres to the testis, so clinical examination is unreliable in excluding malignancy; consenquently, removal is indicated [9].

Papillary cystadenomas are strongly related with Von Hippel-Lindau disease. Up to 25% of men with the disease have an epididymal papillary cystadenoma and two thirds of men with papillary cystadenoma (40% of cystadenomas bilateral) have Von Hippel-Lindau disease. Practically the papillary cystadenomas are pathognomonic for Von Hippel-Lindau disease [6].

Invasive behavior is a feature of malignant lesions. Malignant tumors of the epididymis are rare and include sarcomas, metastases and adenocarcinoma. In adults, there are special features of liposarcoma and leiomyosarcoma on CT and MRI. Primary epididymal adenocarcinomas are very rare [5]. The most common cause of solid malignant neoplasms of the epididymis are metastasis (from prostate, stomach, colon and kidney, and leukemia). Lymphoma may also involve the epididymis in 60% of cases, even though genital tract lymphoma is mostly seen in the testis.

Chronic inflammatory processes can result in secondary solid masses in up to 64% of cases due to granulomatous inflammatory reactions: tuberculosis, brucellosis, syphilis, parasitic and fungal infections [5]. The most common of the above is Mycobacterium tuberculosis. The epididymal infection is thought to result from renal disease which extends to the lower genitourinary tract, although hematogenous dissemination is also a possibility. Approximately 25% of patients have bilateral involvement. The ultrasonographic findings include an enlarged epididymis which varies in appearance, ranging from hypoechoic to hyperechoic. Differential diagnosis from a primary testicular mass is often impossible. When the infection disseminates in testis, (epididymo-orchitis), imaging findings include diffuse testis enlargement, a solitary hypoechoic mass, or multiple hypoechoic nodules [3,6].

Yang DM et al. (2003) used gray scale and color Doppler US together with some clinical features for the differential diagnosis of focal epididymal lesions. They found that lesions were larger in patients with tuberculous epididymitis, the hypoechoic or hyperechoic rim was more common in patients with benign epididymal masses and the intralesional blood flow was greater in patients with nonspecific epididymitis [4]. The characteristic finding in tuberculous epididymitis was heterogenous echogenicity of the lesion. This is due to caseation necrosis granuloma and fibrosis of the lesion. In contrast, sonographic findings in non specific epididymitis and benign epididymal masses were usually homogenous [4, 9]. Most of the focal epididymal lesions were hypoechoic and located at the tail of the epididymis [4].

Alleman WG et al. (2008), concluded, that the size of a neoplastic mass along with its vascularity, were significant malignancy markers. The above, combined with the clinical features, could limit the decision, as regard the differential diagnosis and treatment planning. The authors recommend US to be the first step in the evaluation of solid epididymal masses. If the mass is smaller than 1.5 cm. and Doppler flow is absent, a follow up clinical evaluation is scheduled, with or without scrotal follow up sonography. If the size of a solid epididymal mass is 1.5 cm, or greater, with a present Doppler flow, surgical exploration is considered. The presence of calcifications as well as the echogenicity of a mass was not a statistically significant marker, to determine the pathologic nature of the lesion [5].

In our case, the aspect of the epididymal mass was uncertain, having large dimensions, mixed echostructure, and hypervascularization. This was the reason that the excision was justifiable, the patient having a high risk for a malignant lesion. The histological aspect of chronic epididymitis (excluding granulomatous inflammatory reactions) has to be associate with previous genital infection with chlamydia or other kind of bacteria.

Conclusions

Ultrasography can be used to accurately determine whether an abnormality is intratesticular or extratesticular. If the mass is extratesticular and cystic, a specific diagnosis can be made (hydrocele, epididymal cyst, spermatocele) and the mass can be interpreted as benign. Extratesticular solid lesions lack specific sonographic features and when the features are uncertainty, surgery should be planned.

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