Segmental haemorrhagic infarction of the testis in a paediatric patient: a rare aftermath of epididymitis

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SUMMARY

Testicular infarction is an uncommon finding in paediatric age and is usually due to testicular torsion or trauma causing venous rupture with thrombosis and/or arteriolar obstruction. Other causes of segmental infarction of the testes are represented by polyarteritis nodosa, thromboangiitis obliterans and hypersensitivity angiitis. A few cases of testicular infarction due to epididymitis have been described in the literature related mainly to adult patients. Epididymitis is usually treated in the outpatient setting with close follow-up, but according to our present experience, and reviewing the literature, there may be some cases in which, surgical exploration is mandatory in order to avoid testicular damage.

BACKGROUND

Testicular infarction is a rare complication of epididymitis.^{1 2} Segmental infarction in case of epididymitis is often due to compression of the testis by the adjacent epididymis and oedema of the spermatic cord. Sometimes described in adult patients, it may lead to testicular necrosis and subsequent orchidectomy.³ No paediatric reports have been described in the literature. We report a case of an 18-month-old baby with a sudden onset of epididymitis resulting in segmental haemorrhagic infarction of the testis. Correct ultrasound evaluation and surgical exploration are mandatory in order to relieve testicular discomfort.

CASE PRESENTATION

An 18-month-old baby was brought to our emergency department (ED) with a 2 h history of right-sided scrotal swelling. No history of trauma, gastrointestinal symptoms, vaccination or previous episodes of epididymitis or epididymo-orchitis were referred. Physical examination showed an enlarged and painful right hemi-scrotum, with a markedly thickened wall. Fifteen days before admission, the baby experienced an infection by adenovirus (type 1), as documented by viral culture from a nasopharyngeal specimen.

INVESTIGATIONS

Ultrasound (US) examination showed a large amount of corpuscular fluid with thin septa, marked thickening of the scrotal wall and tunica albuginea. Colour doppler (CD) evaluation showed an increased blood flow in the epididymis. Oral anti-inflammatory therapy based on ibuprofen was started, whereas rest were recommended.

After 24 h the baby was brought again to our ED for worsening of his local condition due to an

increase in right scrotal swelling. A new US evaluation showed an enlarged and vascularised epididymis confirming previous diagnosis of epididymitis. Urine culture was obtained resulting negative for urinary tract infection (UTI). The baby was discharged confirming the prescribed therapy. Physical examination was negative for respiratory or gastrointestinal symptoms.

After another 5 days the patient was admitted to our ED for the third time. Physical examination showed a worsened scrotal swelling with increased local pain involving the lower-right quadrant of the abdomen. US evaluation showed an increase in corpusculated fluid in the right hemi-scrotum with a large amount of fibrotic septa whereas no certain signs of parenchymal blood flow were detected. No signs of hyperchogenic mass, suggestive of torsion of appendix testis, were found (figure 1), and US of the urinary tract was unremarkable. A new specimen of urine for culture was obtained showing no signs of UTI. Blood culture was unremarkable.

DIFFERENTIAL DIAGNOSIS

Mumps was not considered because the child was vaccinated at the age of 1 year. No clinical signs of mumps were detected even if mumps is possible without having pathological signs.

Anomalies of urinary tract were excluded because US and urinalysis were negative for anatomical anomalies and UTI, respectively. For these reasons a VCUG (voiding cysto-urethrogram) was not performed.

TREATMENT

Surgical exploration was carried out. The testis appeared to be incorporated in the tunica vaginalis. A biopsy of the testicle revealed ischaemic appearance of the parenchyma (figure 2). A drainage was left in place for 48 h after the procedure.

Pathological examination showed a segmental haemorrhagic infarction of lamina propria of seminiferous tubules.

OUTCOME AND FOLLOW-UP

After a 1-year follow-up the baby is well and the affected testis is normal in size and blood supply.

DISCUSSION

Epididymitis is an inflammation of the epididymis with or without infection and is usually considered uncommon in younger children. This condition can be subclassified as acute, subacute or chronic based on symptom duration.⁴ The exact incidence is unknown. Several authors reported an incidence between 6% and 44% in all cases of acute scrotum.

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Figure 1 Ultrasound evaluation showing a large amount of corpuscular fluid with thin septa, marked thickening of the scrotal wall (right side). No evident signs of blood flow inside the testis but only peripheral spots were found at the colour Doppler evaluation (left side).

