CASE DISCUSSIONS: ACUTE SCROTAL PAIN IN YOUNG MEN

Acute scrotal pain is distressing for patients and their parents, and its presentation is a concern to the non-urologist. While the ultimate goal is to exclude acute torsion and avoid testicular loss, a careful history and thorough clinical examination may prevent unnecessary hospital referral. Here, the authors explore the lessons from three case scenarios.

CASE 1: TESTICULAR TORSION IN A TEENAGE BOY

A 14 year old boy presents with ongoing intermittent severe scrotal pain following an injury playing rugby a week ago. This episode of pain is associated with vomiting. On examination, the left hemiscrotum is slightly erythematous and tender, with a slightly higher left testis.

Discussion

Testicular torsion accounts for 25-35% of acute scrotal pain in children (50-60% of adolescents), and although this should remain at the forefront of our minds, the aim of the consultation and subsequent management is to achieve a firm diagnosis, with exclusion of alternative pathology.

The classical history of sudden onset testicular pain, radiating to the groin or lower abdomen, associated with nausea and vomiting points towards acute testicular torsion, especially in the adolescent. However in many cases, the history is atypical or intermittent.

History-taking and examination

The starting point of the history has to be the exact time of onset of the pain. This is often difficult to elucidate by direct questioning, therefore working forwards from “when last well” and including daily reference points, such as breakfast time and school hours, can pinpoint the time of onset. Symptoms of systemic upset, possible trauma to the scrotum and urinary symptoms should be assessed. Episodes of previous pain are not uncommon. The congestion seen with an inflammatory process or minor trauma can predispose to torsion, and therefore it is important to have a high threshold of suspicion in boys who experience increasing pain after an initial diagnosis of epididymitis of mild blunt scrotal trauma (for example a rugby injury), as they may have developed testicular torsion as a secondary event.

Clinical examination of the red, angry scrotum is difficult in children, but there is no excuse for not fully assessing and documenting the state of the overlying skin, testes, epididymis, appendix testes and cord.

Examine the groins first, fixing the left hand over both inguinal canals to avoid testicular retraction. The much quoted lie and height of the testes are not reliable clinical signs, but a clearly high-riding testis lying transversely should be immediately referred for scrotal exploration. Scrotal skin changes, such as erythema and oedema, should also raise suspicion, but are late signs. The cremasteric reflex – elicited by lightly stroking the superior medial aspect of the thigh, resulting in elevation of the ipsilateral testicle – is also often absent in torsion, but its presence does not exclude torsion. The GP should aim to exclude a hernia and hydrocele by examination.

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In a study, using a standardised history and examination followed by prompt Doppler ultrasound imaging, 71/79 (89%) had non-torsion, while 8/71 (10.2%) suffered testicular torsion. Although these studies have small numbers of patients, the positive predictors of testicular torsion identified were absence of ipsilateral cremaster reflex, nausea, vomiting and scrotal skin changes. Jefferson et al found nausea and vomiting had positive predictive values of 96% and 98%, respectively, for testicular torsion, advocating for urgent scrotal exploration in patients over 11 years old with acute scrotal pain together with nausea and vomiting.

Further investigations

When acute testicular torsion is diagnosed – or indeed if no diagnosis is reached following history
and examination – urgent surgical exploration is mandatory. Adjuvant Doppler ultrasound imaging may be used to confirm the diagnosis in equivocal or low suspicion cases, providing it does not cause unnecessary delay.6

The procedure undertaken is scrotal exploration, either via a midline raphe incision or bilateral hemiscrotal incisions, with detorsion of the affected side and bilateral 3-point fixation (orchidopexy) if the testis is viable, or orchidectomy with 3-point fixation of the contralateral side if the testis is non-viable.

Testicular preservation can be achieved when the twist is corrected within 4-6 hours (salvage rate 90-100%); beyond 12 hours, the risk of subsequent testis atrophy is significant with fixation, but some tubule salvage may be possible if the testicular appearance at exploration improves with observation. Testicular salvage has been reported at >24hours; however the likelihood of this is low, due to testicular infarction and necrosis.

### CASE 2: TORTED APPENDIX TESTIS IN A PRE-PUBERTAL BOY

A 10 year old boy presents with sudden onset unilateral scrotal pain at rest. He localises it to the upper left side of his scrotum. He is otherwise well, afebrile, and has no history of urinary symptoms or trauma. On examination, he is discretely tender over the upper pole of the testis with a small area of blue discolouration at this point.

