Case 13227

Epididymal abscess: the value of Contrast enhanced ultrasound
Published on 10.12.2015

DOI: 10.1594/EURORAD/CASE.13227
ISSN: 1563-4086
Section: Uroradiology & genital male imaging
Area of Interest: Genital / Reproductive system male
Procedure: Diagnostic procedure
Procedure: Contrast agent-intravenous
Imaging Technique: Ultrasound
Imaging Technique: Ultrasound-Colour Doppler
Special Focus: Infection
Case Type: Clinical Cases
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Patient: 86 years, male

Clinical History:
An 86-year-old patient was referred for ultrasound examination of the scrotum due to pain and oedema of the right hemiscrotum.

Imaging Findings:
Ultrasound of the scrotum was performed to evaluate the cause of the symptoms. Grey-scale imaging demonstrated scrotal wall thickening and a right-sided hydrocele containing multiple echogenic septations (Fig. 1). The ipsilateral epididymis was enlarged, heterogeneous and showed increased vascularity on colour Doppler imaging (Fig. 1, 2). A 22 x 19 mm hypoechoic mass with internal echogenic septations was also found lying at the tail of the right epididymis (Fig. 1). Colour Doppler imaging showed increased blood flow signals at the periphery of the lesion (Fig. 2). Contrast-enhanced ultrasound was performed for further characterization of the lesion and exclusion of internal vascularity. After injection of 4.8 mL of microbubbles (SonoVue™, Bracco, SpA, Milan), the mass showed increased peripheral vascularity. There was complete absence of signal within the central aspect of the lesion (Fig. 3).

Discussion:
Abscesses of epididymitis (AE) are infrequent and occur as a complication in less than 6% of cases of epididymitis, especially if severe or untreated [1]. C. trachomatis and N. gonorrhoeae are the main organisms accounting for AE in young men, whereas E. coli and Proteus mirabilis affect patients over 35 years. Although these abscesses usually manifest as acute scrotal pain, some patients present with a painless palpable mass. If the abscess is not promptly treated, it may be further complicated by rupture, formation of cutaneous sinus tracts or formation of sperm granulomas [2, 3]. Ultrasound represents the primary imaging modality for accurate evaluation of the scrotal lesions. AE typically appear as anechoic or hypoechoic areas with ill-defined margins or sometimes a thick capsule. The inflammatory nature of the abscess is suggested by the increased vascularity which is usually seen at the periphery of the lesion, using colour Doppler imaging [1, 2]. However, the central part of the abscess should be strictly avascular, contrary to tumoral lesions or focal orchitis, where increased vascularity can be found [2, 4]. Tuberculous AE were found to be larger and showed less peripheral vascularity compared to pyogenic AE [5]. The overall appearance of abscesses may resemble a tumour and thus accurate imaging is required for differential diagnosis. It is reported that tumours may be detected in 1.3% of cases of epididymitis [4]. Contrast-enhanced ultrasound (CEUS) is an emerging technique which visualizes vascularity in a highly accurate, illustrative and reproducible manner. It can readily
discriminate tumoral lesions from abscesses and infarcts. It is known that neoplasms show moderate to high vascularity whereas abscesses are invariably avascular. This absence of enhancement is simply and characteristically demonstrated using CEUS, which may also detect enhancing internal septations within the abscess [4, 6]. It has been shown that CEUS is more sensitive and specific and establishes more frequently the diagnosis of scrotal diseases compared with conventional ultrasound [7]. Due to the occasional mass effect demonstrated by some abscesses, the vascular supply of the testes may be compromised, affecting testicular viability [2]. Compression of testicular veins may result in infarction which initially appears as testicular hypertrophy with moderately increased vascularity. Then the ischemia may progresses to complete infarction of the testis. CEUS plays a useful role in determining the testicular vascularization and viability [3, 4].

AE should be treated promptly with antibiotics. In some cases surgical drainage may be considered. Depending on the viability of testes, orchiectomy may also be performed [2].

**Differential Diagnosis List:** Epididymal abscess caused by epididymitis., Epididymal abscess, Epididymal tumour, Epididymal haematoma

**Final Diagnosis:** Epididymal abscess caused by epididymitis.

**References:**


Description: Oblique sonogram of the right hemiscrotum shows hydrocele with multiple echogenic septations. Origin: Sidhu PS, King's College Hospital, London, UK
Description: An enlarged and heterogeneous right epididymis was identified along with a hypoechoic and partially heterogeneous mass situated in its tail. Note the thickened scrotal wall. Origin: Sidhu PS, King's College Hospital, London, UK
Description: The hypoechoic mass containing echogenic septations and foci was seen along with thickening of the right scrotal wall. Origin: Sidhu PS, King’s College Hospital, London, UK
Figure 2

Description: Markedly increased vascularity was identified within the enlarged epididymis. Origin: Sidhu PS, King’s College Hospital, London, UK
Description: There was increased vascularity at the periphery of the lesion. Origin: Sidhu PS, King's College Hospital, London, UK
Description: Multiple blood flow signals were found at the periphery of the lesion, along with some greater blood vessels, possibly perfusing internal septations. Origin: Sidhu PS, King's College Hospital, London, UK
Figure 3

**a**

*Description:* Contrast-enhanced ultrasound image with mechanical index of 0.07, at 38 seconds after microbubbles administration demonstrated early increased peripheral vascularity but no blood vessels within the mass. *Origin:* Sidhu PS, King’s College Hospital, London, UK

**b**

*Description:* Contrast-enhanced ultrasound image, at 44 seconds after microbubbles administration clearly confirmed the presence of increased peripheral vascularity but no blood flow within the mass. *Origin:* Sidhu PS, King’s College Hospital, London, UK
Description: The absence of internal vascularity was also confirmed at 58 seconds. Note the normal testicular vascularity and the perfusion of a single vessel near the lesion, in close correlation with Colour Doppler image 2c. Origin: Sidhu PS, King's College Hospital, London, UK