

OUTCOMES OF ASYMPTOMATIC BACTERIURIA IN PATIENTS WITH DIABETES MELLITUS:

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Abstract:

Asymptomatic bacteriuria seems to be non-eradicable, recurring in case of diabetic patients. There are many studies that has reported the outcomes of asymptomatic bacteriuria in patients with diabetes mellitus. But the study has been never conducted in this population. So this study sincerely strives to study the same in this population.

Keywords:

Asymptomatic, BACTERIURIA, DIABETES MELLITUS.

INTRODUCTION:

Diabetes Mellitus popularly known as sugar problem among the people of India. It is a chronic, non-communicable, widespread, multiorgan disease. The disease affects the pancreas insulin activity leading to raised blood glucose level. The insulin is either reduced or inactive. The population affected by diabetes is increasing due to population growth, aging, urbanization, obesity and physical inactivity. The prevalence of disease will increase worldwide from 171 million in 2000 to 366 million in 2030(1). It is a multiorgan dysfunction disease. People affected with diabetes mellitus have significant chances of getting urinary tract infections as compared to non-diabetic persons(2) And it has also been stated that diabetic people suffer from more complications compared to non-diabetics. Common infections in diabetic patients include respiratory infections, urinary infections, ear infections, soft tissue infections and abdominal problems. Diabetes mellitus has a range of effects on various organ systems(3) a 1940 autopsy study showed that 18% of the subjects with diabetes had a urinary tract infection (UTI) (2). Also diabetic patients are prone to asymptomatic UTI(4). Diabetes is a very common predisposing factor for UTI. The fact that asymptomatic bacteriuria is more common in females with diabetes as compared to males with diabetes(5). Asymptomatic bacteriuria (ASB) is defined as When a bacterial count of same species over 10^5 per ml in mild stream clean catch specimen of urine on two occasions is detected without the symptom of urinary infection. Significant bacteriuria detected by urinary culture, without symptoms attributable to urinary tract like burning micturition, frequent micturition, urinary incontinence, urgency, painful micturition, suprapubic pain, flank pain or fever(6). Asymptomatic and symptomatic bacteriuria are more common in females with diabetes. Asymptomatic bacteriuria may be a precursor for symptomatic bacteriuria. The UTI ranges from asymptomatic bacteriuria to lower cystitis, pyelonephritis, xanthogranulomatous pyelonephritis, renal abscess, perinephric abscess, and papillary necrosis(7). Asymptomatic bacteriuria seems to be non-eradicable, recurring in case of diabetic females(8).

Aims and Objectives:

To the outcomes of asymptomatic bacteriuria in patients with diabetes mellitus.

Materials and Methods:

This study was done in the Department of General Medicine, Malabar Medical College, Modakallur, Calicut, Kerala.

The study was done using the data in MRD section of the hospital. The study was done from November 20th 2020 and data collection was done within a week.

The patients sample size was 100.

All the patients' files were selected from MRD. Detailed history of the patients was studied and then follow up history of the same patients were studied and reported.

Inclusion Criteria:

- The history of the patients should include a follow up sheet at 3rd and 6th month.
- Culture showed positive history in records

Exclusion criteria:

- Patients on immunodeficiency, steroid therapy or immune modulator drugs.
- Without complete follow up history.

Results:

Table 1: Mean age of the Subjects:

Mean Age	Std deviation
59±34 years	± 9.35years

Table 2: Sex Distribution:



Table 3: Outcomes: At 3 months

Symptomatic UTI	3
Hypertension	2
HbA1C	8.1±0.8
Macroalbuminuria	1
Microalbuminuria	2
eGFR (ml/min/1.73²)	93.5±14.67

Table 4: Outcomes: At 6 months

Symptomatic UTI	11
Hypertension	07
HbA1C	8.4±1.3
Macroalbuminuria	2
Microalbuminuria	4
eGFR (ml/min/1.73²)	93.74±11.05

DISCUSSION

Diabetes and various infections go hand in hand. So, diabetic patient is always predisposed to various infections commonly involved is urinary tract. The occurrence of asymptomatic bacteriuria is more common in diabetic patients. It more often affects women than men. The reasons for the lack of symptoms are not well understood. Not only urinary infections but complications are also more common among them(3,4). The range of urinary tract involvement may range from lower urinary tract colonization to clinical or emphysematous cystitis, pyelonephritis, renal and perinephric abscess. According to Valerius, the cause of infection in diabetic patients is thought to be due to neutrophil or lymphocyte dysfunction or immunity (9). The predisposing factors for women with diabetes developing asymptomatic bacteriuria are longer duration of disease as well as macroalbuminuria and peripheral neuropathy. The macroalbuminuria resulting in structural damage in the kidney, raises the chances of bacterial attacks that in turn causes increased chances of developing asymptomatic bacteriuria(2). According to Geerlings, asymptomatic bacteriuria prevalence is very high in diabetic females compared to non diabetic females (26 vs. 6%). They have also shown lower percentage of E.coli in diabetic females to non diabetic females (42 vs. 78%)(6) while Bonadio et al stated the rate of ASB among women with type 2 diabetes is similar to that among women without diabetes (18.8% vs. 18.5%). Also demonstrated that impairment of metabolic control of diabetes—as revealed by an increase in the HbA1c level—increases the risk of developing ASB(5). According to Vejlsgaard and Keane et al stated the correlation between duration of the disease, the presence of microvascular diseases, and the presence of ASB in type 1 and 2 diabetic patients. Longer duration of disease leads to the presence of longstanding complications

(peripheral neuropathy, peripheral vascular disease) (10). Delamaire et al concluded that functioning of PMN at all steps is being altered in diabetic patients leading to the increased chances of vascular complications and infectious episodes.(11). Nicolle et al found the prevalence of bacteriuria in the cohort study declined to about 50% by 9 months, and subsequently remained stable throughout 3 years follow-up. Almost 20% of subjects remained bacteriuric with the original infecting organism throughout the period of observation. With evaluation at 12-month intervals, approximately one-quarter of subjects had each of the four potential outcomes of: resolution following antibiotic therapy for symptomatic urinary infection, following antibiotic therapy for other indications, spontaneous resolution without antibiotics, and persistent bacteriuria with the same organism. Women infected with gram-negative organisms were more likely to have persistent bacteriuria. Many women with resolution of initial bacteriuria, with or without antibiotics, became bacteriuric again during follow-up(8). Women with asymptomatic bacteriuria and diabetes tend to have persistent or recurrent asymptomatic bacteriuria. Bacteriuria is benign, and seldom permanently eradicable.

Conclusion:

This study was successful to study the outcomes of asymptomatic bacteriuria in patients with diabetes mellitus. This would be a boon to the practising physicians and is intended to help the budding general practitioners.

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