Parental perception of acute scrotal pain in children

SS Ubee¹, V Hopkinson², SJ Srirangam³

¹Royal Wolverhampton NHS Trust, UK

²Stockport NHS Foundation Trust, UK

³East Lancashire Hospitals NHS Trust, UK

ABSTRACT

INTRODUCTION Acute scrotal pain (ASP) remains one of the more common urological emergencies in the paediatric age group. Acute testicular torsion is the only true urological emergency, where delay in presentation or management can lead to loss of the affected testicle. Since prompt presentation, diagnosis and treatment are critical for testicular salvage, multiple patient and hospital specific factors may influence orchidectomy rates. Parental awareness of the sequelae of ASP may be a significant factor in delayed presentation of children to hospital. We examine the awareness among parents of the implications of ASP in this snapshot study.

METHODS A prospective study was planned, and all boys between the ages of 2 and 16 years presenting to the unit with ASP and undergoing emergency scrotal exploration were considered for inclusion in the study. The accompanying parents/guardians of all these boys were asked to complete a questionnaire assessing their awareness of ASP and its potential consequences.

RESULTS Over a period of 26 months (July 2010 to September 2012), 76 boys were eligible for the study. The response rate was 81.6%. Only a third (30%) presented to hospital within six hours of onset of pain and just under a quarter (22%) of the cohort attended the emergency department directly. Parents overwhelmingly (96%) felt that there ought to be increased public awareness of the condition. The majority of parents questioned ($n=41$, 66%) did not fully appreciate the implications of ASP.

CONCLUSIONS This is a first snapshot study demonstrating the apparent lack of awareness among parents about the implications of ASP, which could influence the rate of testicular salvage.

KEYWORDS

Acute scrotum – Orchidectomy – Testicular pain – Torsion

Accepted 11 September 2014

CORRESPONDENCE TO

Sarvpreet Ubee, E: sarv21@hotmail.com

Acute scrotal pain (ASP) remains one of the more common urological emergencies in the paediatric age group. Acute testicular torsion is the only true urological emergency, where delay in presentation or management can lead to a loss of the affected testicle. In the UK, the cumulative incidence of testicular torsion has been reported as 1 in 4,000 by the age of 25 years.¹ In patients with testicular torsion, correction within 4–8 hours is recommended to maximise salvage of the affected testis.² Surgery after this time is more likely to result in an orchidectomy owing to irreversible infarction, with a subsequent decrease in fertility and hormonal function.^{3–5} Since prompt presentation, diagnosis and treatment are critical for testicular salvage, multiple patient and hospital specific factors may influence orchidectomy rates.

Orchidectomy rates vary widely in the literature, ranging from 39% to 71% in most series.^{6–8} Some groups have suggested that their orchidectomy rate is low because they achieved rapid time from arrival in the emergency department to surgical management. Bayne *et al* have shown that

the symptom duration before presentation is more important in children in order to avoid orchidectomy.⁹

Parental awareness of the sequelae of ASP may be a significant factor in delayed presentation of children to hospital. We examine the awareness among parents of the implications of ASP in this snapshot study.

Methods

A prospective study was planned and approval granted by the research and audit department of the hospital trust after review of the protocol and the questionnaire. All boys between the ages of 2 and 16 years presenting to the unit with ASP and undergoing emergency scrotal exploration were considered for inclusion in the study. The patients who ended up undergoing an orchidectomy for testicular infarction were not included in the study owing to potential response bias. For the remaining boys presenting with ASP and having a scrotal exploration, the accompanying parents/guardians of all these boys were asked to complete

a questionnaire assessing their awareness of ASP and its potential consequences (Appendix 1 – available online only).

Questionnaires were given to the parents after surgery when the operating surgeon met the parents to inform them of the outcome. The parents would complete the questionnaire and hand it to the ward staff prior to being discharged from the hospital. No personal or sensitive data were collected. Data collected included age of the child, clinical presentation, parental awareness of the implications of ASP, parental view about the importance of this issue (on a linear visual numerical scale from 0 to 10) and the most effective way to disseminate the information to parents and public.

Results

Over a period of 26 months (July 2010 to September 2012), 76 boys were included in the study and their parents/guardians were given the questionnaire. Of these, 62 were eligible for analysis as the remainder either did not answer the essential questions or did not return the questionnaire. The response rate was therefore 81.6%. Data were collected prospectively and analysed at the end of the study period.

