Pharmacoeconomic Evaluation of Antibiotics in Urinary Tract Infection at Tertiary Care Hospital

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ABSTRACT

The Prospective observational study with 50 UTI patients conducted for 6 months period with aimed to analyzed the therapeutic effectiveness and economic burden of UTI female patients due to the overall incidence of urinary tract infection increases substantially in this population; with the majority of infections being asymptomatic. The rate of infection increases further for elderly persons who are in nursing homes. The increase is probably the result of a number of factors including obstruction from prostatic hypertrophy in males, poor bladder emptying as a result of prolapse in females, fecal incontinence in dementia patients, neuromuscular diseases-such as stroke and increased urinary catheterization. And it results that urinary tract infection has a negative impact on the functional capacity and QOL and also impose socioeconomic burden on the patients. The functional capacity and QOL impact score was high before antibiotic administration, whereas after antibiotic administration, the impact score was reduced significantly. Pharmacoeconomics analysis of the administered antibiotics were analyzed and the mostly prescribed antibiotic is cefoperazone+sulbactam (36%) at a cost of Rs.400 increase the effectiveness by 35% of patients. And the study concludes that that amikacin as the effective and cost effective antibiotic and antibiotics are effective in increasing the functional capacity and Quality of life of the patients.

Keywords: Urinary tract infections, Antibiotic Resistance, Pharmacoeconomics, Catheter.

INTRODUCTION

Urinary tract infections are the most commonly occurring bacterial infections and accounts for 8 million patient visits annually. The prevalence of urinary tract infection varies with age and gender. In newborns and infants up to 6 months of age, the prevalence of abacteriuria is approximately 1% and is more common in boys. Most of these infections are associated with structural or functional abnormalities of the urinary tract and have correlated with non-circumcision. Between the ages 1 and 6 years, urinary tract infections occur more frequently in females. The prevalence of urinary tract infection is 7% and 2% respectively[1]. Before puberty, the prevalence of urinary tract infection is approximately 1%, with 5% of females reported to have significant abacteriuria prior to leaving high school. This percentage increases dramatically after puberty in nonpregnant females primarily as a result of sexual activity. Approximately 1 in 5 women will suffer a symptomatic urinary tract infection at some point in their lives. Many women have recurrent infections, with a significant

proportion of these women having a history of childhood infections. In contrast, the prevalence of bacteriuria in adult men is very low (<0.1%). In the elderly, the ratio of bacteriuria in women and men are dramatically altered and is approximately equal in persons older than 65 years of age. Hence, the study aimed to assess the Antibiotic utilization and Economic evaluation in UTI female patients.

METHODOLOGY

The Prospective observational study was conducted with 50 patients in 6 months duration at K.G Hospital& Post Graduate Medical Institute and applied for approval.The study was approved by the Institutional Ethics Committee and issued ethical clearance. The patient information consent form was administered and data collection form was collected. Data were analysed by using SPSS software and Leicester Impact scale is a scoring questionnaire that measures the impact of urinary symptoms on the quality of life and functional capacity of the patients.

RESULT

A total of 50 patients were included in the study with a minimum age of 15 years and maximum age of 85 years. The average age is 55 years.30% of the patients belongs to the age group of 56-65 Years. patient distribution based on isolated microorganism results the most predominantly isolated pathogen from urine culture is found to be e.coli (52%) followed by klebsiella*pneumoniae* (24%), enterococcus species (8%) and candidaalbicans(4%) species.the result is shown in figure 1.
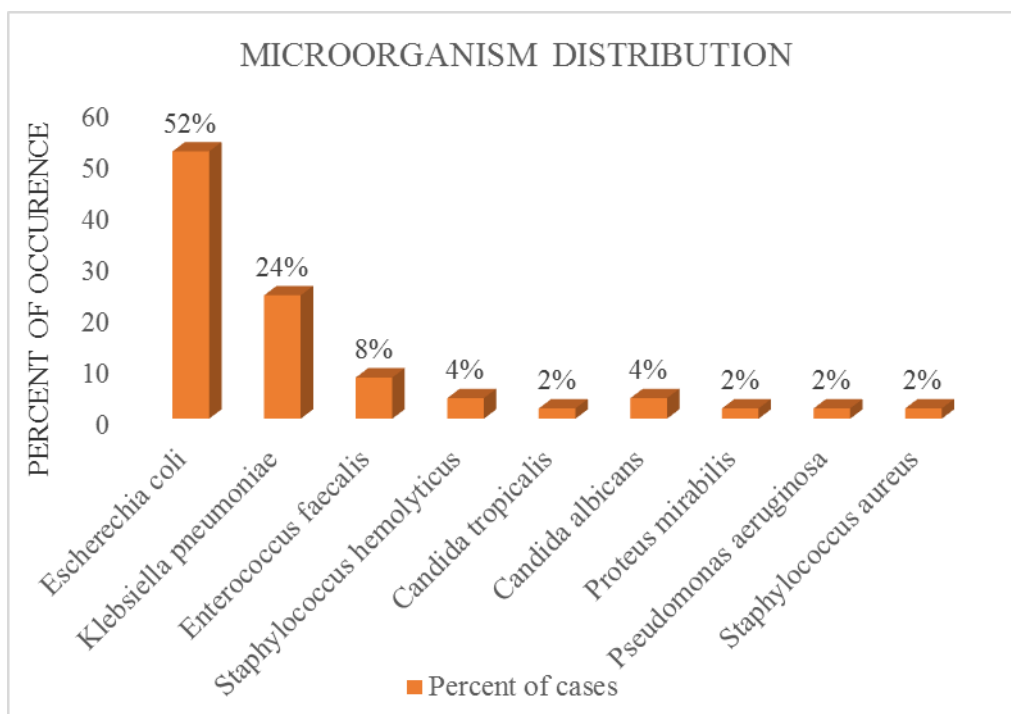

