

PREVALENCE OF ASYMPTOMATIC BACTERIURIA WITH TYPE 2 DIABETES IN A TERTIARY CARE CENTRE IN ANDHRA PRADESH AND CLINICAL IMPLICATIONS

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ABSTRACT

BACKGROUND & OBJECTIVES

Asymptomatic bacteriuria¹ in diabetes² if left untreated, may lead to uncomplicated UTI³, acute pyelonephritis, AKI, ultimately lead to CKD. Tight control of hyperglycaemia and early treatment ABU in patients with prolonged duration with comorbid conditions reduces the incidence of these complications. The present study was done to determine presence of asymptomatic bacteriuria (ABU)^{1,4} and treatment⁵ at the earliest to prevent serious complications.

METHODS

A prospective study was conducted at a tertiary care teaching hospital of Andhra Pradesh from April 2014 to March 2015. 102 cases reported with ages 30-70 years age, having no urinary complaints were included. Their mid-stream urine sample was sent for culture and sensitivity. Women having $>10^6$ colony forming units/mL of single organism were diagnosed⁷ positive for ABU and treated.⁸ They were followed till the cultures were negative with HbA1c is near normal.

RESULTS

ABU was found in 56.86% women and in 19.67% in men. Increased incidence in women with poor glycaemic control, HbA1c is the marker for Diabetes control.

MATERIALS AND METHODS

Total 102 T2DM patients were studied, with FBS >160 mg/dL, PPBS >300 mg/dL, with no signs and symptoms of UTI, and were afebrile, other renal functions like s. creatinine, BUN, spot urine protein/creatinine ratio were normal. US abdomen was a normal study. Mid-stream urine samples of all patients were cultured and microscopically studied. Culture of microorganisms in urine was done on CLED (Cystine Lactose Electrolyte Deficient) medium/MacConkey agar and blood agar using standard loop (Std. size 3 mm internal diameter).⁷

INTERPRETATION & CONCLUSIONS

ABU will not produce symptoms but early detection and treatment⁹ reduces the complications of diabetes and early onset of renal diseases in the form of pyelonephritis, AKI may lead to CIN and CKD.

KEYWORDS

ABU (Asymptomatic Bacteriuria), Complicated UTI. Pyelonephritis, AKI, CLED, FBS, PPBS, HbA1c.

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INTRODUCTION: Type 2 Diabetes is being the major cause of morbidity and mortality especially in 3rd world nations like India where the poverty and other factors prevailing like poor compliance, poor hygiene, social factors may lead to early onset of complications of diabetes,^{10, 11} like nephropathy, CKD etc. to prevent emerging chronic kidney disease secondary to complicated UTI, it may lead to CKD, prior to the development of diabetic nephropathy, CKD. Asymptomatic bacteriuria screening and treatment must be initiated.

RESULTS:

Sl. No	Sex	No. of Patients	Asymptomatic Bacteriuria(A SB)	(%)
16	Males	61	12	19.67
22	Females	51	29	56.86

Table 1: Sex Wise Distribution of the Patients

P-value = 0. 0000092

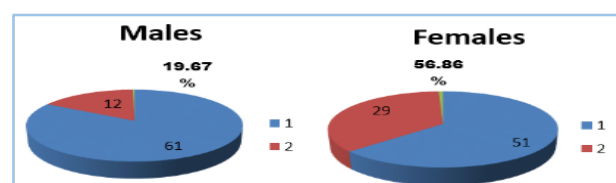


Fig. 1

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Age	Number	ASB	%
31-40	24	16	66.66%
41-50	38	12	31.57%
51-60	22	8	36.66%
61-70	18	5	27.77%
Total	102	41	

