ARC Journal of Diabetes and Endocrinology
Volume 4, Issue 2, 2018, PP 31-33
ISSN No. (Online) 2455-5983
DOI: http://dx.doi.org/10.20431/2455-5983.0402005
www.arcjournals.org

Evaluation of Asymptomatic Bacteriuria and Urinary Tract Infection in Patients with Diabetes Mellitus; Approach and Treatment

Senay Ozturk Durmaz[1*] ,Cemile Elvin Dogan Basaran[2], Mehmet Celik[3]

[1]*Antalya Kepez State Hospital, Department of Infectious Diseases and Clinical Microbiology, Antalya, Turkey*

[2]*Antalya Kepez State Hospital, Department of Internal Medicine, Antalya, Turkey*

[3]*Antalya Kepez State Hospital, Department of Endocrinology and Metabolism, Antalya, Turkey*

Corresponding Author:** ***Senay Ozturk Durmaz, *Antalya Kepez State Hospital, Department of Infectious Diseases and Clinical Microbiology, Antalya, Turkey,* ***Email:*** *drsenay70@gmail.com*

Abstract

Aim: *The term asymptomatic bacteriuria is defined as the presence of a large amount of uropathogen in the urine of a person without any symptoms. The aim of this study was to determine the urinary tract infection asymptomatic bacteriuria in patients with diabetes mellitus.Materials and Methods: Between October 2018 and December 2018, 138 patients with type 2 diabetes who were admitted to internal medicine polyclinic were retrospectively screened for asymptomatic bacteriuria and urinary tract infection. Hba1c levels, urine microscopy, urine culture results were evaluated in patients with diabetes mellitus.Results: Symptomatic urinary tract infection was found in 3 of 138 patients (2.17%), asymptomatic bacteriuria in 13 patients (9.4%) and contamination in 13 patients (9.4%). Ten (62.5%) of 16 urine cultures were found to be E. coli.Conclusion: The incidence of urinary tract infections and asymptomatic bacteriuria is high in diabetic patients who are not under control. Diabetic female patients; In addition to blood sugar regulation, perineal hygiene and menopause training may also reduce urinary tract infections.*

Keywords: *Diabetes mellitus, asymptomatic bacteriuria, urinary tract infection*

1. Introduction

Asymptomatic bacteriuria (ABU) is frequently observed in women and is defined as intense bacterial excretion in the urine without any complaint.In the current European guideline, if at least 2 urine cultures of more than 24 hours in a woman without a complaint, the same bacteria is produced above 10^5 cfu, this is defined as asymptomatic bacteriuria. The only difference between women in men is to show bacterial load in a single culture is sufficient for the definition of asymptomatic bacteriuria (1,2).The prevalence of ABU in women with diabetes mellitus (DM) is approximately three times higher than non-diabetic women (3,4,5,6).In patients with DM, ABU may occur due to inadequate control of blood glucose levels, neurogenic bladder, chronic urinary retention, leukocyte dysfunction, recurrent vaginitis, diabetic microangiopathy (3,7).In addition, poor perineal hygiene contributes to urinary tract infection especially in immunocompromised diabetic women.

2. Materials and Methods

A total of 138 patients with type 2 diabetes, 88 women and 50 men, who were admitted to the internal medicine clinic of Antalya Kepez State Hospital between October 2018 and December 2018 were included in the study. HBA1c levels, urine microscopic examinations and urine cultures were retrospectively evaluated from the patient records.

3. Results

Of 138 patients, 88 were female (63.8%) and 50 male (36.2%). Of the patients, 13 (81.2%)were females and 3 (18.8%) were males. In 16 patients, urine cultures showed growth in 10^5cfu \ ml. Three female patients had dysuria and the other patients had no symptoms. The mean age of patients with urine growth was 60.1 and mean HBA1c was 8.7%. In the urine analysis, 4 patients were found to have pyuria. Risk factors for urinary tract infection due to diabetes were given in Table 1. Active distribution of reproduction; In 10 patients (62.5%) Eschrichia

coli, in 2 patients (12.5%) Streptococcus agalactiae, in 2 patients (12.5%) Klebsiella spp., In 1 patient (6%) Candida spp. and coagulase negative staphylococci in 1 patient.