The aetiology can be divided into two categories: specific types such as tuberculosis and non-specific. The last one is most frequently observed in younger children.⁵ In men aged between 14 and 35 years epididymitis is frequently caused by *Neisseria gonorrhoeae* or *Chlamidia trachomatis*.⁴ There are some differences between adults, in which tuberculosis must be considered as one of the possible causes, and children, in which chronic epididymitis does not exist in childhood. Urinary reflux in the ejaculatory duct, detrusor-sphincter dyssynergia, amiodarone administration or systemic infectious diseases are advocated as possible causes.^{4 5} Somekh *et al* showed that, in their series of 44 patients with epididymitis/epididymo-orchitis, 22 (50%)

experienced upper respiratory symptoms in 30 days before the onset of scrotal symptoms and an infection by viral agents or *Mycoplasma pneumoniae* was found in 86% of patients. The isolation of a pathogen in these patients may also not have a direct relationship with inflammatory scrotal diseases but the seasonality highlighted in this study suggests that epididymitis may be considered as a postinfectious disease.⁶ In our case, a respiratory infection by adenovirus type 1, was referred to in recent clinical history.

Treatment of epididymitis in children is generally based on analgesic and anti-inflammatory therapy. Most textbooks state that epididymitis is the result of an infection ascending from the

Figure 2 Intraoperative picture showing ischaemic aspect of the right testis that appears to be incorporated in a markedly thickened tunica vaginalis (white circle).

bladder or urethra and should be treated with a course of antibiotics effective against usual urinary pathogens. However, there are few data to support a bacterial cause of epididymitis in children, and these treatment recommendations are not evidence based.⁷ The incidence of urinary tract infection (UTI) in patients with epididymitis ranges from 0% to 7%.^{5 6} Testicular ischaemia due to epididymitis is rarely seen in adult patients which may lead to testicular atrophy but it has never been described in childhood. Testicular loss in case of epididymitis is due to vascular compression by both swelling of the epididymis and inflammation of the spermatic cord. The subsequent oedema causes lymphatic and venous compression followed by arterial occlusion and/or thrombosis.³ Patients and/or their relatives should be advised of possible complications, including sepsis, abscess and extension of the infection.⁴ Epididymitis can be treated in the outpatient setting with close follow-up, but according to our present experience, and reviewing the literature,^{1-3 8 9} there may be some cases that may require surgical attention. Vordermark *et al*³ affirmed that, surgical exploration must be performed in all patients in which, radionuclide scan gives an evidence of testicular hypoperfusion. Their experience was based on three cases and, in the editorial comment, Martin affirms that this conclusion is subjective and more cases are needed to sustain this conclusion³ and, in addition, radionuclide scan evaluation, cannot be promptly available.

Testicular US is extensively used to detect all the conditions causing vascular hypoperfusion (spermatic cord torsion, missed torsion, abscess formation and parenchymal fracture), Doppler ultrasonography for diagnosis of testicular torsion had 94% sensitivity, 96% specificity, 95.5% accuracy and 89.4% positive predictive value (PPV) and a 98% negative predictive value (NPV).^{10 11} Despite this data it is well known that colour Doppler is not sensitive enough to make any diagnosis of testicular flow in children. In infants sensitivity is much lower. In case of normal flow at the colour Doppler evaluation the possibility of an acute spermatic cord torsion cannot be excluded, especially in younger children, in addition, US may present some problems to differentiate between epididymitis and torsion of the appendix.¹⁰ In case of doubt immediate surgical exploration is mandatory.

Our present experience shows that US can be helpful in diagnosing testicular discomfort due to epididymitis. In many cases epididymitis is a benign condition, considered as a post-infectious disease, that resolves after a few days by using anti-inflammatory drugs, rest and scrotal elevation. In our case, all these shrewdness were employed, but the clinical condition worsened. US showed an increase in corpusculated fluid with a

Learning points

- ▶ In case of epididymitis with blood and urine culture negative, when anti-inflammatory therapy fails and ultrasound (US) shows signs of testicular discomfort (reduction of vascular flow, dislocation and or compression of the testis), surgical exploration may be considered in order to relieve discomfort of the affected testis.
- ▶ Colour Doppler evaluation is not sensitive enough to make any diagnosis of testicular flow in children. In infants the sensitivity is much lower.
- ▶ In case of doubt immediate surgical exploration is mandatory.

large amount of fibrotic septa compressing the testis while non certain signs of blood flow were documented. All these ultrasonographical aspects suggested a compression of both testes and the vascular pedicle.

Competing interests None.

Patient consent Obtained.

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