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Scrotal Exploration for Suspected Testicular Torsion: Can we Prevent Unnecessary Surgery?

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Abstract

Testicular pain is a common reason for seeking urgent urological advice and many patients with uncertain diagnosis undergo scrotal exploration. The role of ultrasound in triage of these patients is well recognised, but limited availability out-of-hours and inherent delays often make its use impractical. The aim of this study was to review local practices in relation to scrotal explorations and preoperative ultrasound and to highlight ways for improvement. We completed a retrospective study of 117 emergency scrotal explorations for suspected testicular torsion performed at our hospital in a four year period (2006-2010). Eleven patients (9.40%) had preoperative ultrasound. Analysis indicated that 32 patients (27%) had testicular torsion, 40 (34%) torsion of hydatid of Morgagni, 20 (17%) epididymo-orchitis, 1 (1%) testicular trauma and no cause for pain was found in 24 (21%) of cases. There were seven reported complications (5.98% rate).

A significant proportion of patients undergoing scrotal exploration had pathology not requiring surgery. In cases where pain is of long duration (e.g. >12 hours) and clinical picture not suggestive of testicular torsion, ultrasound may be able to prevent unnecessary surgery by ruling out testicular torsion.

Keywords: Scrotal exploration; Torsion; Testicles; Colour doppler; Ultrasound

Introduction

Testicular pain is a common reason for seeking urgent urological advice and many patients with uncertain diagnosis undergo scrotal exploration. Around 25-35% of patients who present at the emergency department with acute scrotal pain will in fact have a testicular torsion (twisting of the spermatic cord and causing testicular ischaemia) [1,2]. The role of Colour Doppler Ultrasound (CDUS) in triage of these patients and reduction in unnecessary surgery is well recognised. It has been shown that modern CDUS is highly sensitive and specific test for testicular torsion and may also predict likelihood of requiring orchidectomy on exploration [3-6]. Yet, this evidence has not changed the prevailing view based on early studies, that diagnostic performance of CDUS in cases of acute scrotum is questionable. As a consequence, there is a significant resistance to wider availability of CDUS for out-of-hours service, which in turn makes its use impractical.

Methods and Results

We completed a retrospective study of all 117 emergency scrotal explorations for suspected testicular torsion performed at our institution in a four year period (2006-2010). Testicular torsion on exploration was found only in 32 patients (27.35%), whilst others had pathology not requiring surgical treatment: torsion of testicular appendage (34.18%), epididymo-orchitis (17.09%) and no cause (21.36%). Only 11 patients (9.40%) undergoing surgery had preoperative ultrasound with median delay between arrival to casualty and CDUS of just over three hours. CDUS had 100% sensitivity and 71.43% specificity for predicting testicular torsion (4 cases), yet it failed to provide precise diagnosis in seven other scrotal pathology cases (epididymo-orchitis, trauma and torsion of testicular appendage). Seven complications were recorded ranging from wound haematoma to pulmonary oedema (Table 1).

Discussion

In summary, a significant proportion of patients undergoing scrotal exploration at our institution had pathology not requiring surgery. The vast majority of this unnecessary surgery and its complications could have been prevented by timely and accurate CDUS. This prevention also could have led to potential saving of over £100 000 on the basis of NHS cost of CDUS (approximately £50) compared to the cost of urgent scrotal exploration and one night stay in the hospital (approximately £1200).

Yet, CDUS was used only infrequently and with significant delays. Furthermore, whilst CDUS was useful in confirming/ruling out testicular torsion, its utility in diagnosis of other causes of acute testicular pain in our series was limited. The discrepancies between diagnosis on exploration and CDUS may be explained by lack of experience on the part of junior radiologists arising from low frequency of this examination. In our view, the key factor preventing wider use of CDUS is a reluctance to consider the new evidence and re-structure the service to provide this diagnostic modality to patients presenting with acute scrotum.

Another issue is that the most common means for diagnosis of testicular cancer is clinical examination and the results of CDUS. We are not aware of any guidelines suggesting proceeding to a radical orchidectomy for testicular cancer without confirmation on CDUS. It has been confirmed by recent large studies that CDUS for the diagnosis of testicular cancer has 92% sensitivity, 95% specificity, 94% accuracy, 78% positive predictive value and 98% negative predictive value [6]. The respective figures for the diagnosis of testicular torsion are slightly

Complication	Patients
Scrotal hematoma	2
Epididymorchitis/scrotal abscess	2
Chronic testicular pain	1
Pulmonary oedema	2

Table 1: Complications of scrotal exploration.

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superior 94%, 96%, 95.5%, 89.4% and 98%. Therefore CDUS is a highly accurate diagnostic preoperative tool for the diagnosis of testicular torsion and therefore should be used routinely in the triage of patients presenting to the emergency department with acute scrotal pain.

The change in the approach to clinical problem of undiagnosed scrotal pain requires joint effort on the part of urologists and radiologists. If scrotal exploration is to transform from mainly diagnostic to mainly therapeutic procedure, then preoperative CDUS must be utilized to its full potential. The plentiful clinical evidence regarding diagnostic value of CDUS in triage of acute scrotal pain should form foundation of eagerly awaited national and international clinical guidelines, which in turn will provide framework for change in the management of this urological emergency.

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