

Testicular atrophy: A complication of non-mumps orchitis after scrotal exploration for presumed testicular torsion

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Abstract

An acute illness related to the scrotum is a common paediatric surgical emergency. Difficulty in ruling out testicular torsion means that scrotal exploration is often performed for other scrotal pathologies, including orchitis. The clinical course of orchitis is usually benign and long-term sequelae are rare. We describe two adolescent boys, previously vaccinated for mumps, whom had scrotal exploration for presumed testicular torsion. Both were found intraoperatively to have orchitis, and both subsequently developed testicular atrophy, within 2 months post-surgery. These cases demonstrate the rare, but potentially devastating, complication of testicular atrophy that may arise in non-mumps orchitis. The causative pathophysiology may involve some degree of testicular compartment syndrome and subsequent ischaemia. Patients must be made aware of the potential for this outcome and be advised on testicular self-examination after surgery.

Keywords

Adverse effects, atrophy, case report, complications, ischaemia, orchitis, paediatric surgery, scrotum, scrotal exploration, testicular atrophy

Introduction

An acutely affected scrotum is a common paediatric surgical emergency. Difficulty in ruling out testicular torsion means that scrotal exploration is often performed for other scrotal pathologies, including orchitis. The clinical course of orchitis is usually benign and long-term sequelae are rare. We describe two adolescent boys, previously vaccinated for mumps, whom had scrotal exploration for presumed testicular torsion. They were found intraoperatively to have orchitis, and subsequently developed testicular atrophy, within 2 months post-surgery. These cases demonstrate the rare, but potentially devastating, complication of testicular atrophy that may arise in non-mumps orchitis. The causative pathophysiology may involve some degree of testicular compartment syndrome and subsequent ischaemia. Patients must be made aware of the potential for this outcome and advised on testicular self-examination after surgery.

of acute scrotal inflammation. There was no previous significant clinical history. Their episode of acute scrotal inflammation was associated with fever and abdominal pain. They had an ultrasound assessment of the affected testes, which showed reduced or absent vascularity (Table 2 and an ultrasound example, in Figure 1(a)). Urgent scrotal exploration was performed. Intraoperatively, all testes were found to be acutely inflamed, but not torted. Intravenous antibiotics followed by a course of oral antibiotics were instituted in both the boys. Postoperatively, both boys had a wound infection requiring local wound debridement. Follow-up examination revealed nearly total testicular atrophy within the 2 months post-exploration, which was evident clinically and confirmed by ultrasonography (Figure 1(b)).

Case reports

Two adolescent boys, aged 14 and 12 years, presented with cases of acute inflammation of the scrotum (Table 1). Both were previously vaccinated for mumps and had no preceding history suggestive of mumps, prior to their clinical presentation

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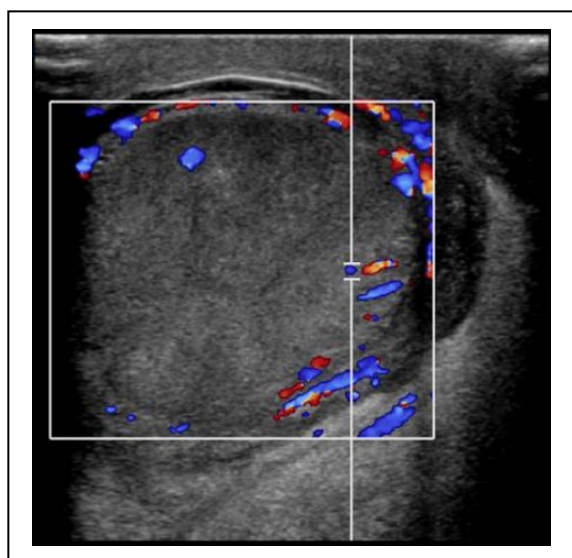


Figure 1(a). Preoperative ultrasound of a boy patient's affected left testis, showing a heterogenous appearance and reduced central vascularity.

