234

Cordoni M C[1], Giannantoni A[2], Del Zingaro M[2], Notarstefano F[1], Zucchi A[2], Mearini L[2], Scionti L[1], Porena M[2]
1. Dept. of Internal Medicine, University of Perugia, 2. Dept. of Urology, University of Perugia

RELATIONSHIPS BETWEEN VOIDING DYSFUNCTION AND PERIPHERAL NEUROPATHY IN ASYMPTOMATIC PATIENTS AFFECTED BY DIABETES MELLITUS TYPE I : PRELIMINARY RESULTS

Hypothesis / aims of study

Diabetic peripheral neuropathy is a common complication of diabetes mellitus that can cause significant morbidity and mortality. While it is known that genitourinary autonomic neuropathy can cause sexual dysfunction and neurogenic bladder, the real prevalence of diabetic cystopathy is still under discussion. The aims of the present study were to investigate the prevalence of voiding dysfunction in asymptomatic patients with type I diabetes mellitus and to determine the relationships with clinical data linked to the disease and with scores of severity of peripheral neuropathy.

Study design, materials and methods

36 consecutive patients who did not complain of urinary symptoms were included in the present prospective study. Inclusion criteria were age < 50 years (so as to exclude bladder outlet obstruction due to benign prostatic hypertrophy in males and urogenital prolapse in females), no history of abdominal surgery or trauma and no recent urinary tract infections. Metabolic control was evaluated by assessing in each patients HbAlc value. Autonomic neuropathy was determined by studying 4 cardiovascular reflexes (deep breathing**,** lying to standing, valsalva manoeuvre, postural hypotension) according to Bellavere'score. Somatic neuropathy was assessed by the measurement of the vibration perception threshold (VPT) at both big toes using a biothesiometer. Voiding dysfunction were assessed by means of uroflowmetry and the following parameters were investigated: maximum flow rate (Qmax), medium flow rate, voiding time, uroflowmetry curve morphology and postmicturition residual volume.

Results

There were 25 females and 11 males; mean age was 34.4 $\pm$ 1.3 years; time since onset of diabetes was 18.5 $\pm$ 1.7 years and mean value of HbA1c was 8.5 $\pm$ 0.3%. Mean score of autonomic neuropathy was 1.3 $\pm$ 0.3, and the mean value of VPT was 9.4 $\pm$ 4 V on right big toe, and 9.2 $\pm$ 1.3 V on left big toe.

On uroflowmetry, Qmax values were reduced to <18 ml/sec in 25% of patients; in 66% of these patients also medium flow rate values appeared to be low. An increase in post micturition residual volume, as $\geq$ 20% of the emptying volume, was observed only in 1 patient. In 4 cases the residual volume ranged from 10 to 20% of micturitional volume. Abnormal uroflowmetry curves were found in 16.6% of cases. We detected a significant correlation between low Qmax values and time since onset of diabetes (r^2= 0.263; p = 0.001), and with score accounting for the severity of autonomic neuropathy (r^2= 0.115; p< 0.05). Low medium flow rate values also correlated with the time since onset of diabetes (r^2= 0.256; p = 0.001) and with score of autonomic neuropathy (r^2= 0.203; p< 0.01). Finally, we did not detect any significant relationship between VPT and voiding parameters.

Interpretation of results

According to the studies previously performed in animals and humans, the most common voiding dysfunction in subjects affected by diabetes mellitus are impaired sensation of bladder filling and detrusor contractility alterations. These abnormalities are usually retained to develop later during the course of the disease and generally are accompanied with obstructive urinary symptoms. Few data exist about the relationships between voiding abnormalities and severity of peripheral neuropathy. These preliminary results indicate that about 20% of asymptomatic patients with type I diabetes mellitus are affected by micturitional disturbances and that these dysfunction correlate with duration of the disease and with the severity of autonomic neuropathy, as assessed by the study of cardiovascular reflexes.

Further informations are needed to assess the role of somatic neuropathy in the development of voiding dysfunction in these subjects.

Concluding message

Non invasive diagnostic technique as uroflowmetry should be included in the work up of asymptomatic diabetic patients and indicate those candidates who need more invasive urodynamic tests and, eventually, therapeutic interventions.

References

Duby, J.J., et al. Diabetic neuropathy : an intensive review. Am J Health Syst Pharm. 15; 61: 160, 2004