

Asymptomatic Pyuria In Diabetic Females

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Summary:

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Background: The goal of this study was to determine the prevalence and the risk factors of asymptomatic pyuria in diabetic female patients.

Methods: The study included 100 diabetic female patients and 100 non diabetic females attending the outpatient in the period from Sep.2001 to Sep.2002. Patients with symptoms of urinary tract infection were excluded. Asymptomatic pyuria was defined as the presence of more than 10 leukocytes/high power field in an uncentrifuged random urine sample.

Results: Diabetic women more often had asymptomatic pyuria than non diabetic women. The prevalence of asymptomatic pyuria was significantly higher in patients with duration of diabetes exceeding 15 years than those below. Diabetic females with asymptomatic pyuria more often had diabetic retinopathy, neuropathy, nephropathy, cerebrovascular disease, and ischemic heart disease than those without asymptomatic pyuria. As the degree of neuropathy increases it is accompanied by an increase in the prevalence of asymptomatic pyuria. The prevalence of asymptomatic pyuria was significantly increased in patients with proliferative diabetic retinopathy. As degree of nephropathy increases, it is accompanied by an increase in the prevalence of asymptomatic pyuria.

Conclusion: There is an increase in the prevalence of asymptomatic pyuria among diabetic females with complications of retinopathy, neuropathy and in nephropathy. The prevalence of asymptomatic pyuria increased with long duration of diabetes as diabetic microangiopathy becomes sever.

Key words: Asymptomatic pyuria; DM; Females.

Introduction:

Kass was the first to highlight the importance of asymptomatic bacteruria; he observed that 6-7 % of pregnant women have asymptomatic bacteruria and almost half of this developed pyelonephritis subsequently (1).

Asymptomatic bacteruria also is of importance in the elderly and individuals who are known to be at high risk for recurrent symptomatic infection including diabetics and patients with cystic renal diseases, anatomic or neurological urinary abnormalities in addition to patients with history of urethral catheterization. Untreated asymptomatic bacteruria predisposes the individual to recurrent UTI.

Asymptomatic bacteruria is actually 4-5 times higher in patients with diabetes mellitus than those without (2, 3, and 4).

Diabetic patients comprise a large proportion of outpatient population and deserve special attention. Under controlled diabetes mellitus is a problem as it causes high morbidity and mortality (5, 6).

This study shows this problem and correlates complications of diabetes mellitus and the duration of the disease with this problem

Patients And Methods:

During the period from Sept 2001 to Sept 2002 , 100 female patients aged > 40 years with diabetes mellitus and asymptomatic pyuria were sent for urine examination to laboratories of Najaf teaching hospital and are correlated with fasting blood sugar .Complete neurological examination including autonomic neuropathy , blunt tendon reflexes , symptomatic peripheral neuropathy gangrenous neuropathy , ophthalmoscopic examination and fundoscopy , and detection any diabetic retinopathy , background retinopathy , preproliferative retinopathy and proliferative retinopathy ,blood pressure measurement; supine position and erect position and electrocardiograph examination were performed. All patients were diabetics with duration of disease > 5 years.

For control of disease, glycosylated Hb measurements were done. At the same time 100 non diabetic females urine samples were examined for asymptomatic pyuria as a control group with records of age, blood pressure and evidence of ischemic heart disease.

Results:

This study clears an increase in the prevalence of asymptomatic pyuria among females with long standing diabetes mellitus as in table -1. The prevalence of asymptomatic pyuria was significantly higher in patients with a duration of diabetes exceeding 15 years than those below.(0-4 years 20 % , 5-9 years 26 % , 10-14 years 36% and >15 years 48 %).

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Diabetic females more often had asymptomatic pyuria than non diabetic females (32% versus 16% $P < 0.001$) as in table- 2.

As the degree of neuropathy increases it is accompanied by an increase in the prevalence of asymptomatic pyuria. (Blunt tendon reflexes 25 %, symptomatic 52 % and gangrenous 68 %).

