STUDIES ON DIAGNOSTIC AND THERAPEUTIC APPROACH FOR URINARY TRACT INFECTION

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INTRODUCTION

Urinary tract infection (UTI) is an infection of any of the organ in the Urinary tract which consists of the bladder, the urethra, and the kidneys. Worldwide, about 150 million people are diagnosed with UTI each year, costing the global economy in excess of 6 billion US dollars (Janifer et al., 2009). UTI, if not treated properly, leads to the serious complications like sepsis, renal scarring, and pelvic inflammatory diseases etc. The most common pathogens responsible for UTI includes E.coli, Pseudomonas, K. pneumoniae, Proteus species etc. Presently, single or combinational antibiotics are use as an empirical therapy. However, it results in the development of Multiple Drug Resistant (MDR) strains of pathogens (Jumbo et al., 2008). The diagnosis of UTI cannot be made on symptomatology alone and urine examination is utmost important (Srivaths et al., 1996). Hence, taking this into consideration, the present study was conducted to evaluate the physical, chemical and microscopic parameters of urine in UTI along with the screening of associated uropathogens with their antimicrobial resistance and sensitivity pattern.

MATERIALS AND METHODS

Total eleven urine samples were collected from the female patients of reproductive age group (22-30) suffering from UTI that had been registered in the civil hospital, Washim and transported aseptically in the laboratory. The physical parameters of urine viz. colour, odour, pH, appearance, volume etc, the chemical parameters viz. sugar, bile salts, bile pigments, occult blood, protein etc. and the microscopic analysis viz. pus cells, casts, yeasts, WBC, RBC etc. were determined adopting standard conventional methods (Godkar and Godkar, 2006).

RESULTS AND DISCUSSION

In the present study, urine samples obtained from total eleven UTI patients were subjected to routine urine analysis, along with pathogen identification and antibiotic S/ R pattern. The routine urine analysis shows elevated level of albumin in almost all the samples tested, indicating protein urea as the diagnostic marker for urinary tract infections. However, the findings should be correlated conducting studies with larger numbers of samples. The chemical parameters excluding the urine albumin doesn’t showed significant alteration. In case of the physical analysis of urine color, odour and appearance shows significant alterations. In urine
microscopy the presence of epithelial cells, casts yeast cells, WBC etc were predominant which indicates the tissue disintegration in the urinary tract (Table 1).

The predominant pathogens identified were *E. coli* (72.72%), followed by *Proteus* spp. (54.54%), *S. aureus* (45.45%) and *Pseudomonas* spp. (9%) (Table 2; Fig. 1). These results were in accordance with the conclusions given by most of the workers (Dhakal et al., 2002 and Sahm et al., 2001). The results on antibiotic sensitivity test revealed the presence of MDR in all the uropathogens (Table 3; Fig. 2). These results were in...

![Figure 1: percent existence of possible uropathogen](image1)

![Figure 2: Antibiotic sensitivity / resistance pattern of uropathogens](image2)
correlation with the results obtained by Pandiyal et al., 2009. The presence of MDR in uropathogens may be due to plasmid carrying the resistance genes or it may be linked to integrons (Miller and Tang, 2004).

Hence, the present study clearly indicates that the routine urine analysis especially with the protein urea, altered physical parameter and the presence of WBC, Casts, yeast cells and epithelial cells along with positive test for E.coli can be used as an accurate diagnostic marker for UTI. Secondly, due to the continuous changes in the behavior of the uropathogens against currently indicated antibiotics, surveillance for antibiotic sensitivity of the uropathogens is very important for developing an empirical antibiotic therapy which may be beneficial for reducing the disease period in the patients as well as their medico-expenditure.

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REFERENCES