Table 2: Age Wise Distribution

p-value = 0. 000092

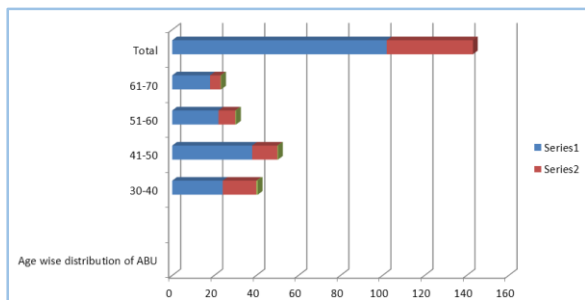


Fig. 2: Age Wise Distribution

Sl. No	FBS	N=	ASB	%
1	<200	42	8	19.04%
2	201-250	38	16	42.10%
3	251-300	20	16	80%
4	>300	2	1	50%

Table 3: ABU in Correlation with FBS mg%

p-value = 0. 004354

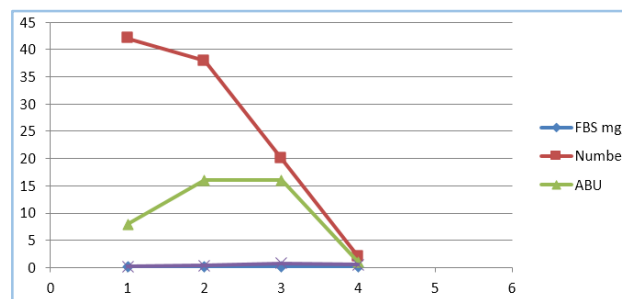


Fig. 3: ABU in Correlation with FBS mg%

Age	1-5 years			6-10 years			11-15 years		
	No. of Patients	ABU	%	No. of Patients	ABU	%	No. of Patients	ABU	%
30-40	12	10	83.33	8	4	50%	4	2	50%
41-50	26	6	23.07	12	5	41.66	2	1	50%
51-60	14	4	28.57	7	3	42.85	1	1	100%
61-70	12	2	16.66	5	2	40%	1	1	100%

Table 4: Duration of Diabetes and ABU

DISCUSSION: 102 patients attended the medical OP with various complaints, none of them were having symptoms of urinary tract infection, with documentary evidence of T2 Diabetes (FBS 160-200 mg/dL, PPBS>300 mg/dL)¹² more the blood sugar may be associated with other comorbid conditions, on different methods of treatment with different classes of drugs like oral hypoglycaemic agents, Insulins, or both with poor control of hyperglycaemia may be due to poor diet control, even though the people are hardworking, not well educated, many more are illiterates. We used only hospital available drugs glibenclamide, glimepiride, metformin and Recombinant DNA.¹³ plain and 30/70 Insulin. These patients were screened for Asymptomatic Bacteriuria.

The patients were categorised in to groups according to Age, Sex, Blood glucose status and duration of diabetes. Among the 102 patients, 41 patients had asymptomatic bacteriuria with prevalence of 40.19%. Among the age and sex matched controls the prevalence of ABU is 12.3%, this shows that substantial increase of ABU among diabetics has been increasing.

Rengarts.¹⁴ in 1960 reported ABU in 34% of 68 patients, Saxena et al reported 9.3% and Chaturvedi.⁹ et al. in 1984 reported an incidence of 28% in patients confined to bed for various reasons. In this study, among 41 patients with ABU of 29(56.86%) were females, 12(19.67%) were males, regarding bacteriuria.⁶

E. coli accounts 24(58.53%), 8(66%) cases were reported E. coli., 3(7.31%) Klebsiella, 1(50%) and 1(50%) each of coagulase positive staphylococci, Pseudomonas respectively. This shows females outnumbered males, E. coli was common in both females and males with ABU. This shows that prevalence of ABU is more in women with diabetes and without diabetes as compared with age and sex matched controls. Some workers reported no significant difference in diabetic and non-diabetic men (O'Sullivan and Filtzgerald, 1961), KASS in 1965, ABU was more frequent in diabetic women than non-diabetic. In 1960, ABU was 7% in pregnant diabetics. This study shows age of the patient and duration of diabetes has direct relation with asymptomatic bacteriuria.

Depending on the fasting blood sugar levels, the patients were divided in to four groups, this study shows increasing prevalence of ABU in higher levels FBG, 42.10% in second group (201-250 mg/dL), 80% (16 out of 20) were with FBG 251-300 mg/dL, and 50% in very small group, one out of 2 with FBG >300 mg/dL. The group with 80% prevalence may be due to hormonal in women, hormonal changes, BPH in males, and development of Neuropathy indirectly impacted the increasing prevalence. This showed the poor glycaemic control has direct impact on prevalence of ABU. This study showed increased prevalence in 30-40 years with short duration diabetes group, 10 cases out of 1283. 33% may be due to young and sexually active, this

might be the cause. In the large group, 41-50 years age group, 5 yrs. duration of diabetes only 23.7%, 5-10 and >10 years duration of T2DM showed the prevalence of ABU 41.66% to 50%, indicates the diabetic complications like mucosal barrier damage, vascular and neurological like autonomic neuropathy, etc. This study showed comorbid conditions like BPH in males, pelvic diseases and other hormonal deficiencies in elderly females has indirect influence on prevalence of ABU.

SUMMARY AND CONCLUSION: 102 patients attended the medical OP with documentary evidence of diabetes with no signs and symptoms of UTI, were screened for Asymptomatic Bacteriuria (ABU), some factors were directly and some indirectly showed the influence on prevalence of ABU.

1. Increasing Age.
2. Gender; more in women than men.
3. Poor control of Hyperglycaemia increases ABU.
4. Comorbid conditions in middle to elderly females increase ABU.
5. Duration of diabetes, as the duration increases comorbid conditions develop, and bacterial colonisation due to disruption of mucosal barrier.
6. E. coli is the commonest both in males and females, second is Klebsiella.

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