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RESEARCH ARTICLE

THE ROLE OF URINE ROUTINE MICROSCOPY IN DAILY UROLOGY PRACTICE: A STUDY OF 1000 PATIENTS

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ABSTRACT

This study evaluates the diagnostic utility of urine routine microscopy in the management of urology patients. Over 1000 patients presenting with urological complaints were analyzed. The findings underscore the relevance of urine microscopy in detecting urinary tract infections (UTIs), hematuria, crystalluria, and other pathological conditions. By correlating microscopy findings with definitive diagnostic tests, the study highlights its utility in clinical decision-making. The results support the routine use of this cost-effective diagnostic tool in both primary and specialized urological care.

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INTRODUCTION

Urine routine microscopy has long been a cornerstone of diagnostic evaluation in urology, providing critical information about urinary tract pathology. Despite the advent of advanced diagnostic tools, microscopy remains an essential and widely accessible test, particularly in resource-limited settings. It is a quick, affordable, and effective method for screening and diagnosing conditions such as urinary tract infections (UTIs), hematuria, and urolithiasis. This study aims to evaluate the clinical utility of urine routine microscopy in urological practice, focusing on its sensitivity, specificity, and role in guiding treatment decisions. By analyzing data from 1000 patients, the study seeks to reinforce the significance of this traditional yet indispensable diagnostic modality (1).

METHODS

- **Study Design:** A prospective observational study conducted at a tertiary care centre
- **Sample Size:** The study included 1000 patients presenting to the urology outpatient department with a range of urological complaints.
- **Inclusion Criteria:** Patients aged 18–70 years presenting with complaints such as dysuria, hematuria, flank pain, or lower urinary tract symptoms (LUTS).

- **Exclusion Criteria:** Patients currently on antibiotics, those with known systemic diseases affecting urine composition, or those who failed to provide clean-catch midstream urine samples.
- **Data Collection:** Midstream clean-catch urine samples were collected and analyzed for physical characteristics (color, clarity), chemical parameters (pH, glucose, protein), and microscopic findings (red blood cells (RBCs), white blood cells (WBCs), crystals, casts, and epithelial cells) (2). Each sample was processed using standard laboratory protocols, and results were interpreted by experienced laboratory personnel.
- **Outcome Measures:** Correlation between urine microscopy findings and definitive diagnostic tests, such as urine culture, imaging studies (ultrasound, CT), and histopathological examinations.

RESULTS

Demographics: The study included 1000 patients, with a mean age of 45 years (range: 18–70 years). The male-to-female ratio was 1.5:1. The most common presenting complaints were dysuria (40%), flank pain (25%), and hematuria (15%).

Microscopic Findings

- **UTI Diagnosis:** Abnormal WBC counts were observed in 35% of patients, with urine culture confirming infections in 90% of these cases.
- **Hematuria:** RBCs were detected in 20% of patients, with 30% of these cases attributed to urological malignancies. **Crystalluria:** Crystals (calcium oxalate, uric acid) were identified in 25% of patients, correlating with imaging findings in urolithiasis cases.

Cost-Effectiveness: Routine urine microscopy was found to be highly cost-effective, providing diagnostic insights at a fraction of the cost of advanced imaging and molecular tests. Early identification of UTIs and urolithiasis through microscopy reduced the need for more expensive diagnostics in 40% of cases (3).

DISCUSSION

The study highlights the diagnostic accuracy and utility of urine routine microscopy in urological practice. The findings demonstrate that urine microscopy can reliably detect UTIs, hematuria, and crystalluria, aiding in the timely initiation of appropriate interventions. Although advanced diagnostic modalities such as molecular tests and imaging provide greater specificity, their high cost and limited availability make them inaccessible to many patients. In contrast, urine microscopy is widely available, affordable, and provides rapid results. The limitations of urine microscopy include its reliance on sample quality and potential observer bias. However, these limitations can be mitigated through standardized protocols and training. This study reinforces the importance of incorporating urine routine microscopy as a first-line diagnostic tool in urology, particularly in resource-limited settings (4).

CONCLUSION

Urine routine microscopy is an invaluable diagnostic tool in urological practice. Its ability to detect common and critical conditions such as UTIs, hematuria, and urolithiasis underscores its relevance in both primary and specialized care. The study findings support its routine use to optimize patient management, particularly in resource-constrained environments.

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