The prevalence of asymptomatic pyuria was significantly increased in patients with proliferative diabetic retinopathy (24% background 31% preproliferative). As degree of nephropathy increases, it is accompanied by an increase in the prevalence of asymptomatic pyuria, (Proteinuria 33 % renal failure 61 %) thus the prevalence of asymptomatic pyuria increased with long duration of diabetes and as diabetic microangiopathy becomes sever.

There is an increase in the prevalence of asymptomatic pyuria among diabetic patients with complications of retinopathy, neuropathy and in nephropathy as in table- 2.

Proliferative retinopathy, symptomatic autonomic neuropathy, and gangrene were all significantly higher in diabetic females with asymptomatic pyuria than diabetic females without.

Table-1 Clinical characteristics of diabetic females with asymptomatic pyuria and those without

	Clinical characteristics		Without Asymptomatic pyuria.		With Asymptomatic pyuria.	
	No.	(%)	No.	(%)	No.	(%)
Total number	m72	(100%)	28	(100%)		
Mean age (years)	54±10		57±10 *			
Mean duration of diabetes (years)	8.4±7		11.8±10*			
Diabetic retinopathy	3	(4%)	2	(7%) *		
Diabetic nephropathy	28	(40%)	16	(60%) *		
Ischemic heart di	10	(14%)	4	(14%) **		
Diabetic neuropathy	23	(32%)	20	(68%) **		

* $P < 0.05$ ** $P < 0.01$

NOTE: *Some patients had more than one characteristic others had none; hence the total numbers of characteristics differ from numbers of patients.*

Table-2: Clinical characteristic of non diabetic and diabetic women.

Clinical characteristic	Non diabetic women		Diabetic women	
	No.	(%)	No.	(%)
Total number	100	(100%)	100	(100%)
Mean age(years)	53 ±15		* ±13 53	
Hypertension	28	(28%)	78	(78%) ***
Ischemic Heart Disease	10	(10%)	22	(22%) ***
Asymptomatic pyuria	16	(16%)	32	(32%) ***

* $P < 0.05$ ** $P < 0.01$ *** $P < 0.001$

NOTE: *Some patients had more than one characteristic others had none; hence the total numbers of characteristics differ from numbers of patients.*

Discussion:

In mid 1950s at a time when urinary tract infection was considered to be an important contributor to chronic renal failure, hypertension, toxemia of pregnancy, routine screening for bacteruria was advocated in diverse groups of patients.

Thereafter, it was observed that schoolgirls and women with asymptomatic pyuria were more likely to have progression to renal failure than those without (2).

Interest in asymptomatic pyuria later shifted to pregnant women undergoing genitourinary instrumentations, renal transplants recipient, post transplantation period and diabetics. Studies in all these groups had consistently confirmed that patients with asymptomatic pyuria are at increased risk of symptomatic urinary tract infection (4).

This suggests that diabetic patients with asymptomatic pyuria are at risk.

It has been postulated that both altered bacterial adhesion to the uroepithelium due to abnormality of Tammhorstop protein and granulocyte dysfunction contribute to the pathogenesis of UTI in diabetes. Several polymorph nuclear defects such as impaired migration, phagocytosis, intracellular killing and chemotaxis which may be related to decreased polymorph nuclear cells membrane fluidity occur in diabetic subject.

This study shows similar findings to other studies from different parts of the world them. An explanation to that is related to impaired sensation in bladder, results in bladder distress and residual urine which result in a physiological obstruction of the urinary tract which intern increase the susceptibility to infection and allow infection to be initiated by much smaller number of uropathogens

(7).

There is a high prevalence of genitourinary tract structural abnormalities like cystocele, cystourethrocele and rectocele among women with diabetes and have recurrent urinary tract infections which reaches 30% compared with non diabetic patient 9 % (8, 9).

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