ASYMPTOMATIC BACTERIURIA CAN BE CONSIDERED A DIABETIC COMPLICATION IN WOMEN WITH DIABETES MELLITUS

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1. INTRODUCTION

Patients with diabetes mellitus (DM) have an increased risk for infections.1,2 The urinary tract is the most important site of these infections.3,4 Many urinary tract infections (UTI) are asymptomatic and it is not known whether symptomatic UTI are preceded by asymptomatic bacteriuria (ASB). In contrast to men, a higher prevalence of ASB has been found in women with DM compared to women without DM.4,5,6,7 However, others could not confirm this finding.8,9 Because more complications of UTI are seen in diabetic patients compared to nondiabetic patients10 and renal involvement, even without the presence of symptoms (subclinical pyelonephritis), is common,11,12 it is important to investigate the association between ASB and symptomatic UTI in women with DM. Various risk factors for ASB in diabetic women have been suggested.5,7,13,14,15,16 However, most studies only included a small number of patients from one hospital, often without distinguishing between DM type 1 and 2.

Genes and Proteins Underlying Microbial Urinary Tract Virulence
Edited by L. Emödy et al., Kluwer Academic/Plenum Publishers, 2000 309
The aim of the present multi-center study was to determine the prevalence of ASB as well as the risk factors for ASB in a large number of women both with type 1 and type 2 diabetes.

2. METHODS

2.1 Patients’ Enrolment and Evaluation

The patients were recruited in the diabetes outpatient clinics of the University Hospital Utrecht (tertiary care hospital), four non-university hospitals (Diakonessenhuis Utrecht, Bosch Medicentrum ’s Hertogenbosch, Catharinahospital Eindhoven) and the offices of seven general practitioners in The Netherlands. Women were included with either DM type 1 or DM type 2, age between 18-75 years. All patients were asked to collect two consecutive midstream urine specimens during a 2-4 month period. Exclusion criteria were: Pregnancy, recent hospitalization or surgery (< 4 months), known urinary tract abnormalities, symptoms of a UTI or the use of antimicrobial drugs in the previous 14 days. Finally 636 women entered the study group. During the first visit of the study all patients were interviewed and the medical history was obtained from the hospital files using a standardized questionnaire, which included: Age, type and duration of DM, medication, secondary complications of the DM (retinopathy, macrovascular diseases, peripheral neuropathy), pregnancies or urinary tract surgery in the previous years, number of urinary tract infections in the last year, recent sexual intercourse (<1 week), contraceptive method, menopausal status and use of (local) estrogens. Blood pressure, weight and height (Body Mass Index, BMI) were recorded. The following laboratory values were obtained: Serum hemoglobin A1c (HbA1c), serum creatinine, blood group, microalbuminuria, glucosuria, leucocyturia and urinary pH. In addition, in 106 patients the bladder residue in m1 after micturition was measured by a bladderscan and in 40 patients the Ewing test was performed to assess cardiovascular autonomic neuropathy.

To investigate the prevalence of ASB in nondiabetics, females visiting the eye and trauma outpatient clinic and not having DM, were asked to collect two consecutive midstream urine specimens. Exclusion criteria were the same as for the diabetic females. Hundred fifty-three women were included (mean age 47.8 year, standard deviation 16.4 year).