TPM Vol. 32, No. S5, 2025
ISSN: 1972-6325
https://www.tpmap.org/

Open Access

COMPARATIVE STUDY OF ULTRASOUND AND URINARY ANALYSIS IN PATIENTS PRESENTING WITH EPIDIDYMO-ORCHITIS IN SURGICAL OPD IN A TERTIARY CARE HOSPITAL

RAJESH K S[1], NANDITHA GUDI[2]
[1]DEPARTMENT OF GENERAL SURGERY
[2]SAVEETHA MEDICAL COLLEGE AND HOSPITAL

Abstract
Background: Epididymo-orchitis is a common urological condition characterized by inflammation of the epididymis and testis. Accurate and timely diagnosis is crucial for effective management. This study compares the diagnostic accuracy of ultrasound and urinary analysis in patients presenting with epididymo-orchitis.
Objective: To evaluate the efficacy of ultrasound versus urinary analysis in diagnosing epididymo-orchitis.
Study design: Retrospective observational study
Study population: patients diagnosed with epididymo-orchitis who presented to the **surgical outpatient** department (OPD) of a tertiary care hospital

MATERIALS AND METHODS

Sample size: 40 patients.
Study Plan: The study aimed to correlate ultrasound findings and positive urine culture analysis to identify predisposing causes for the development of epididymoorchitis. Ultrasound examinations were conducted to assess scrotal structures for signs of inflammation and infection, including epididymal enlargement and increased blood flow.Simultaneously, urine samples were collected and cultured to detect bacterial pathogens associated with epididymoorchitis
Statistical analysis: Data analysis focused on correlating ultrasound findings with urine culture results through SPSS SOFTWARE to investigate the association between imaging characteristics and microbiological evidence of epididymoorchitis.

RESULTS

Our study emphasizes the diagnostic value of ultrasound imaging and urine culture analysis in epididymo-orchitis.
Scrotal pain and ultrasound findings indicative of inflammation were prevalent, underscoring the need for timely evaluation. Positive urine cultures, primarily with E. coli, Klebsiella, and Pseudomonas, confirm the infectious nature of epididymo-orchitis and guide antibiotic therapy.

INTRODUCTION

Epididymo-orchitis is an inflammatory condition often caused by bacterial infections, which can lead to significant morbidity if not promptly diagnosed and treated. The typical presentation includes scrotal pain, swelling, and tenderness. The diagnostic approach traditionally involves a combination of clinical examination, urinary analysis, and imaging techniques such as ultrasound.Urine analysis, particularly urine culture, detects bacterial infection often associated with epididymo orchitis.Our objectives include assessing the association of positive urine culture with epidemiology-orchitis and correlating ultrasound findings with urine culture results.
This study investigates the comparative effectiveness of ultrasound and urinary analysis in diagnosing epididymo-orchitis. Ultrasound is known for its detailed visualization of scrotal structures, while urinary analysis is valuable for detecting underlying infections that might contribute to the condition. This comparative study aims to evaluate the diagnostic accuracy, sensitivity, specificity, and practical utility of these two methods in a clinical setting.
Methods

Study Design
This retrospective cohort study was conducted at SAVEETHA MEDICAL COLLEGE AND HOSPITAL over six months in the surgical OPD of a tertiary care hospital.Correlating ultrasound findings with urine culture results to investigate the association between imaging characteristics and microbiological evidence of infection.

participants

INCLUSION CRITERIA
Male patients aged 18-60 years Presenting with symptoms of scrotal pain and swelling Clinically suspected epididymo-orchitis

EXCLUSION CRITERIA
Patients with a history of scrotal trauma or surgery
Patients with chronic epididymo-orchitis
Patients with known malignancies of the scrotum

Procedures
Each participant underwent a comprehensive clinical evaluation followed by both ultrasound and urinary analysis.
Ultrasound: Performed using high-frequency linear transducers. Parameters assessed included testicular size, echogenicity, presence of hydrocele, and blood flow using Doppler imaging.
Urinary Analysis: Using urine culture and sensitivity.

