International Journal Dental and Medical Sciences Research
Volume 5, Issue 2, Mar - Apr 2023 pp 167-169 www.ijdmsrjournal.com ISSN: 2582-6018

A Clinical Profile of Urinary Tract Infections in Diabetes Mellitus

Dr G Naresh kumar
PG3, Dept of General Medicine, Unit chief – Dr Rama Raju

Date of Submission: 09-03-2023 Date of Acceptance: 18-03-2023

 Diabetes mellitus is the most common endocrine disease of this century.
 In India, Diabetes is a major health hazard. It is the seventh leading cause of death.
 Poor circulation in diabetics, reduced ability of white blood cells to fight infection, dysfunctional bladders that contract poorly all contribute to the increased prevalence of UTI in diabetics.
 Urinary tract infection is one of the common condition encountered by health care practitioners in diabetics.
 Many recent studies have reported constantly changing microbiological profile of UTI cases attributed to changing socio-demographic composition of the population, increased population mobility, antibiotic usage pattern and changing antibiotic susceptibility of microbial agents.
 Understanding these changing patterns is extremely vital in resource poor countries like India, where majority of the patients are treated empirically due to poor availability of culture and sensitivity facilities.
 A study was planned to know the clinical and microbial spectrum, and antimicrobial sensitivity of these organisms that cause Urinary tract infections in Diabetics.

1. To study the clinical presentations of urinary tract infection in both Type I and II Diabetes Mellitus
2. To study various risk factors and their association with Urinary tract infections in both Type I and II Diabetes Mellitus
3. To study causative micro-organisms and their drug susceptibility in Urinary tract infections with both Type I and II Diabetes mellitus

Study design: Observational study, prospective study.

The study population included all the patients presenting to the study setting with symptoms suggestive of urinary tract infections and later confirmed with diagnosis of UTI by clinical examination and investigations.

People less than 18 years of age and non-diabetics were excluded from the study.

Demographic clinical parameters, past history, treatment history were considered as relevant variables.

Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables.

A total of 100 people were included in the analysis.

The mean age was 52.12 $\pm$ 7.12 years in the study population.

Male participants were 56 (56%), remaining 44 (44%) were female.

Symptoms - 71 (71%) were having fever, 22 were having chills and rigors, 69 (69%) were having pain while urination, 71 (71%) were having burning sensation, 22 (22%) were having increased frequency, 18 (18%) were having past renal disease.

Treatment history - 71 (71%) were on oral hypoglycemic treatment and 29 (29%) were taking insulin.

Investigations - 54 (54%) showed normal CBP. 46% subjects had altered WBC picture indicating various infections.

41 (41%) showed increased FBS, PLBS and HbA1c.

Among the urine culture reports of study population, organisms were identified as follows – 64 (64%) showed E.coli growth, 13 (13%) showed Enterococcus, 3 (3%) showed GBS, 8 (8%) showed Klebsiella pneumonia, 3 (3%) showed Proteus mirabilis, 5 (5%) showed Pseudomonas aeruginosa and 4 (4%) showed Staphylococcus aureus.

 The present study demonstrated the pattern of microbiological flora present in the urinary tracts of mainly diabetic patients (mean age of 52.12 $\pm$ 7.12 years) that consisted of males and females in almost similar ratio.
 This study has further insisted the suspicion of urinary tract infections when a premenopausal woman complains of burning sensation, increased

frequency and dysuria as we have found a higher correlation between them.

 The constitutional symptoms were also moderately associated with the diagnosis of the disease condition.

 We have observed similar complaints obtained from the past history in about one-third of the subjects diagnosed with the disease.

 Relatively, a similar group of participants (about one-third) has had their antibiotic treatment taken in the past.

 18 (18%) were having renal disease which could be imparted to ascending infection, impaired host defences and bladder colonization.

 The incidence of Escherichia coli in UTI cases of this study was predominant.

 E.coli has emerged in more than two-thirds of patients and was also documented in subjects after single course of antibiotic therapy.

 Protection of E.coli by beta-lactamase-producing organisms has been disclosed both in vitro and in vivo. Several studies have demonstrated the ability of meropenem to prevent recurrent infection in selected patients. This has proved efficacious in many clinical trials and hence obtained a strong recognition and recommendation for its use in a typical setting.

 Furthermore, there was evidence from studies that showed slight differences in the types of bacteria isolated from the same individual at a different point in time. This documents a necessary finding of changing bacterial nature and a need to change antibiotics of choice where conditions apply.