The mean age of patients undergoing scrotal exploration for ASP was 10.7 years (range: 2–16 years). Overall, 30% presented to hospital within 6 hours of onset of pain, 26% within 6–12 hours and the remaining 46% after 12 hours. Just under a quarter (22%) of the patients attended the emergency department directly and 30% either went to a direct access walk-in or 'out-of-hours' general practitioner (GP) centre. Nearly half of the patients ($n=29$, 48%) went to their own GP and 14 of these waited more than 12 hours before going to their GP. Parents overwhelmingly (96%) felt that there ought to be increased public awareness of the condition, with an importance rating of 9.5/10 for this issue.

The majority of parents questioned ($n=41$, 66%) did not fully appreciate the implications of ASP (especially testicular loss due to irreversible infarction) in children prior to seeing a health professional during the current episode. The parents who admitted some awareness of the consequences ($n=21$, 34%) cited family/friends, the internet or their GP as their source of information.

When asked about their suggestions for the most effective source for information dissemination, the responses were: schools (18%), GP surgery (18%) and community centre (2%). The majority (61%) suggested all of the above mentioned sources. Other suggestions included media, leaflets, maternity packs, baby checks and school curriculum.

Discussion

Historically, the cumulative incidence of testicular torsion has been reported as 1 in 4,000 by the age of 25 years.¹ In a more recent study, the yearly incidence is of at least 3.8 cases of operatively confirmed testicular torsion per 100,000 boys under 18 years of age.¹⁰

The testicular loss rate varies from 23% to 42%, rising to 67% in patients with a symptoms duration of about

12 hours.^{10,11} In one study, investigators quoted a testicular salvage rate of 90% if detorsion occurred less than six hours from the onset of symptoms; this rate fell to 50% after 12 hours and to less than 10% after 24 hours.¹² In our study, two-thirds of the patients presented after six hours of onset of symptoms and a testicular torsion in these patients may have led to an orchidectomy.

Bayne *et al* suggested that any factor affecting a delay in hospital presentation is important in children with torsion.⁹ They also felt that the delay in interhospital transfer was a significant factor in boys ending up having an orchidectomy. In our cohort, only 22.5% of patients presented directly to the emergency department to seek medical attention. The remaining patients sought other modes for advice and some of them even waited overnight for the medical centres to open in the morning. These boys could potentially have lost precious time. Awareness in the community about testicular torsion could help in reducing this delay.

Ethnicity, race, socioeconomic status and, in some countries, medical insurance have been reported to be the significant factors leading to patients having an orchidectomy following delayed presentation for testicular torsion.^{8,9} Reassuringly also, patients with testicular torsion tend to seek medical attention earlier than boys with ASP owing to other causes.¹³

Our study demonstrates a clear lack of awareness of the consequences of ASP among parents in our region, which is likely to be representative of a wider trend. This parental unfamiliarity could result in delayed hospital presentation, thereby raising the risk of testicular infarction. In order to facilitate prompt presentation, raising public awareness of the condition and its implications needs to be a priority for healthcare professionals, with information being disseminated at a community level.

A number of approaches were identified by parents in the present study, based on the target age group of the boys. During the early years, mothers of boys can be educated by the health worker during scheduled baby checks or through the parent group meeting. Staff at daycare centres and nurseries must also be made aware of the potential consequences of ASP.

Schools could play a vital role in information dissemination with ASP becoming a component of physical and sexual health lessons. Open discussion in school and also through various media sources will help to reduce the embarrassment surrounding testicular pain, which may otherwise stop some of the boys with ASP from informing their parents, thereby delaying corrective intervention.

The GPs have a significant role to play. Most of the parents would have had numerous encounters with their GPs with regard to their children's health. Direct communication between the parents and the primary care health professionals, information leaflets and posters about ASP could help to stimulate discussion and create awareness.

The primary objective of this prospective snapshot study was to assess and demonstrate poor awareness of the sequelae associated with ASP among parents with young boys as this could influence time to seeking medical intervention

and potentially risk testicular loss with all its longstanding physical and psychological implications. We acknowledge that there are limitations to our study given the sample size and that those who underwent an orchidectomy were excluded. It is also impossible to eliminate response bias due to the emotional state of the parents but we wanted to capture live, practically relevant data rather than risk recall bias with a delayed questionnaire.