Table1: *Causes of predisposition to ABU in patients with DM*

Insufficiency in the control of blood glucose levels	Recurrent vaginitis
Diabetes related leukocyte dysfunction	Chronic urinary retention
Diabetic neuropathy	Microangiopathy linked to Diabetes Melittus

The demographic distribution and distribution of factors are shown in Table 2. 13 of the patients had contamination in the urine culture. All of these patients were female (100%) and the mean age was 52.8 years.When diabetic patients were examined according to blood HbA1c level; Themean HbA1c value of the 13 female patients who had contamination in the urine culture was 9.4%.The mean HbA1c value of 16 patients with urine culture was found to be 8.7%.

Table2: *Demographic distribution and distribution of factors in cases with ABU and urinary tract infection*

Female (n: 13)	Male (n: 3)	Age	Active microorganism	HBA1C(%) value
√		*56*	*Eschrichia coli*	>10
√		63	Candida spp.	>10
√		68	*Streptococcus agalactiae*	>10
√		56	*Eschrichia coli*	6,9
√		68	*Eschrichia coli*	6,1
√		82	*Eschrichia coli*	>10
√		69	*Eschrichia coli*	>10
√		53	*Klebsiella spp.*	8,1
	√	54	*Eschrichia coli*	6,2
	√	68	*Koagülaz negatif stafilokok*	7,5
√		51	*Eschrichia coli*	>10
√		43	*Streptococcus agalactiae*	6,1
	√	44	*Klebsiella spp.*	>10
√		54	*Eschrichia coli*	>10
√		72	*Eschrichia coli*	9,4
√		64	*Eschrichia coli*	9,2

4. DISCUSSION

Of the 138 patients who were screened in our study, 3 had symptomatic urinary tract infection and 13 patients had ABU, and all of the symptomatic patients were female (100%). Three of the female patients were symptomatic (3.4%).The rate of ABU was 26% in diabetic women and 6% in non-diabetic women (9-10). In our study, ABU was found in 14.7% of female diabetic patients. The mean age was 60.2 and 81% of the cases were female.In postmenopausal women, vaginal Ph drops due to the lack of estrogen, the colonization of lactobacilli decreases.Thus, it facilitates colonization of the vagina with the possible uropathogens originating from the gastrointestinal tract. This may be explained by the high prevalence of ABU in males and females compared with males (8).The mean HbA1C level was 8.7% in patients with symptomatic urinary tract infection and ABU. This shows poor glycemic control. Diabetes regulation can be thought to reduce the rate of morbidity. Keleştimur and colleagues were reported to have ABU in 32% of diabetic patients with high HbA1C levels and in 7% of patients with normal HbA1c levels (11).

The most common cause of ABU is aeropo-gram-negative bacteria. Escherichia coli is isolated from 70-75% of samples. Klebsiella pneumoniae and Enterebacter spp.saptanir in 12-23% of cases. It is not uncommon for group B streptococci and Pseudomonas species to become ABU agents (3,12,13). In our study, 10 (62.5%) of 16 reproduction were E.coli. The diagnosis of symptomatic urinary tract infection may be difficult in the elderly. Patients with dysuria, urinary frequency, new onset urinary incontinence, side pain, and fever may not have symptoms such as urinary incontinence. In patients, ABU is caused by its own gastrointestinal flora and the use of antibiotics leads to the development of resistant strains.All 13 cases with contamination were female. Naturally, anatomical reasons, vaginal flora, short urethra, lactobacilli and hygiene factor affect this condition (14).It is a known fact that treatment of ABU in many cases is unnecessary due to antibiotic cost and side effects.In the presence of ABU, the recommended treatment groups consist of pregnant women, surgical interventions, renal transplant recipients and children (15).