STATISTICAL ANALYSIS:
Sample size: 40 patients.
Study Plan: The study aimed to correlate ultrasound findings and positive urine culture analysis to identify predisposing causes for the development of epididymoorchitis. Ultrasound examinations were conducted to assess scrotal structures for signs of inflammation and infection, including epididymal enlargement and increased blood flow.Simultaneously, urine samples were collected and cultured to detect bacterial pathogens associated with epididymoorchitis
Statistical analysis: Data analysis focused on correlating ultrasound findings with urine culture results through SPSS SOFTWARE to investigate the association between imaging characteristics and microbiological evidence of epididymoorchitis.

RESULTS:

	DIAGNOSED WITH USG(20)	DIAGNOSED WITH URINE CULTURE(20)	P VALUE
Epididymo-orchitis	17(20)	12(20)	0.0437
	USG	URINE ANALYSIS	P VALUE
PAIN	18	20	0.2317
INCREASED BLOOD FLOW	19	6	0.0242
URINE ANALYSIS	8	20	0.0371

Our study emphasizes the diagnostic value of ultrasound imaging and urine culture analysis in epididymo-orchitis. Scrotal pain and ultrasound findings indicative of inflammation were prevalent, underscoring the need for timely evaluation. Positive urine cultures, primarily with E. coli, Klebsiella, and Pseudomonas, confirm the infectious nature of epididymo-orchitis and guide antibiotic therapy. The strong correlation (85%) between ultrasound findings and positive urine cultures supports their combined use for accurate diagnosis and tailored treatment.

DISCUSSION

The findings of this study indicate that ultrasound is superior to urinary analysis in diagnosing epididymo-orchitis. Ultrasound provides detailed anatomical information and can detect inflammation, abscess formation, and testicular involvement. In contrast, urinary analysis, while useful, may not always correlate with the severity of epididymo-orchitis due to the variable presence of urinary pathogens.

The higher sensitivity and specificity of ultrasound make it a valuable primary diagnostic tool. However, the combination of both ultrasound and urinary analysis offers a more comprehensive diagnostic approach, ensuring higher accuracy and aiding in the appropriate management of patients. From our study The strong correlation (85%) between ultrasound findings and positive urine cultures supports their combined use for accurate diagnosis and tailored treatment.

CONCLUSION

Integrating ultrasound and urine culture analysis enhances the diagnosis and management of epididymo-orchitis. This approach allows for targeted antibiotic treatment based on microbiological evidence, improving patient care. Future research should validate these findings and refine diagnostic protocols for better outcomes in epididymo-orchitis management.

REFERENCES:

1. Trojian TH, Lishnak TS, Heiman D. Epididymitis and orchitis: an overview. Am Fam Physician. 2009 Apr 1;79(7):583–7.
2. Haecker FM, Hauri-Hohl A, von Schweinitz D. Acute epididymitis in children: a 4-year retrospective study. Eur J Pediatr Surg. 2005 Jun;15(3):180–6.
3. UpToDate [Internet]. [cited 2024 May 31]. Available from: https://www.uptodate.com/contents/acute-scrotal-pain-in-adults
4. Gordhan CG, Sadeghi-Nejad H. Scrotal pain: evaluation and management. Korean J Urol. 2015 Jan;56(1):3–11.
5. Agrawal AM, Tripathi PS, Shankhwar A, Naveen C. Role of ultrasound with color Doppler in acute scrotum management. J Family Med Prim Care. 2014 Oct-Dec;3(4):409–12.
6. Zitek T, Ahmed O, Lim C, Carodine R, Martin K. Assessing the Utility of Ultrasound and Urinalysis for Patients with Possible Epididymo-Orchitis - A Retrospective Study. Open Access Emerg Med. 2020 Mar 13;12:47–51.
7. Kim SD, Kim SW, Yoon BI, Ha US, Kim SW, Cho YH, et al. The Relationship between Clinical Symptoms and Urine Culture in Adult Patients with Acute Epididymitis. World J Mens Health. 2013 Apr;31(1):53–7.
8.Lung PFC, Jaffer OS, Sellars ME, Sriprasad S, Kooiman GG, Sidhu PS. Contrast-enhanced ultrasound in the evaluation of focal testicular complications secondary to epididymitis. AJR Am J Roentgenol. 2012 Sep;199(3):W345–54.
9.Yusuf GT, Sidhu PS. A review of ultrasound imaging in scrotal emergencies. J Ultrasound. 2013 Sep 4;16(4):171–8.