Deciding on the most appropriate time to ask the parents to complete the questionnaire was difficult as many of these patients present out of normal working hours. Prior to the procedure would have been ideal from the point of view of the study but from the patient care perspective, the surgeon's primary focus is to proceed with scrotal exploration. On the other hand, delaying it until after discharge could have reduced the number of responses. It was therefore decided that the parents would be handed the questionnaire immediately after the scrotal exploration when the operating surgeon met the parents to inform them of the outcome. In this manner, we would be in a position to exclude the parents of those boys who had an orchidectomy.

In the planning stages of the study, it was recognised that any caring parent would not unnecessarily delay seeking medical attention irrespective of their prior knowledge (or lack thereof) about the importance of testicular pain in boys. It was also recognised that the delayed presentation for the orchidectomy group could be down to multiple factors including socioeconomic and educational background of the family, dynamics between family members, being a single parent and a possible reluctance on the part of teenage boys to talk to their parents. Proving with statistical significance that lack of awareness was the underlying cause for delayed presentation would require a large longitudinal population-based or multicentre study to achieve the required number of patients.

Owing to the emotional sensitivity from the parents' perspective about their son losing a testicle, it was not felt appropriate to ask the parents of this particular group of boys to complete a questionnaire. This project was also taken to the local ethics committee, which suggested excluding the orchidectomy group because of concerns about causing upset. It is acknowledged that comparative information from the parents of the boys who had an orchidectomy for a non-viable testicle would have been useful.

To our knowledge, this is the first study looking at the parental factors influencing the presentation of ASP in children along with the expectation of the parents from the

health service regarding this issue. A larger, community-based, multiregional demographic study targeting children and their parents through schools or a hospital-based multicentre prospective study would be appropriate to evaluate this further and to identify effective techniques for information dissemination.

Conclusions

Through this small study, representative of a specific population group, we feel it is justified to ask the question whether more could be done to reduce the number of orchidectomies due to testicular torsion as there is an apparent lack of awareness among parents about the implications of ASP. Coordinated efforts will be required at primary care and community level to create awareness in order to reduce delayed presentation.

References

1. Williamson RC. Torsion of the testis and allied conditions. *Br J Surg* 1976; **63**: 465–476.
2. Schneck F, Bellinger M. Abnormalities of the testes and scrotum and their surgical management. In: Wein AJ, Kavoussi LR, Novick AC *et al.* *Campbell-Walsh Urology*. 9th edn. Philadelphia, PA: Saunders; 2007.
3. Romeo C, Impellizzeri P, Arrigo T *et al.* Late hormonal function after testicular torsion. *J Pediatr Surg* 2010; **45**: 411–413.
4. Arap MA, Vicentini FC, Cocuzza M *et al.* Late hormonal levels, semen parameters, and presence of antisperm antibodies in patients treated for testicular torsion. *J Androl* 2007; **28**: 528–532.
5. Bartsch G, Frank S, Marberger H, Mikuz G. Testicular torsion: late results with special regard to fertility and endocrine function. *J Urol* 1980; **124**: 375–378.
6. Baker LA, Sigman D, Mathews RI *et al.* An analysis of clinical outcomes using color Doppler testicular ultrasound for testicular torsion. *Pediatrics* 2000; **105**: 604–607.
7. Jefferson RH, Pérez LM, Joseph DB. Critical analysis of the clinical presentation of acute scrotum: a 9-year experience at a single institution. *J Urol* 1997; **158**: 1,198–1,200.
8. Kaye JD, Shapiro EY, Levitt SB *et al.* Parenchymal echo texture predicts testicular salvage after torsion: potential impact on the need for emergent exploration. *J Urol* 2008; **180**: 1,733–1,736.
9. Bayne AP, Madden-Fuentes RJ, Jones EA *et al.* Factors associated with delayed treatment of acute testicular torsion – do demographics or interhospital transfer matter? *J Urol* 2010; **184**: 1,743–1,747.
10. Zhao LC, Lautz TB, Meeks JJ, Maizels M. Pediatric testicular torsion epidemiology using a national database: incidence, risk of orchiectomy and possible measures toward improving the quality of care. *J Urol* 2011; **186**: 2,009–2,013.
11. Dunne PJ, O'Loughlin BS. Testicular torsion: time is the enemy. *Aust N Z J Surg* 2000; **70**: 441–442.
12. Davenport M. Acute problems of the scrotum. *BMJ* 1996; **312**: 435–437.
13. Mushtaq I, Fung M, Glasson MJ. Retrospective review of paediatric patients with acute scrotum. *ANZ J Surg* 2003; **73**: 55–58.