5. CONCLUSION

The risk of urinary tract infection increases in diabetic postmenopausal patients with poor glycemic control. Genital region hygiene and prevention of urinary tract infections should be explained in patients undergoing diabetes education.

REFERNCES

[1] Grabe, M., Bartoletti, R., & Bjerklund Johansen, T. E. (2015). Guidelines on urological infections. European Association of Urology Web site.

[2] Nicolle LE, Bradley S, Colgan R, Rice JC, Schaeffer A, Hooton TM.Infectious Diseases Society of America guidlines fort he diagnosis and treatment of asymptomatic bacteriuria in adults,*Cli Infect Dis* 2005;40(5):643-54.

[3] Sobel JD,Kaye D. Urinary tract infections.In: Mandell GL,Bennet JE, Dolin R,eds *Mandell, Douglas and Bennet's Principles and Practice of Infectious Diseases*. 5th ed. Philadelphia : Churchill Livingstone, 2000:773-805.

[4] Pfau A,Sacks TG,Effective prophylaxis for recurrent urinary tract infections during pregnansy.*Clin Infect Dis* 1992;14:810-4.

[5] Zhanel GG, Harding GKM, nicolle LE, Asymptomatic bacteriuria in patients with diabetus mellitus. *Rev Infect Dis* 1991;13:150-4.

[6] Batalla MA,Baladimos MC, Bradley RF. Bacteriuria in diabetes mellitus. *Diabetologia* 1997;7:297-301.

[7] Rayfield EJ,Ault MJ,Keausch GT,Brothers MJ,Nechemaias C,Smith H.Infection and diabetes:the case for glucose control.*Am J Med* 1982;72:439-50.

[8] Nordenstam GR,Branderberg GA,Oden AS, Eden CMS. Bacteriuria and mortality in an elderly population.*N Eng J Med* 1986; 314 : 11 52-60.

[9] Geerlings SE. Urinary tract infections in patients with diabetes mellitus:epidemiology, pathogenesis and treatment. Int J Antimicrob Agents. 2008;31Suppl 1:S54-7.

[10] Nicolle LE, Bradley S, Colgan R, Rice JC, Schaeffer A, Hooton TM; InfectiousDiseases Society of America; American Society of Nephrology; American Geriatric Society. Infectious Diseases Society of America guidelines for the diagnosis and treatment of asymptomatic bacteriuria in adults. Clin Infect Dis. 2005;40(5):643-54.

[11] Keleştimur F,Ünal A,Paşaoğlu H,Başar E,Kılıç H,Doğanay M. Diabetes mellituslu hastalarda asemptomatik bacteriüri. Mikrobiyoloji Bülteni 1990;24:173-82.

[12] Stein G, Fünfstück R. [Asymptomatic bacteriuria]. Med Klin (Munich). 2000 ; 95(4) : 195-200.

[13] Miller JM,Raimer KA.Urinary tract infection and pyelonephritis.*In*:Posterek JG,ed.*Obstetric and Gynecologic Infectious Diseases*.Second ed.New York:Raven Press,1994:274-93.

[14] Sungur G, Taşcı S. Diabetes mellitus'lu kadınların hijyenik alışkanlıkları ve üriner sistem enfeksiyonu görülme durumu. ERÜ Sağlık Bilimleri Fakültesi Dergisi. 2014; 2: 12-21.

[15] Azak E,Gündeş G. S.Asemptomatik Bakteriüri *Türkiye Klinikleri J Urology -Special Topics* 2010;3(3):27-33

Citation: *Senay Ozturk Durmaz ,Cemile Elvin Dogan Basaran, Mehmet Celik. Evaluation of Asymptomatic Bacteriuria and Urinary Tract Infection in Patients with Diabetes Mellitus; Approach and Treatment. ARC Journal of Diabetes and Endocrinology. 2018; 4(2):31-33. doi:dx.doi.org/10.20431/2455-5983.0402005.*