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Managing epididymo-orchitis in general practice

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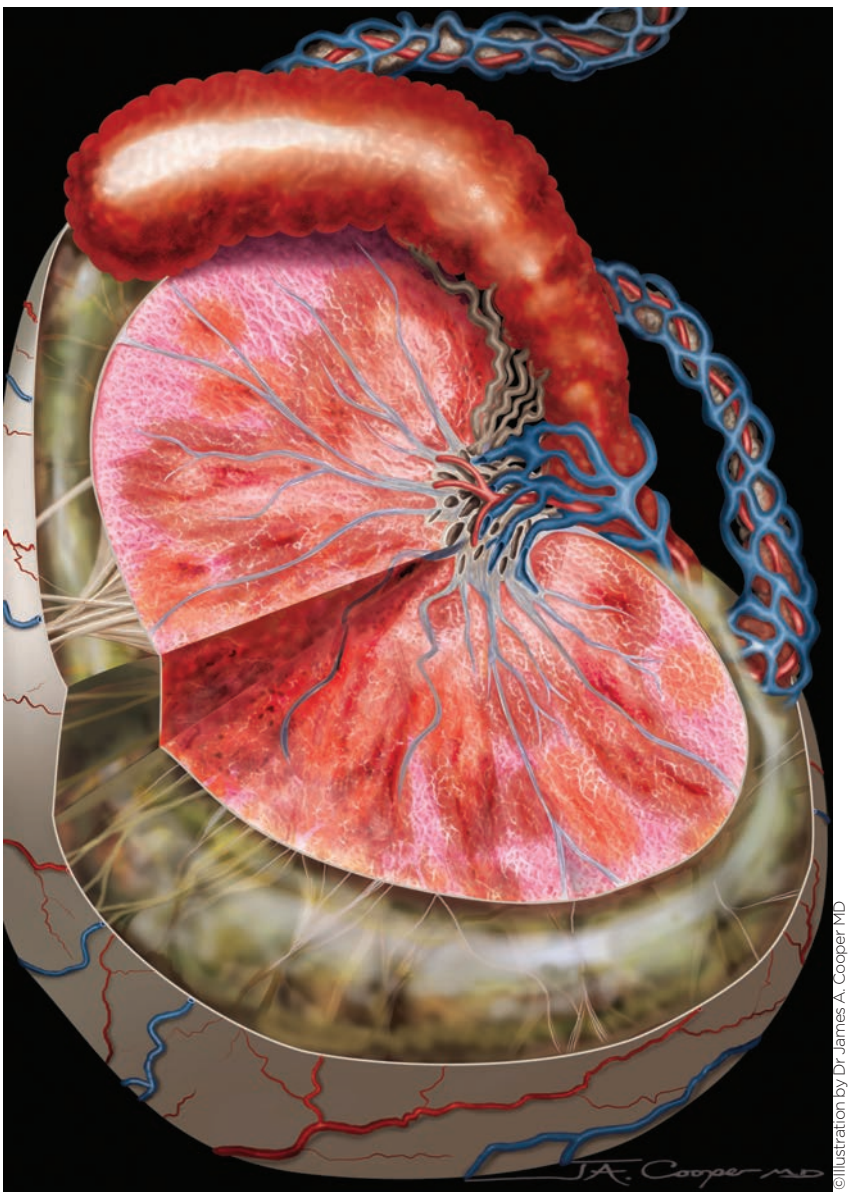

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Swollen testicle

How should patients be examined?

Which patients should be referred?

What are the treatment options?

EPIDIDYMO-ORCHITIS (EO) IS A COMMON UROLOGICAL CONDITION AND THE MAJORITY OF CASES initially present to, and are managed within, primary care.[1] Epididymitis and orchitis normally co-exist with isolated epididymitis being more common than isolated orchitis.[2] EO can be acute (less than six weeks' duration), sub-acute, or chronic if persisting for more than three months[3] and typically presents with testicular pain and swelling.

