

PP 17

A study on association between urine crystals and urine culture in urinary tract infection suspected patients

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Background: Urolithiasis is an increasing clinical problem in Sri Lanka. Elevated urine crystals have been reported from patients with symptoms related to Urinary Tract Infections (UTI). Since, bacteria play a role in urine crystal formation, it is important to find the presence of urine crystals and bacteria in patients with symptoms of UTI to find out whether these symptoms are due to UTI or an early indication of urolithiasis.

Objective: To investigate the correlation between urine crystals and urine culture in UTI suspected patients.

Method: Forty five subjects presented with symptoms of UTI, requesting urine culture reports from private sector medical laboratories were enrolled in this study. Age of the study population was 18-50 years. Mid-stream urine specimens were collected from each individual and cultured on Hi-Chrome UTI culture media. Culture plates were incubated at 37 °C for 24 hours and the colony count and appearance was recorded. Urine crystal concentration was determined by crystal concentration technique. Each urine crystal type and its concentration were recorded.

Results: Of 45 patients, 29 were positive for urine crystals whereas 16 were negative for urine crystals. Nineteen patients were positive whereas 26 patients were negative for urine culture. Eighteen patients were positive for both crystals and culture. Only one crystal negative patient was positive for culture. Crystal positive, 11 patients showed negative result for urine culture. Fifteen patients were negative for both crystals and urine culture. Crystal types and organisms detected were calcium oxalate, triple phosphate, uric acid, and coliforms, *Pseudomonas* spp, and coagulase negative *Staphylococcus* spp, respectively. According to the Fishers exact test there was a significant association ($p < 0.05$) between the presence of urinary calcium oxalate and coliforms in UTI suspected patients.

Conclusion: Statistically significant correlation was found between the presence of urinary calcium oxalate and coliforms in UTI suspected patients.