

# Validity Of Quantitative Uncentrifuged Urine Microscopy, Centrifuged Deposit Microscopy And Gram Stain In Rapid Diagnosis Of Urinary Tract Infection

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## Background

Urinary Tract Infections (UTIs) are among the most common bacterial infections in clinical practice both in community and hospital settings. The diagnostic methods of UTI have changed little in the past few decades. Culture remains the gold standard for the diagnosis of UTI. However, it takes 24-48 hours to complete. Rapid screening methods like wet mount examination, Gram's stain, urine dipstick (leukocyte esterase or nitrite), catalase test are used with varying success. Different laboratories use varying procedures for screening and rapid diagnosis of UTI.

## Methods

A total of 100 clean catch midstream urine samples collected from patients with symptoms of UTI were used in the study. The urine was collected in sterile wide-mouthed containers and processed within 24 hours after collection. After observing for turbidity and color, it was processed by the following methods: Quantitative unspun wet mount examination, Quantitative centrifuged deposit examination, Gram's stain and culture. The collected data was analyzed using SPSS (Statistical Package for Social Sciences) version 11.5. For statistical analysis, Chi square test was used.

## Results

Sensitivity of Gram's stain of centrifuged deposit of microscopic significant bacteriuria was 35.4% and specificity was 10.5%. ( $\chi^2 = 4.483$  and  $p = 0.034$  is considered statistically significant). Sensitivity of Gram's stain of centrifuged deposit of microscopic significant pyuria was 17.5% and specificity was 50%. ( $\chi^2 = 8.9$ ,  $p = 0.0029$  is considered highly significant). Sensitivity of Gram's stain of quantitative unspun wet mount of microscopic significant pyuria was 14% and specificity was 47.2%. ( $\chi^2 = 11.5$ ,  $p < 0.001$  was considered very highly significant). Sensitivity of Gram's stain of centrifuged deposit of microscopic significant pyuria was 15.6% and specificity was 36.7%. ( $\chi^2 = 4.712$ ,  $p = 0.0299$  was considered significant).

## Conclusions

1. A positive correlation was observed between Gram's stain and culture for the detection of pyuria as well as bacteriuria.
2. A positive correlation was observed between quantitative unspun wet mount microscopy and culture for the detection of pyuria.
3. A positive correlation was observed between centrifuged deposit microscopy and culture for the detection of pyuria.