The incidence of EO was 25/100,000 person-years in UK general practice in 2004-2005.[1] Sexually transmitted infection (STI) is the most common cause in younger men and urinary tract pathogens are the more common culprits in older men, especially those with a functionally abnormal urinary tract and in those who have recently undergone urinary tract instrumentation.

Acute testicular torsion is the most important differential diagnosis of acute testicular pain especially in younger men. If there is any suspicion of testicular torsion, the patient »

should be referred to secondary care without delay.

CAUSES

Often the exact cause of EO is unclear[4] but most guidance is based on a 1979 prospective study of 50 men with acute epididymitis by Berger and colleagues.[5] They identified that the most common pathogens in the under 35s were *Neisseria gonorrhoeae* and *Chlamydia trachomatis* and that *Escherichia coli* was the most common cause of acute epididymitis in the over 35s. Many treatment protocols and guidelines are based on these results.

A 1990 retrospective study[2] from Israel showed a bimodal distribution in those aged 16-30 and 51-70 which would coincide with the findings of STI in the young and urinary tract infection (UTI) in older men with bladder outflow obstruction (BOO) due to prostatic enlargement.

Isolated orchitis is rare and tends to occur in prepubertal boys with mumps.[3] Mumps orchitis presents with acute testicular pain and swelling four to seven days after initial fever and parotid swelling and can be very difficult to distinguish from testicular torsion. Other rarer infective causes of chronic EO include: TB, and fungal and parasitic infections and tend to be associated with HIV and immunosuppression.[6-11] These are summarised in table 1, left, along with rarer non-infectious causes including amiodarone therapy, granulomatous disease[12] and following vasectomy.[13]

Table 1

Causes of epididymo-orchitis

Association	Pathogen
Urinary tract infection	**Common** *Escherichia coli*[5] **Less common**[3] *Proteus spp* *Klebsiella pneumoniae* *Pseudomonas aeruginosa* **Rare** *Salmonella spp*[32] Staphylococcus[33]
Sexually transmitted	**Common**[15] *Chlamydia trachomatis* *Neisseria gonorrhoeae* **Not common**[15] *Ureaplasma urealyticum* *Mycoplasma genitalium*
Other infections	**Bacterial** *Haemophilus influenzae*[3] *Mycobacterium tuberculosis*[34] *Mycobacterium leprae*[35] BCG therapy for bladder cancer[36] Brucella[35] *Nocardia asteroides*[37] **Fungal** *Aspergillus fumigatus*[6] *Blastomyces dermatitidis*[7] *Histoplasma capsulatum*[8] *Coccidioides immitis*[9] *Torulopsis glabrata*[10] *Candida albicans*[11] **Viral** Mumps Mumps vaccine[38] Coxsackie[39] Cytomegalovirus[40] **Other** Syphilis[41] *Schistosoma haematobium*[35] *Schistosoma mansoni*[35] *Wuchereria bancrofti*[35] **Inflammatory** Behçet's disease[15] Polyarteritis nodosa[42] Henoch-Schönlein purpura[43] Granulomatous orchitis[44]
Drugs	Amiodarone[12]
Post vasectomy[13]	
Idiopathic	

'If there is any suspicion of testicular torsion, the patient should be referred immediately to secondary care'

HISTORY AND EXAMINATION

The key to initial assessment is to look for any evidence of torsion (see figure 1, opposite). This would include sudden onset unilateral severe testicular pain and scrotal swelling associated with vomiting with an absent cremasteric reflex and an abnormally lying, very tender testis on examination. Referred pain from a distal ureteric calculus can also present as acute onset testicular pain.

