

Clinical Profile and Complications of UTI In Diabetic Patients

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Abstract:

Background: Diabetes mellitus (DM) is a chronic and potentially disabling disease which is reaching an epidemic proportion in many parts of the world. The biggest impact of the disease is on adults of working age, particularly in developing countries and UTI is a common infection observed in diabetic patients and also associated with increased risk of certain complicated UTIs such as emphysematous pyelonephritis, emphysematous xanthogranulomatous pyelonephritis, renal/perirenal abscess. Such conditions are potentially life-threatening and require early identification and prompt evaluation as well as management.

AIM: The present study was an attempt to find out the clinical profile and complications of UTI in diabetic patients, in relation to the duration of diabetes mellitus.

Methodology: This prospective observational study was carried out from September 2012 to August 2014. A total of 250 patients with diabetes mellitus enrolled.

RESULTS: In the present study 55.6% were females and male to female ratio was 1:1.25. The common age at presentation was between 51 to 70 years (62%) and the mean age was 62.43 ± 10.80 years. The commonest presentation was fever (42.40%) followed by frequency and urgency in 15.2% and 10.4% respectively while 51.2% of the patients were asymptomatic. Complications were present in 4% of the patients and emphysematous pyelonephritis/pyelitis was present in 1.2%.

Conclusion: The present study showed fever as the commonest presentation. Complications were present in 4% of the patients and emphysematous pyelonephritis/pyelitis was present in 1.2%. No association was found between urine culture and age ($p=0.353$), sex ($p=0.735$), duration of diabetes ($p=0.198$), clinical presentation ($p=0.898$) and diabetic control ($p=0.203$). Also no association was noted between complications and sex, duration of diabetes and diabetic control.

Key Words: Diabetes Mellitus, UTI,

I. Introduction:

Diabetes Mellitus is a metabolic disorder of multiple etiologies characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both.¹

Although urinary tract infections are common and major health problems in men and women with diabetes, data to define expected prevalence, incidence, and risk factors as well as interventions to reduce the risk of developing these complications are limited. Further UTI in diabetics is often given less importance, more attention being paid to macro and microvascular complications and remains least explored.

DM is associated with several complications. The complications of diabetes mellitus include retinopathy, nephropathy, and neuropathy (both peripheral and autonomic). The risk for atherosclerotic vascular disease is also increased in persons with DM¹

Aim:

To find out the clinical profile and complications of UTI in diabetic patients.

II. Methodology:

Comprised 250 patients with Diabetes Mellitus

Inclusion Criteria

- Type 1 and Type 2 diabetic patients >18 year of age with and without symptoms of UTI with significant pyuria.
- Significant pyuria was defined as:
 - >5 WBC/HPF in males
 - > 8 WBC/HPF in females

Exclusion Criteria

- Gestational Diabetes.
- Immunocompromised states;
 - HIV.
 - Patients on steroids.
 - Malignancy.
 - Transplant recipients.

Method of study: prospective observational study

Method of collection of data: Demographic data like gender and age was obtained. Patients were interviewed and history pertaining to diabetes mellitus along with other relevant history were recorded. Patients were subjected to general physical examination and systemic examination.

Investigations: Patients were subjected to the following investigations

- Urine examination
 - Urine routine and microscopy
 - Urine culture and sensitivity with colony counts (mid stream, clean catch sample)
 - Haemoglobin
 - Total white blood cell count
 - Differential count
 - Blood sugar levels
 - Fasting
 - Post prandial
 - Glycosylated haemoglobin
 - Renal function test
 - Ultrasound abdomen
- Following investigations were done wherever indicated
- X-ray
 - KUB
 - CT scan abdomen

Statistical analysis

The categorical data was expressed as rates, ratios and proportions and comparison was done using chi-square test. The continuous data was expressed as mean ± standard deviation (SD) and independent sample ‘t’ test was used to compared the data. A probability value (‘p’ value) of less than or equal to 0.05 at 95% confidence interval was considered as statistically significant.

III. Results:

A total of 250 patients having diabetes mellitus were studied.