Fig. 1: Patient Distribution Based On Isolated Microorganism

The patient distribution based on risk factors was analyzed and the most predominant risk factor is found to be menopause (68%),which is followed by diabetes mellitus (54%),catheterization (30%) and renal impairment (24%).the result is shown in figure 2.
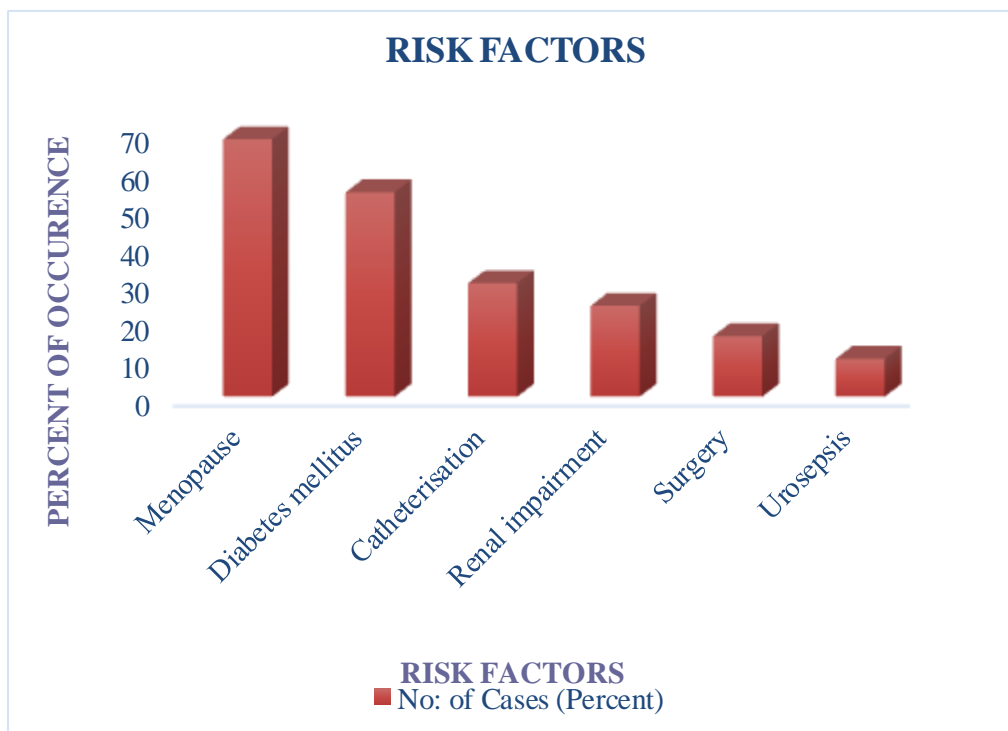

Fig. 2: Risk Factor Analyses

Out of the total 50 patients,15 patients have acquired uti from the hospital settings. Patient distribution based on symptoms were assessed and the predominant symptom of uti in this study is found to be urgency (58%) followed by burning micturition (50%), suprapubic heaviness (34%) and flank pain (32%).

The functional capacity and Quality of Life scores were assessed or evaluated using Leicester Impact scales. The scores were taken before and after antibiotic administration. The patient's functional capacity and QOL improved significantly after antibiotic administration. The result is depicted in table.2 and figure 3.