As the most common pathogens in EO are those responsible for UTI and STI, it is important to ask about urinary symptoms as well as a full sexual history to help identify the likely

Table 2

BASHH recommended investigations for epididymo-orchitis[15]

Test	Organism
Gram-stained urethral smear	*N. gonorrhoeae*
Gram-stained preparation from a centrifuged sample of first pass urine (FPU)	*N. gonorrhoeae*
Swab for culture and/or FPU or urethral swab for nucleic acid amplification test (NAAT)	*N. gonorrhoeae*
FPU or urethral swab NAAT	*C. trachomatis*
Microscopy and culture of mid-stream urine (MSU)	Urinary bacteria

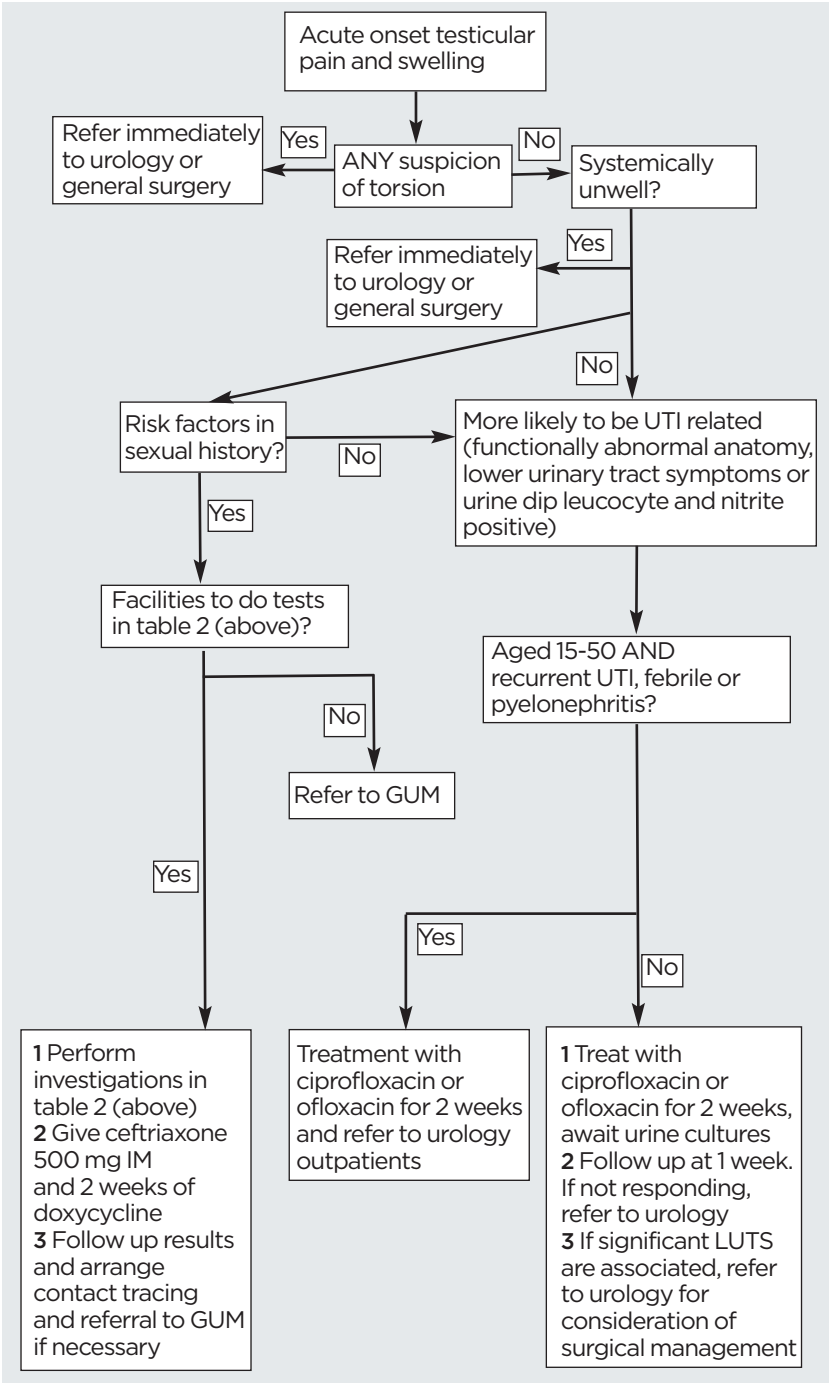

FIGURE 1
Primary care management algorithm for epididymo-orchitis

organism. Men who practise penetrative anal intercourse are at increased risk of enteric organism infection as well as STI.[14]

Examination of a patient with acute EO classically reveals a swollen, tender testis with swelling of the epididymis which starts at the tail (lower pole) and moves up towards the head of the epididymis at the upper pole of the testes. There may also be a tender and thickened spermatic cord, erythema of the scrotum, a reactive hydrocoele and penile discharge, suggestive of *N. gonorrhoeae* infection.[15]

In severe cases, the patient may be systemically unwell with a fever and require hospital admission. Patients with chronic EO will have a tender, large indurated testis.