Table 1. Sex distribution

Sex	Distribution (n=250)	
	Number	Percentage
Male	111	44.40
Female	139	55.60
Total	250	100.00

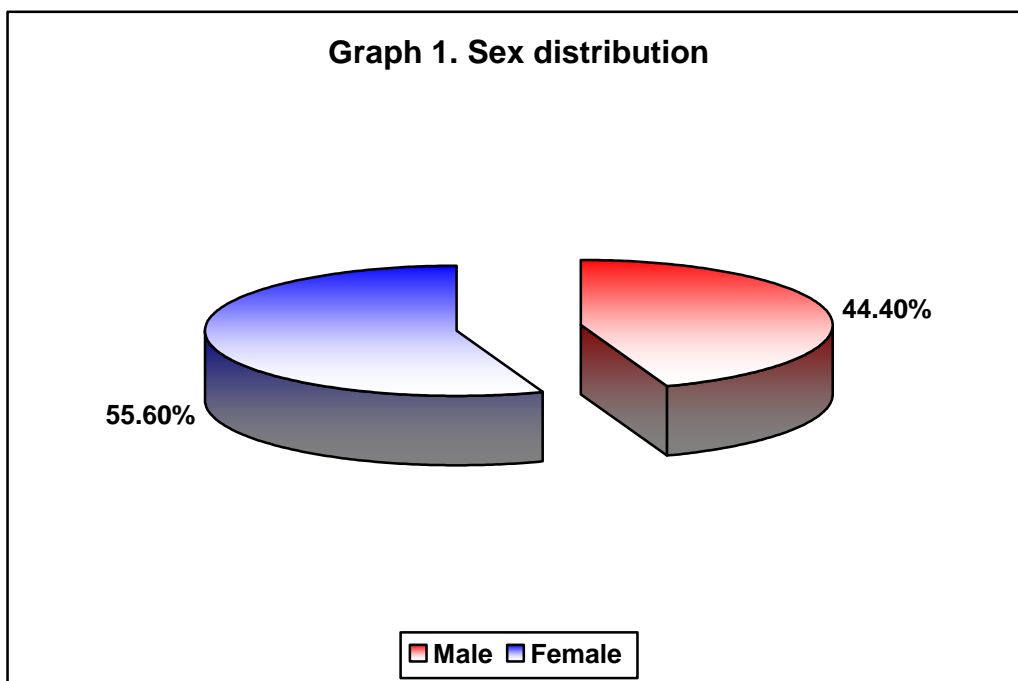


Table 2. Age distribution

Age group (Years)	Distribution (n=250)	
	Number	Percentage
40 to 50	37	14.80
51 to 60	80	32.00
61 to 70	75	30.00
71 to 80	45	18.00
81 to 90	13	5.20
Total	250	100.00

