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Original Article

Assessment of prevalence of asymptomatic bacteriuria in females suffering from type 2 diabetes mellitus

Anil Mishra

Department of Medicine, Assistant Professor, Career Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

ABSTRACT:
Background: As the prevalence of both type 1 diabetes and type 2 diabetes increases worldwide, factors associated with diabetes and its complications become more important. Asymptomatic bacteriuria (ASB) refers to the presence of bacteria in bladder urine in an asymptomatic individual. Hence; the present study was undertaken for assessing the prevalence of asymptomatic bacteriuria in females suffering from type 2 diabetes mellitus. **Materials & methods:** A total of 100 diabetic females were enrolled. Complete demographic and clinical details of all the patients were obtained. A Performa was made complete clinical profile and details of clinical examination were recorded. Pregnant subjects, subjects with history of any other systemic illness and subjects over 60 years of age were excluded from the present study. Urine samples were obtained from all the patients and prevalence of asymptomatic bacteriuria was recorded. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. **Results:** Asymptomatic bacteriuria was seen in 22 percent of the patients. A significant correlation was observed while correlating duration of diabetes and asymptomatic bacteriuria. **Conclusion:** Significant proportion of diabetic females is affected by asymptomatic bacteriuria.
Key words: Asymptomatic bacteriuria, Diabetes.

Corresponding Author: Anil Mishra, Department of Medicine, Assistant Professor, Career Institute of Medical Sciences, Lucknow, Uttar Pradesh, India

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INTRODUCTION

As the prevalence of both type 1 diabetes and type 2 diabetes increases worldwide, factors associated with diabetes and its complications become more important. Asymptomatic bacteriuria (ASB) refers to the presence of bacteria in bladder urine in an asymptomatic individual. Usually, samples are collected indirectly by clean-voided midstream urine, and growth of the same uropathogen (≥105 cfu/ml) in two consecutive specimens is considered to be a significant indication of the presence of bacteria in bladder urine. ASB is found in 2–5% of healthy adult women, is quite unusual in healthy men, and has been claimed to be three to four times more common in women with diabetes than in healthy women.[1-3]

ASB is considered clinically significant and worth treating during pregnancy because treatment effectively reduces the risk of pyelonephritis and preterm delivery. Although ASB has been found to associate with increased risk of hospitalization for uro-sepsis in a prospective observational study among women with diabetes, the treatment of ASB in one randomized controlled trial did not reduce the risk of symptomatic urinary tract infection.

Associations between ASB, metabolic control of diabetes, and impaired renal function have been brought up repeatedly.[4-6] Hence; the present study was undertaken for assessing the prevalence of asymptomatic bacteriuria in females suffering from type 2 diabetes mellitus.

MATERIALS & METHODS

The present study was undertaken for assessing the prevalence of asymptomatic bacteriuria in females suffering from type 2 diabetes mellitus. A total of 100 diabetic females were enrolled. Complete demographic and clinical details of all the patients were obtained. A Performa was made complete clinical profile and details of clinical examination were recorded. Pregnant subjects, subjects with history of any other systemic illness and subjects over 60 years of age were excluded from the present study. Urine samples were obtained from all the patients and prevalence of asymptomatic bacteriuria was recorded. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

RESULTS

Mean age of the patients was 54.6 years. 8.9 years was the mean duration of diabetes. Out of 100 patients, oral hypoglycaemic drugs were the line of treatment in 72 percent of the patients. Asymptomatic bacteriuria was seen in 22 percent of the patients. A significant correlation was observed while correlating duration of diabetes and asymptomatic bacteriuria.

Table 1: Duration of diabetes

Duration of diabetes (years)	Number of patients	Percentage of patients
5 to 10	69	69
More than 10	31	31
Total	100	100
Mean age ± SD	8.9 ± 7.12	

Table 2: Type of treatment

Parameter	Number of patients	Percentage
Oral hypoglycaemic drugs	72	72
Insulin	2	2
Both	24	24
Total	100	100

Table 3: Prevalence of Asymptomatic bacteriuria

Parameter	Number of patients	Percentage
Asymptomatic bacteriuria	22	22
Total patients	100	100

Table 4: Correlation of duration of diabetes and asymptomatic bacteriuria

Duration of diabetes (years)	ABU positive	ABU negative
Mean	13.2	7.1
SD	4.5	2.3
p- value	0.001 (Significant)	

DISCUSSION

Urinary albumin is the main parameter employed to diagnose diabetic nephropathy (DN). The exclusion of bacteriuria has been recommended at the time of DN diagnosis. This approach has been debated and information on this suggestion in patients with diabetes is scarce.[7- 9] Hence; the present study was undertaken for assessing the prevalence of asymptomatic bacteriuria in females suffering from type 2 diabetes mellitus.

