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TYPE 2 DIABETES BUT NOT METABOLIC SYNDROME IS ASSOCIATED WITH LOWER URINARY TRACT SYMPTOMS IN MEN LESS THAN 45 YEARS OLD

Hypothesis / aims of study
The main interest of the present study arises from our clinical observation that urologists often manage diabetes patients with advanced stage diabetic cystopathy referred from other physicians. Metabolic syndrome (MS) often coexists with diabetes has associations with LUTS and BPH in elderly men. However, the early effect of MS on lower urinary tract function remains unclear. In this study, we investigated the association of diabetes and MS with lower urinary tract symptoms and function in type 2 diabetes men younger than 45-year-old.
Study design, materials and methods
Voiding and erectile function in 226 men with type 2 diabetes at a single diabetes clinic and 183 healthy men with normal fasting blood glucose were compared. Subjects were evaluated using the International Prostate Symptom Score questionnaire (IPSS), urinary flow rate and post-void residual urine measurement. The association of MS with lower urinary tract symptoms and function was also evaluated.
Results
The mean age was 38.9 ± 6.1 years (range 20 to 45) and the mean duration of diabetes was 2.8 ± 3.1 years (range 0.5 to 20). Table 1 showed that patients with diabetes had significantly greater mean BMI, total IPSS and voided volume than controls. However, mean age, maximal urinary flowrate and post-voided residual urine were similar in the diabetes and controls groups. Compared with controls, diabetic men had an increased of odds ratio of having moderate to severe LUTS (OR=1.78, 95% CI 1.12, 2.84, p=0.01). A total of 156 (69%) patients met the criteria for MS. These patients had a significantly greater BMI compared to diabetes patients without MS. The mean age, duration of diabetes, HbA1c, IPSS, voided volume and maximal urinary flowrate were similar between diabetic patients with and without MS in table 2.
Interpretation of results
We found that men less than 45 years old with type 2 diabetes had more LUTS but similar bladder emptying function in the early stage of diabetes. By contrast, previous study in diabetic patients of mean age of 62 respectively found that not only LUTS were more common but also emptying function was impaired [1]. These findings in different age groups may suggest that the effect of diabetes on LUTS occurs earlier than the worsening of emptying function. In addition, Rohrmaan et al showed that men with three or more components of the MS had an increased odd of LUTS in a population-based survey [2]. Although Park et al found no relationship between LUTS and MS in Korean elderly male patients, their results showed that diabetes itself was significantly associated with moderate to severe LUTS [3]. Our findings showed that MS was not associated with worse LUTS in the early stage of diabetes. Diabetes seemed to have a more predominate effect on LUTS than other components of MS in these patients.
Concluding message
Type 2 diabetes patients aged less than 45 years old had more LUTS but similar bladder emptying function compared with controls. MS did not aggravate the severity of LUTS, or emptying function in diabetic men less than 45 years old. Our results suggest the need for increased attention to LUTS in diabetes men less than 45 years old.

Table 1: Comparison of general characteristics, lower urinary tract symptoms, uroflowmetry and erectile function in the diabetes and control groups.

	Control	Diabetes	p Value
No. Pts	183	226	
Mean age	38.3 ± 5.8	38.9 ± 6.1	0.11
Mean BMI (kg/m2)	24.4 ± 3.1	27.2 ± 4.8	<0.001
Mean IPSS total	4.1 ± 4.6	6.1 ± 5.8	<0.001
Mean IPSS storage	2.0 ± 2.2	2.7 ± 2.7	0.02
Mean IPSS voiding	2.1 ± 3.1	3.5± 4.2	<0.001
Mean quality of life	1.7 ± 1.2	1.6± 1.3	0.27
Moderate to severe LUTS	35 (19.1%)	67 (29.6%)	0.01
Mean voided volume (ml)	326 ± 102	376 ± 177	0.04
Mean Qmax (ml/sec)	22.8 ± 7.9	22.6± 8.1	0.84
PVR (ml)	20± 20	23± 35	0.82

Table 2: Comparison of clinical characteristics, lower urinary tract symptoms, uroflowmetry and erectile function in male type 2 diabetes patients ≦ 45 years old with and without metabolic syndrome (MS)

	With MS	Without MS	p-value
No Pts	156	70	
Mean age	39.2± 6.1	38.4 ± 6.1	0.39
Duration of diabetes (yrs)	2.8± 3.1	3.1± 3.0	0.39
Mean BMI (kg/m2)	29.1 ± 4.2	23.2 ± 3.5	<0.001
HbA1c	9.0 ± 2.2	9.4 ± 2.1	0.25
IPSS	6.2 ± 5.9	5.9 ± 5.6	0.73
IPSS storage	2.7 ± 2.8	2.5 ± 2.6	0.57
IPSS voiding	3.5 ± 4.3	3.4 ± 4.3	0.92
IPSS Quality of life	1.6 ± 1.3	1.7 ± 1.2	0.41
Voided volume (ml)	378± 179	372 ± 174	0.79
Qmax (ml/sec)	22.8± 8.3	22.2 ± 7.6	0.59
PVR (ml)	22 ± 37	27 ± 29	0.27

References

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2. Association between markers of the metabolic syndrome and lower urinary tract symptoms in the Third National Health and Nutrition Examination Survey (NHANES III). Int J Obes 2005; 29: 310-16
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Was this study approved by an ethics committee?	**Yes**
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Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**