**Discussion**

The torted appendix testis (hydatid of Morgagni/testicular appendage, a remnant of the paramesonephric duct) is a diagnosis achieved only by careful palpation. It is a sessile cyst 2-3mm in diameter attached to the upper pole of the testes within the tunica vaginalis. Torsion of the appendix testis is most common in pre-pubertal boys, at which time it is more common than a diagnosis of acute testicular torsion. Lewis et al looked at 238 cases of acute scrotal pain presenting to the emergency department, and found that 46% had a diagnosis of torsion of the appendix testis, compared to only 16% with testicular torsion. However, 10 of these patients were diagnosed at exploration.8

**Examination**

During examination the child may cry, but persevere. If you are confident with the clinical findings of a discrete swelling at the upper pole of the epididymis that is exquisitely tender, this signifies a torted appendix testis, and an unnecessary scrotal exploration may be avoided. In addition, the “blue dot” sign (a blue discolouration at the upper pole of the testis) may be seen in the early stages in a boy with little intra-scrotal fat, although in the later stages, an inflammatory exudate may mask this sign.

A torted appendix testis can be treated with rest, cooling and non-steroidal anti-inflammatories in the majority of cases. A few boys will require resection of the appendix testis for pain control or infection.

### BOX 1: DIFFERENTIAL DIAGNOSIS OF AN ACUTE SCROTUM IN CHILDREN

- Torsion of testicular appendage (hydatid of Morgagni)
- Epididymitis
- Orchitis
- Hernia
- Varicocele
- Hydrocele
- Tumour
- Ectopic spleen or adrenal tissue
- Trauma
- Cellulitis
- Idiopathic scrotal oedema
- Fat necrosis
- Henoch-Schonlein purpura

### CASE 3: ACUTE EPIDIDYMITIS IN A YOUNG ADULT MAN

A 21 year old sexually active sailor presents with a three day history of right-sided scrotal pain and swelling, associated with a burning sensation on passing urine.

**Discussion**

Once again, achieving a diagnosis is based on history and examination, supplemented by urinanalysis. There are three main diagnoses to consider in this patient: epididymo-orchitis, missed/intermittent testicular torsion or a rapidly growing testicular tumour (although this usually presents as a painless lump).

Acute epididymitis is the most common cause of the above symptoms, believed to be due to ascending bacterial infection caused predominantly by *Chlamydia trachomatis* and *Neisseria gonorrhoeae* under the age of 35, and pathogenic urinary tract bacteria (e.g. *Escherichia coli*) over the age of 35 or where there has been recent instrumentation of the urinary tract, such as catheterisation or cystoscopy. These figures are possibly now somewhat historical; it is unwise to presume the man over 35 is exempt from sexually transmitted infections.

Mumps orchitis, although rare, should also be considered, especially if the patient has been incompletely immunised. Testicular swelling in mumps usually occurs 7-10 days after the characteristic fever and parotid swelling.8 The presentation is slightly more insidious than with torsion, with pain radiating to the inguinal cord; however it can also be very severe.
The patient may be febrile with urinary symptoms or urethral discharge, the overlying scrotal skin may be red, with an enlarged acutely tender epididymis, and there may be a hydrocele evident. In epididymo-orchitis, elevating the testis may reduce pain (Prehn’s sign), as opposed to testicular torsion where elevation of the testis does not usually affect the level of pain.

Treatment is with empirical doxycycline or an appropriate antibiotic for a urinary tract infection (UTI) based on age (e.g. trimethoprim, ofloxacin, ciprofloxacin). Bed rest, scrotal support and analgesia may also help.

A urine dipstick positive for nitrites points towards infection in which case a mid-stream urine (MSU) sample should be sent for culture before starting antibiotics.

Once treatment with doxycycline has been started, the younger patient should be advised to attend the GU clinic and use condom contraception until cleared of STIs. A urethral swab should be sent for gram stain and culture, nucleic acid amplification test or antigen detection test for chlamydia (from first urine sample of the day or urethral swab).

The older man will require a follow up urine culture, renal ultrasound and flow rate to establish a cause for the UTI.

The majority of patients will respond to oral antibiotics, but it is important to ask patients to return if there is no improvement in their symptoms in 72 hours. Although it may take up to six weeks for the swelling to resolve completely, the pain and redness should be markedly improved after three days. If there has been no improvement, the situation has deteriorated and/or pyrexias have developed, the patient should be referred to hospital to exclude the formation of a scrotal abscess.

**BOX 2: RARER CAUSES OF ACUTE TESTICULAR PAIN:**

- Sarcoidosis
- CMV
- Coccidiomycosis
- Filiariasis
- Amiodarone induced
- Leprosy
- Polyarteritis nodosa (PAN) and vasculitis
- Extra-pulmonary tuberculosis

**When to refer an acute scrotum**

If, following a thorough examination (and this is what is often performed badly), a positive diagnosis cannot be achieved, scrotal exploration is indicated. The clinical examination is the key to diagnosis, and every part of the scrotal contents need to be assessed.