UTI in men is very often associated with BOO. So it is important to examine the abdomen for a palpable bladder and to perform a digital rectal exam to check for benign prostatic hyperplasia (BPH), prostate cancer, constipation and prostatitis which can also cause EO.

'If symptoms are not resolving, alternative diagnoses of the testicular pain and swelling including neoplasms and rarer causes will need to be investigated'

All patients should be followed up by the GP to ensure that the symptoms are improving at three to seven days.[3,16,17] Acute EO should typically resolve after one to three days but the pain and swelling can take up to four weeks to resolve.[3]

If symptoms are not resolving, alternative diagnoses of the testicular pain and swelling including testicular neoplasms and rarer causes will need to be investigated, see table 1, p22. Complications of EO include testicular infarction, abscess formation, testicular atrophy, and chronic induration and there is some suggestion that infertility can result.[18-20] »

key points

SELECTED BY
Dr Peter Saul
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Epididymitis and orchitis normally co-exist with isolated epididymitis being more common than an isolated orchitis. Epididymo-orchitis (EO) can be acute (less than six weeks' duration), sub-acute, or chronic if persisting for more than three months and typically presents with testicular pain and swelling. Sexually transmitted infection (STI) is the most common cause in younger men and urinary tract pathogens are the more common culprits in older men. Acute testicular torsion is the most important differential diagnosis of acute testicular pain especially in younger men.

The most common pathogens in the under 35s are *Neisseria gonorrhoeae* and *Chlamydia trachomatis* and *Escherichia coli* is the most common cause of acute epididymitis in the over 35s. Isolated orchitis is rare and tends to occur in prepubertal boys with mumps. Other rarer infective causes of chronic EO include: TB, and fungal and parasitic infections and tend to be associated with HIV and immunosuppression.

Evidence of torsion includes sudden onset unilateral severe testicular pain and scrotal swelling associated with vomiting with an absent cremasteric reflex and an abnormally lying, very tender testis on examination. Examination of a patient with acute EO classically reveals a swollen, tender testis with swelling of the epididymis which starts at the lower pole and moves up towards the head of the epididymis at the upper pole of the testes. UTI in men is very often associated with bladder outflow obstruction. So it is important to examine the abdomen for a palpable bladder and to perform a digital rectal exam to check for benign prostatic hyperplasia, prostate cancer, constipation and prostatitis which can also cause EO.

A urine dip is a sensitive and very useful test for diagnosing UTI and should be done on all patients presenting with symptoms of EO. Urine microscopy, culture and sensitivity can then confirm the urinary bacterium and guide treatment. If there is any suspicion of testicular torsion, the patient should be referred to secondary care immediately as surgery is required within four to six hours. Patients who are in severe pain or systemically unwell should be referred to secondary care for analgesia, intravenous antibiotics and hydration.

Antibiotic treatment should be started before microbiological confirmation of the pathogen. If an STI is suspected the BASHH guidelines recommend a 500 mg intramuscular injection of ceftriaxone. For those with risk factors for *N. gonorrhoeae* infection doxycycline 100 mg bd for two weeks is recommended. If a UTI with an enteric organism is suspected, ciprofloxacin 500 mg bd or ofloxacin 200 mg bd for two weeks is recommended.

INVESTIGATIONS

A urine dip is a sensitive and very useful test for diagnosing UTI and should be done on all patients presenting with symptoms of EO. Urine microscopy, culture and sensitivity can then confirm the urinary bacterium and guide treatment.