Table 1: Functional Capacity and QOL Assessment P-Value

FUNCTIONAL CAPACITY AND QOL ASSESSMENT SCORES (BEFORE & AFTER ANTIBIOTIC ADMINISTRATION)	Figure 2 risk factor analyses	Figure 2 risk factor analyses	Figure 2 risk factor analyses	Figure 2 risk factor analyses	Figure 2 risk factor analyses
	12.780	6.510	13.882	49	0.00001
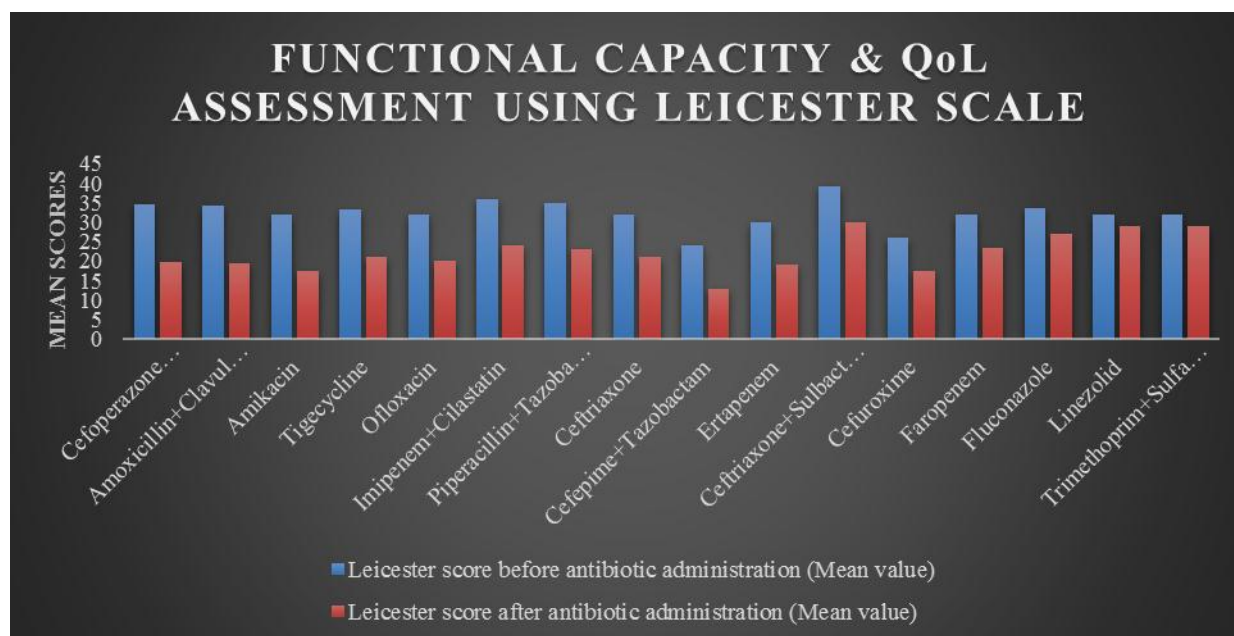
Fig. 3: Mean Functional Capacity and QOL Scores for Each Antibiotics Administered and Their Mean Differences

Pharmacoeconomics analysis of the administered antibiotics were analyzed and the mostly prescribed antibiotic is cefoperazone+sulbactam (36%) at a cost of Rs.400 increase the effectiveness by 35%. The highest cost of the prescribed antibiotic is rs.2758 for tigecycline increase the effectiveness by 29% and the lowest cost is rs.14 for trimethoprim+sulfamethoxazole only increase the effectiveness by 7%. cefoperazone+sulbactam is the mostly prescribed antibiotic with a recurrence rate of 4%, followed by amoxicillin+clavulanate(2%), ofloxacin(2%), cefuroxime(2%), fluconazole(2%), linezolid(2%) and Trimethoprime and Sulphamethoxazole (2%).

CONCLUSION

Urinary tract infection is a vexing medical condition and it is associated with significant morbidity and healthcare costs. The recognition of the various risk factors and treatment with the appropriate antibiotic is necessary for cure of urinary tract infection and the prevention of its recurrence. From the study we found that urinary tract infection has a negative impact on the functional capacity and QOL and also impose socioeconomic burden on the patients. The functional capacity and QOL impact score was high before antibiotic administration, whereas after antibiotic administration, the impact score was reduced significantly. This proves that antibiotics are effective in increasing the functional capacity and Quality of life of the

patients. In our study, we also evaluated the cost effectiveness of urinary tract anti-infective. From our study, we conclude that amikacin as the effective and cost effective antibiotic in treating antibiotic.

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