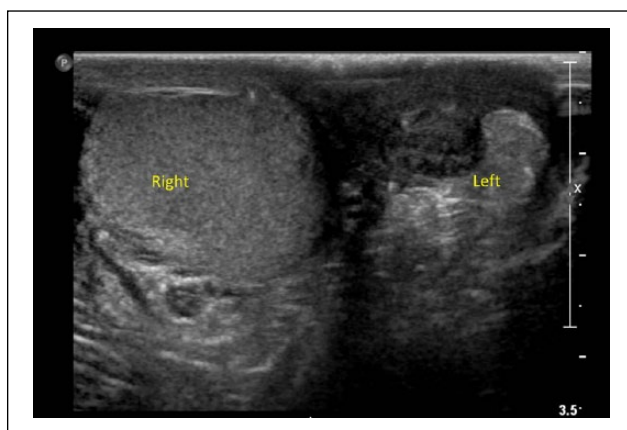


Figure 1(b). Repeat ultrasonographic assessment of the same patient, done postoperatively at 2 months, showing complete atrophy of the affected left testis.

Table 1. Summary of clinical signs and symptoms at presentation.

Patient number	Age (yrs)	Past medical history	MMR vaccine	Complaints upon presentation	Physical findings			
					Scrotal swelling	Scrotal erythema	Scrotal tenderness	Cremasteric reflex
1	14	Nil	Yes	Abdominal pain (4 d) Left-sided scrotal pain (3 d) Scrotal swelling (3 d) Fever (1 d)	Yes	Yes	Yes	Present
2	12	Nil	Yes	Vomiting (1 episode) Right-sided scrotal pain (10 d) Back pain (3 d) Fever (3 d)	Yes	Yes	Yes	Absent

d: days; MMR: Measles, mumps and rubella; nil: none.

Table 2. Investigations and progress.

Case number	Full blood count	Urinalysis	Urine culture	US results	Intra-operative findings during scrotal exploration	Bleeding upon tunica albuginea incision	Post-op complications	US findings upon follow-up	Time duration from operation to US
Patient 1	Leukocytosis	Normal	No growth	Reduced vascular flow	No testicular torsion. Inflammation of testis and epididymis.	Yes	Wound infection	Right testis normal 15.6 ml. Left testis not seen.	2 months
Patient 2	Normal	Normal	No growth	Reduced vascular flow	No testicular torsion. Inflammation of testis and epididymis	Yes	Wound infection	Right testis 0.52 ml. Left testis normal 9 ml.	1.5 months

ml: millilitre; US: ultrasound.

Discussion

We report the rare complication of complete testicular atrophy in two adolescent boys with isolated non-mumps orchitis.

Mumps-related orchitis is responsible for most cases of isolated orchitis, and up to 60% of these boys develop a degree of testicular atrophy [1]; however, testicular atrophy is rarely described as a complication in cases of orchitis without a concurrent mumps infection [2]. To our knowledge, there are no reports in the literature of testicular atrophy in patients with orchitis who had previously undergone scrotal exploration.

Both our patients had no preceding history suggestive of mumps and had been adequately vaccinated. We did not perform serological tests for mumps, as the clinical features were considered adequate to arrive at or exclude a diagnosis of mumps. Both had induction doses of prophylactic antibiotics prior to surgery, which likely explains the absence of urinary bacterial growth.

In our cases, ultrasonography showed there was decreased testicular vascularity, a feature usually suggestive of testicular torsion and unexpected in orchitis [3]. This appearance of ischaemia may be due to inflammatory interstitial oedema, leading to a testicular compartment syndrome within the confines of an inflexible tunica albuginea [4]. Such findings have also been described in large scrotal hydrocoeles and in isolated epididymitis [5].

If the pathophysiology of atrophy is thought to be a consequence of testicular compartment syndrome, testicular fasciotomy may be performed. This manoeuvre has been reported to reduce intrascrotal pressure and to produce a return of colour to the testis [4,5], and should be considered particularly for patients with pre-operative ultrasonographic evidence of reduced testicular flow and intraoperative findings of orchitis, as the patient is already under anaesthesia for

a surgical procedure; however, this has been attempted in cases of mumps-related orchitis with equivocal success [1].

Conclusions

These cases demonstrate the rare, but potentially devastating, complication of testicular atrophy that may arise in non-mumps orchitis. The causative pathophysiology may involve some degree of testicular compartment syndrome and subsequent ischaemia. Patients must be made aware of this outcome and advised on testicular self-examination after surgery.

Declaration of conflicting interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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