To investigate an STI-associated EO and in younger patients, the British Association of Sexual Health and HIV (BASHH) guidelines, recommend urethral swabs for Gram staining, gonorrhoea and chlamydial NAAT as well as first pass and mid-stream urine culture.[15] These tests are summarised in table 2, opposite.

BASHH and the European Association of Urology (EAU) guidelines state that the urethral swabs and mid-stream urine samples should be taken before starting empirical antibiotics but this is often not done in practice.[21]

REFERRAL

If there is any suspicion of testicular torsion, the patient should be referred immediately to secondary care (urology or general surgery depending on local arrangements) as surgery is required within four to six hours.[22]

Similarly, if patients are in severe pain or systemically unwell with fever, tachypnoea, tachycardia or hypotension, they should be referred to secondary care for analgesia, intravenous antibiotics and hydration.

If a patient with BPH is suffering from recurrent UTIs, NICE guidance recommends referral to a urologist as recurrent UTIs are a complication of BPH and would be an indication for transurethral resection of the prostate or other surgical intervention.[23]

Men between 15 and 50 do not typically get UTIs and so the EAU guidelines on treatment of urological infection recommend urological referral of this age group if they have a febrile UTI, pyelonephritis, recurrent infections or if a 'complicating factor is suspected'.[24] Another urinary tract cause such as a renal calculus or urethral stricture may be present.

Younger patients or those with a sexual history should be referred to a genitourinary medicine (GUM) department for initial investigations and treatment, if this is not possible in general practice, as well as for contract tracing and treatment.

Any patient whose symptoms are not responding should be referred to urology or GUM ideally with an ultrasound scan of the testes.

TREATMENT

Paracetamol and NSAIDs provide good analgesia. Ice packs and scrotal elevation and supports may also help relieve pain.[3]

Antibiotic treatment should be started before microbiological confirmation of the pathogen.[15] The particular antibiotic depends on the likely pathogen meaning appropriate clinical assessment of the likely source is paramount. Guidelines based on the epidemiology recommend different treatments for the under and over 35s when it is the sexual and urological history that should guide treatment.

'Antibiotic therapy should be started before microbiological confirmation of the pathogen'

If an STI is suspected

The BASHH guidelines recommend a 500 mg intramuscular injection of ceftriaxone to cover EO when a sexual source is suspected. The dose of ceftriaxone has been increased from 250 mg in the earlier guidelines to 500 mg in the current guidelines for the treatment of non-complicated gonorrhoea because of increased resistance of *N. gonorrhoeae* to ceftriaxone.[25, 26] For those with risk factors for *N. gonorrhoeae* infection including previous gonorrhoea or known contact, men who have sex with men or those with a purulent discharge, doxycycline 100 mg bd for two weeks is recommended as there is increased resistance of *N. gonorrhoeae* to quinolones.[26]

For those without urethral swabs showing Gram-negative diplococci, doxycycline 100 mg bd or ofloxacin 200 mg bd for two weeks should be used.[5,27,28] Ofloxacin and doxycycline have been shown to be more effective against *C. trachomatis* than ciprofloxacin.[29]

If a UTI is suspected

If an enteric organism is suspected, ciprofloxacin 500 mg bd or ofloxacin 200 mg bd for two weeks is recommended.[30] Fluoroquinolones

are the preferred antibiotic as they have excellent penetration into the testes.[31]

Ofloxacin covers *C. trachomatis* and the majority of urinary pathogens so can be used to treat most causes of EO. Doxycycline needs to be used if there is any suggestion of *N. gonorrhoeae.* However, if there is any suspicion of an STI, the patient should be referred to GUM where appropriate treatment can be initiated.

CONCLUSION

EO tends to be caused by either urinary tract pathogens or by STI. The majority of cases can be managed in primary care. Without appropriate investigation STIs and functionally abnormal male urinary anatomy may be missed.

In the case of STIs, this would represent a lost opportunity for contact tracing and prevention of further spread of infection.

Similarly, it is unusual for men to suffer UTIs without abnormal functional anatomy and so accurate diagnosis and urological referral for EO could lead to improved urinary symptoms and quality of life.

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