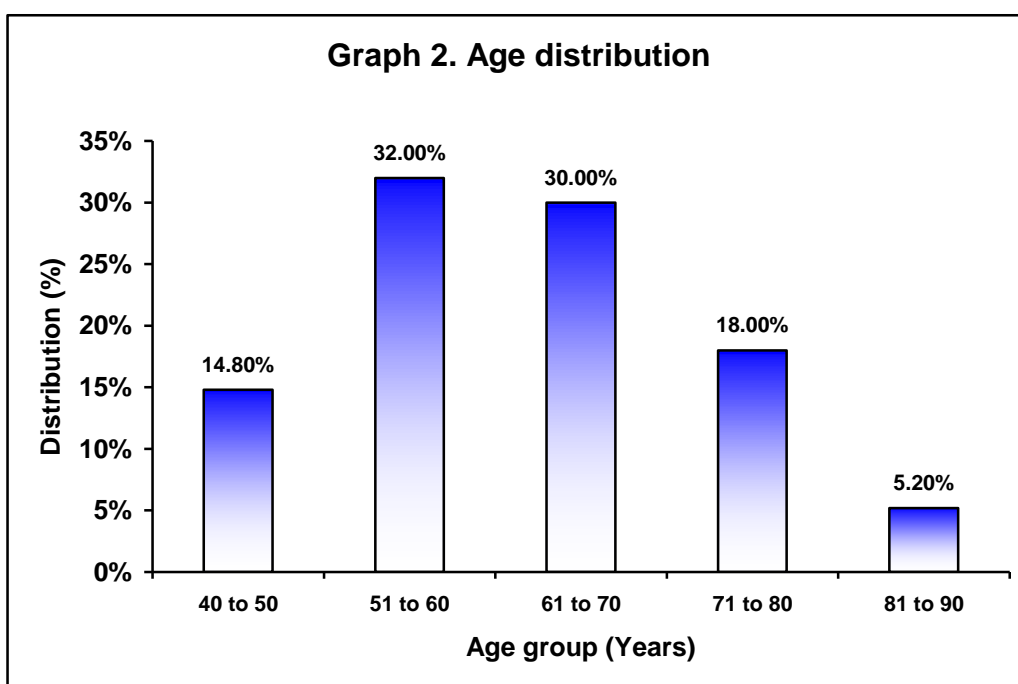


Table 3. Type of diabetes

Type	Distribution (n=250)	
	Number	Percentage
I	248	99.20
II	2	0.80
Total	250	100.00

Graph 3. Type of diabetes

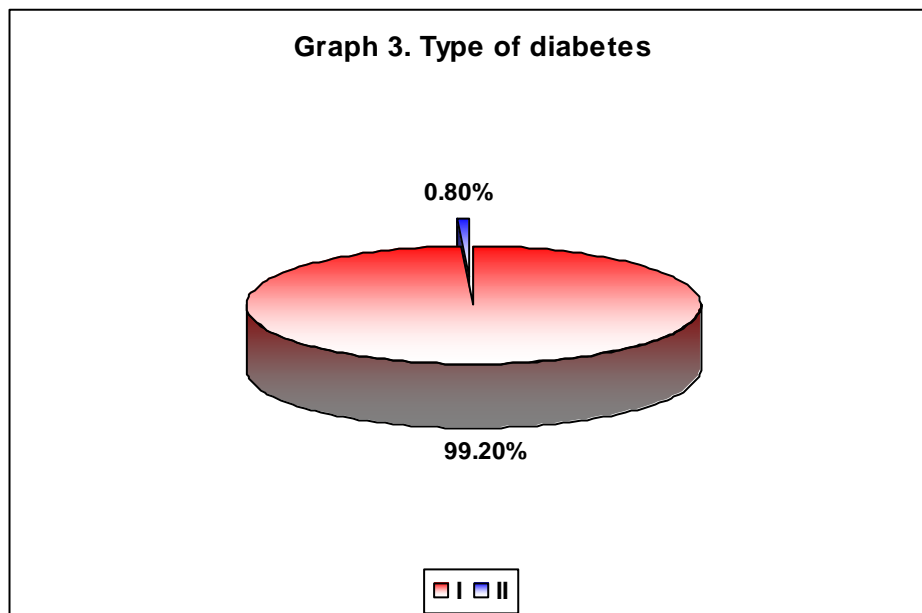


Table 4. Presentation

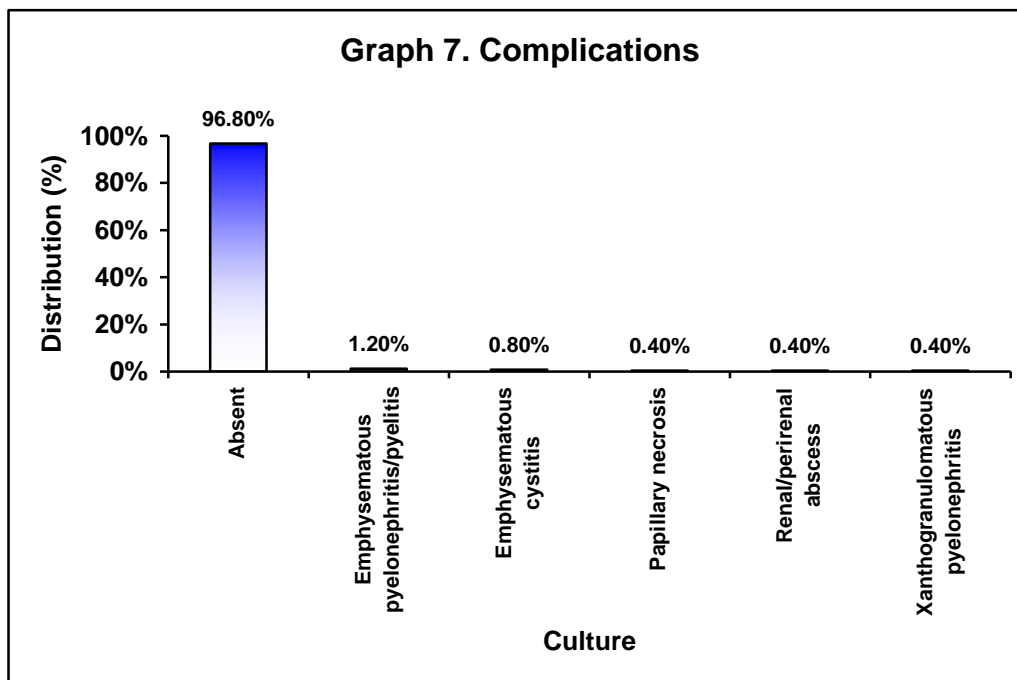
Presentation	Distribution (n=250)	
	Number	Percentage
Fever	106	42.40
Frequency	38	15.20
Urgency	26	10.40
Dysuria	25	10.00
Supra pubic pain	24	9.60
Nocturia	23	9.20
Hematuria	3	1.20
Loin pain	3	1.20
Asymptomatic	128	51.20