 Bacterial complications following UTIs are rare, and antibiotics may lack protective effect in preventing bacterial complications. Analyses of routinely collected administrative healthcare data can provide valuable information on the number of UTIs, antibiotic use and bacterial complications to patients, prescribers, and policy-makers.

 Urinary tract infections in diabetics, if caused by Escherichia coli or another strain of gram-negative bacteria and if left untreated, or with incomplete antibiotic treatment, puts the patient at an increased risk of recurrence and renal complications.

 This underlines the importance of promotion of good hygienic practices in preventing the occurrence of the related conditions.

 Recent advances in technologies and insights on molecular biological approaches for urinary tract pathway from renal pelvis to tip of urethra, will continue to enhance our understanding of epidemiology, etiology, pathogenesis, diagnosis, and management of urinary tract infections.

 Moreover, in the era of upcoming drug-resistant microbes, we should have to exert more effort to develop more intensive and effective treatment strategies against pathogens in urinary tract.

 Data used in this study are population-based and include information from primary, outpatient specialist and inpatient care as well as data on all drugs dispensed in ambulatory care.

 Data are continuously updated, and loss to follow-up is minimal.

 Outcome definitions are based on recorded diagnoses. Thus, this study relies on the accuracy and completeness of diagnosed data.

 It is unknown whether the individual completed the prescribed course of antibiotic treatment as it may subject to recall bias and no real inspection was done.

 Another key limitation of the study is limited generalizability of study findings, as the study was conducted in tertiary care referral hospital and may represent serious cases in the spectrum of the disease.

 There is a need to conduct further large-scale studies on the subject to enhance our understanding of the microbiological profile, the factors associated with different etiologies and the treatment response and also recurrent rates of UTI.

 There is need to establish continuous surveillance system at each health care facility level to monitor the changing trends of infections and antibiotic sensitivity pattern of the microbes. This can help us in formulating evidence informed guidelines to effectively manage UTI in diabetics.

Vaishnav B, Bamanikar A, MaskeP, Rathore VS, Khemka V, Sharma D.Study of clinic-pathological and bacteriological profile of urinary tract infections in geriatric patients with type 2 diabetes mellitus; Int J Cur Res Rev; 2015; Vol 7; Issue 21; 13-18

Shill MC, Huda NH, Moain FB, Karmakar UK. Prevalence of uropathogens indiabetic patients and their corresponding resistance pattern: Results of a survey conducted at diagnostic centers in Dhaka, Bangladesh. Oman Med J. 2010;25(4):282–85

Sewify M, Nair S, Warsame S, Murad M, Alhubail A, Behbehani K, et al. Prevalence of urinary tract infection and antimicrobial susceptibility among diabetic

patients with controlled and uncontrolled glycemia in Kuwait. J Diabetes Res. 2016;2016:6573215.

Simkhada R. Urinary tract infection and antibiotic sensitivity pattern among diabetics. Nepal Med Coll J 2013; 15(1):1–4.

Marques LP, Flores JT, Barros Junior Ode O, Rodrigues GB, MourãoCde M, Moreira RM. Epidemiological and clinical aspects of urinary tract infection in community-dwelling elderly women. Braz J Infect Dis: 2012;16(5):436-41.

Sharma S, Govind B, Naidu SK, Kinjarapu S, Rasool M. Clinical and Laboratory Profile of Urinary Tract Infections in Type 2 Diabetics Aged over 60 Years. J Clin Diagn Res 2017; 11(4):OC25-OC28.

Gilbert GG, Donders MD. Lower genital tract infections in diabetic women. Current Infectious Disease Reports; 2002: 4(6), 536-539.

Janifer J, Geethalakshmi S, Satyavani K, and Viswanathan V. Prevalence of lower urinary tract infection in South Indian type 2 diabetic subjects. Indian J Nephrol; 2009; 19(3): 107–111.

Goswami R, Bal CS, Tejaswi S, Punjabi GV, Kapil A, Kochupillai N. Prevalence of urinary tract infection and renal scars in patients with diabetes mellitus. Diab Res Clin Pract.2001;53:181 –6.

Geerlings SE, Meiland R, van Lith EC, Brouwer EC, Gaastra W, Hoepelman AIM. Adherence of type 1-fimbriaeted E. coli to uro epithelial cells: More in diabetic women than in control subjects. Diab care. 2002;25:1405–9.

Acharya D, Bogati B, Shrestha GT, Gyawali P. Diabetes mellitus and Urinary Tract Infection: Spectrum of Uropathogens and their Antibiotic Sensitivity. J. Manmohan Memorial Inst. Health. Sci. 2015; 1(4):24–8.