

2021 Best Research Poster Award

The Role of a Urine Dipstick in the Diagnosis of the Acute Scrotum

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INTRODUCTION

Scrotal pain is a common emergency department presentation, with a spectrum of probable diagnoses ranging from a benign pathology requiring no treatment, to acute testicular torsion requiring urgent operative intervention.¹

The concern for missing the diagnosis of a testicular torsion and subsequently delaying intervention resulting in orchidectomy for an ischaemic testicle, necessitates the hasty referral of patients for specialty review.²

In addition to time pressures, acute scrotal pain is a complex clinical presentation for junior doctors to navigate. Due to the variability in clinical presentations, and the lack of an accurate, simple and timely diagnostic tool to rule out testicular torsion.³

OBJECTIVES

To evaluate the role of a urine dipstick in the assessment of acute scrotal pain emergency department presentations.

METHOD

A prospective case series of males presenting with acute scrotal pain to Barwon Health over a 12 month period, from the 3rd of February 2020 to the 31st of January 2021, was undertaken.

Only patients who were referred to and reviewed at the bedside by a doctor working in the urology department were included.

Information collected included the emergency department doctors provisional referral diagnosis and if a urine dipstick had been completed prior to referral. The urology doctors assessment, investigation results and final diagnosis were also recorded. The final diagnosis was pre-defined as the diagnosis given by the urology unit doctor at the completion of their bedside assessment, or the operative findings if the patient proceeded to a scrotal exploration.

A review of the urine dipstick results, and their likely impact on the initial emergency department diagnosis was completed.

The urine dipstick was pre-defined as having had an impact on the emergency clinicians diagnosis if it showed haematuria, pyuria and/or nitrituria and the final diagnosis was epididymitis-orchitis or it showed haematuria and the final diagnosis was ureterolithiasis.

Confidence intervals for positive dipstick proportions were computed using the Clopper-Pearson exact method.⁴ The association between positive urine dipstick and final diagnosis was tested using the chi-square test.

DISCUSSION

Patient care is at the forefront of all clinical interactions. A healthy working relationship between the emergency and urology departments is paramount to the management of patients with acute scrotal pain. The diagnosis of acute scrotal pain, in particular testicular torsion cannot be reliably made based on a single investigation but instead a collection of clinical findings.^{5,6}

Our study showed one in five patients perceived to have testicular torsion by the emergency department, had a positive urine dipstick that aligned with their final clinical diagnosis of either epididymo-orchitis or ureterolithiasis.

CONCLUSION

A collection of clinical findings is required to diagnose the aetiology of acute scrotal pain. Information that can be easily, quickly, cheaply, and reliably collected, such as a urine dipstick, can assist in clinical decision making.

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RESULTS

139 patients presented to the emergency department with a complaint of acute scrotal pain. 85 (61%) were referred for bedside urology review. Median age of 17 years (P25 12 yrs, P75 31 yrs). 2.3% (n=2) had proven testicular torsion, 28.5% (n=24) had epididymitis-orchitis and 8.2% (n=7) had ureterolithiasis (Table 1).

TABLE 1: Characteristics of Acute Scrotal Pain Presentations by Final Diagnosis

	Torsion of Testicle	Torsion of Testicular Appendix	Epididymitis-Orchitis	Ureterolithiasis	Testicular Trauma	Normal Testis
Number	2 (2)	13 (15)	24 (28)	7 (8)	4 (5)	20 (24)
Age	31 (28,33)	11 (10,13)	19 (14,32)	33 (24,34)	16 (14,20)	17 (14,21)
Duration of Pain	13 (8,19)	12 (2,48)	32 (5,72)	6 (3,18)	30 (19,45)	5 (3,21)
Acute Onset of Pain	1 (50)	10 (77)	9 (38)	5 (71)	1 (25)	14 (70)
Fever	0	0	1 (4)	0	0	0
LUTS	0	1 (8)	5 (21)	1 (14)	0	2 (10)
Vomiting	0	0	2 (8)	1 (14)	1 (25)	1 (5)
Abdominal Pain	0	0	7 (29)	3 (43)	0	2 (10)
High Testicle	1 (50)	2 (15)	2 (8)	2 (29)	0	2 (10)
Cremaster Present	1 (50)	10 (77)	19 (79)	6 (86)	4 (100)	15 (75)
Erythema	1 (50)	0	5 (21)	0	0	0
Swelling	0	1 (8)	13 (54)	0	1 (25)	2 (10)
Positive Urine Dipstick	0	0	7 (29)	7 (100)	0	1 (5)
Imaging Confirmed Diagnosis	1 (50)*	0	18 (75)	6 (86)	2 (50)	8 (40)
Raised Inflammatory Markers	0	0	6 (25)	1 (14)	1 (25)	1 (5)
Kidney Injury	0	0	0	2 (29)	0	0

Data are reported as median (P25, P75) or n (%). LUTS: Lower urinary tract symptoms. * = External Ultrasound

68 (80%) of patients received a primary diagnosis of testicular torsion by the emergency department clinician. Following review by a urology unit doctor, 14 proceeded to scrotal exploration for concern of testicular torsion.

7 patients were diagnosed with ureterolithiasis, all of whom had haematuria on their urine dipsticks (100%, 95% CI: 59–100%), 100% of these urine dipsticks were initiated by the urology doctor following bedside review. 22 patients were diagnosed with epididymitis-orchitis. 8 of these had pyuria, nitrituria and/or haematuria on their urine dipstick (36%, 95% CI: 17–59%) and only one urine dipstick was completed prior to referral (Figure 1).

20.6% of patients perceived to have testicular torsion by the emergency department had a positive urine dipstick that aligned with their final alternative diagnosis (95% CI: 12–32%).

FIGURE 1: Urine Dipstick in Possible Testicular Torsion

Emergency Department Leading Diagnosis	Patients 68
Final Diagnosis	Testicular Torsion 2, Epididymo-orchitis 22, Uretero-lithiasis 7, Other 37
Positive Urine Dipstick	0, 8 (36%) 95% CI: 17–59%, 7 (100%) 95% CI: 59–100%, 0
Positive Urine Dipstick Completed Prior to Referral	0, 1, 0, 0