Table 5. Urine examination

Urine examination	Findings	Distribution (n=250)	
		Number	Percentage
Protein	Absent	76	30.40
	1	105	42.00
	2	41	16.40
	3	13	5.20
	4	5	2.00
	I	2	0.80
	Traces	8	3.20
	Total	250	100.00
Sugar	Absent	126	50.40
	0.5	6	2.40
	1	89	35.60
	2	25	10.00
	3	4	1.60
Total	250	100.00	
WBC	10 or less	62	24.80
	> 10	115	46.00
	Plenty	73	29.20
	Total	250	100.00
RBC	5 or less	133	53.20
	> 5	12	4.80
	Absent	105	42.00
	Total	250	100.00

Table 6. Complications

Complications	Distribution (n=250)	
	Number	Percentage
Absent	242	96.80
Emphysematous pyelonephritis/pyelitis	3	1.20
Emphysematous cystitis	2	0.80
Papillary necrosis	1	0.40
Renal/perirenal abscess	1	0.40
Xanthogranulomatous pyelonephritis	1	0.40
Total	250	100.00



IV. Discussion:

In the present study prevalence of UTI was slightly higher (55.6%) in females compared to males (44.4%) and female to male ratio was 1.25:1. These findings were consistent with a recent study by Prakasam A et al on 200 diabetics also showed female preponderance (65%) over males (35%)². UTI is more widespread in women with DM than men as a consequence of debilitated immune system. Also close proximity of female urethral meatus to anus, shorter urethra and sexual intercourse have been reported as factors that influence this higher prevalence in women.

The commonest presentation was fever which was present in 42.40% of the patients followed by frequency in 15.2%, urgency in 10.4% and very few patients presented with dysuria (10%). However, nearly more than half that is, 51.2% of the patients were asymptomatic. This was consistent with similar studies done by Freiha FS et al³ who reported 86% of the patients with fever at presentation and Jayanth Kumar et al,⁴ where fever (86.7%), frequency (80%), dysuria (71.1%) and loin pain (11.7%) were commonly observed. Complications observed in this study were renal/perirenal abscess 1 (0.40%), papillary necrosis 1 (0.40%), emphysematous cystitis 2 (0.80%), emphysematous pyelonephritis/pyelitis 3 (0.20%) and xanthogranulomatous pyelonephritis 1 (0.40%). According to Arul Prakasam et al,² ascending infection leading to pyelonephritis, impaired leucocyte function, emphysematous complications and renal/perinephric abscesses are well recognized in patients with poor glycemic control

V. Conclusion

The present study showed fever as the commonest presentation in patients with UTI having diabetes mellitus and the other presentations were frequency, urgency and dysuria. Also it was evident that diabetic patients with UTI may be asymptomatic as nearly half of the study population were asymptomatic for UTIs. Complications were present in 4% of the patients and emphysematous pyelonephritis/pyelitis was present in 1.2%. No association was noted between complications and sex, duration of diabetes and diabetic control.

References:

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