Mean age of the patients was 54.6 years. 8.9 years was the mean duration of diabetes. Out of 100 patients, oral hypoglycaemic drugs were the line of treatment in 72 percent of the patients. Mendoza T et al studied the frequency of asymptomatic bacteriuria in type 2 diabetic women. Fifty women with type 2 diabetes and 50 non diabetic women were studied. There was microbial growth in 40% of samples from diabetic women and 6% of samples from controls ($p < 0.01$). Asymptomatic bacteriuria was present in 32% of diabetics and 4% of controls ($p < 0.01$). E Coli was the most frequently isolated strain, in 55% of patients and 100% of controls. Klebsiella pneumoniae was isolated in 10% of diabetics, coagulase negative Staphylococcus in 10%, Enterococcus spp in 10% and Pseudomonas aeruginosa in 5%. Leukocyturia of more than 10 cells per field, was present in 80% of diabetic women with positive culture. Women with positive cultures had a longer lasting diabetes than those with negative cultures. There was no association between urine microbiological results and glycosilated hemoglobin, fasting blood glucose, chronic complications of diabetes and treatment received. This study showed a high prevalence of asymptomatic bacteriuria among diabetic women.[8] Bonadio M et al screened 228 women with diabetes for bacteriuria. A control group of 146 women without diabetes was also evaluated. The frequency of significant bacteriuria was 17.5% (40 of 228) among women with diabetes and 18.5% (27 of 146) among women in the control group. Seven (13.5%) of 52 and 33 (18.8%) of 176 women with type 1 and in type 2 diabetes, respectively, had significant bacteriuria. The presence of higher glycated hemoglobin levels was the only significant risk factor for significant bacteriuria in women with type 2 diabetes.[9]

In the present study, asymptomatic bacteriuria was seen in 22 percent of the patients. A significant correlation was observed while correlating duration of diabetes and asymptomatic bacteriuria. Papazafiropoulou A et al evaluated the prevalence of ASB in subjects with type 2 diabetes mellitus (T2D) with and without microalbuminuria (MA). A hundred diabetic subjects with MA and 100 diabetic subjects without MA were analysed. Diabetic subjects with MA showed increased prevalence of ASB compared to diabetic subjects without MA. Escherichia coli was the most prevalent pathogen isolated in diabetic

subjects with and without MA followed by Proteus mirabilis and Klebsiella spp. Univariate logistic analysis showed that ASB was associated with the presence of coronary artery disease and gender in the diabetic study group with MA. ASB is more prevalent among T2D subjects with MA.[10]

Hirji et al revealed that patients with Type II diabetes were more prone to UTI. In a 1-year follow-up, 5967 cases of UTI were observed within diabetic patients and 3708 UTI cases in nondiabetic individuals. Overall incidence rate (IR) of UTI among diabetic patients was 46.9/1000 patients/year and among nondiabetic individuals was 29.9/1000 patients/year. Among newly diagnosed diabetic patients the overall IR was 45.5/1000 patients/year and with patients with previous history of diabetes, the IR was 58.8/1000 patients/year. When classified by gender, the IR of UTI in females was 72.8/1000 patients/year and 25.5/1000 patients/year for males. The IR of UTI in nondiabetic females was 45.7/1000 patients/year, and for male, it was 16.5/1000 patients/year. Classification on the basis of route of drug, the IR of UTI in patients treated with oral antidiabetic drugs was 49.7/1000 patients/year and for patients treated with insulin was 66.8/1000 patients/year. IR of UTI was higher in poorly controlled diabetic patients than patients with controlled diabetes. Thus, this study concluded that IR of UTI in diabetic patients differ with respect to route of drug, gender, glycemic control, and newly diagnosed patients.[11]

CONCLUSION

Significant proportion of diabetic females is affected by asymptomatic bacteriuria.

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