

DIABETES-RELATED RISK FACTORS FOR URINARY INCONTINENCE IN WOMEN WITH DIABETES

Hypothesis / aims of study

In a large community-based survey conducted during the years 1995-97, women with diabetes were found to be associated with an increased risk for also having urinary incontinence. This association was still statistically significant after adjustments for age, BMI, parity and smoking. However, the association was not very strong with an OR of 1.22 after the adjustments. The women with diabetes had a more severe type of incontinence, and women with diabetes were more likely to have urge and mixed types of incontinence.

A recent study found that duration of diabetes was associated with an increased risk of incontinence [1]. It has also been shown that macroalbuminuria and peripheral neuropathic pain were associated with incontinence [2]. A randomized controlled trial found that lifestyle intervention in women with pre-diabetes reduced the incidence of weekly incontinence compared to the antidiabetic drug metformin or placebo [3].

The mechanisms behind the association between urinary incontinence and diabetes are not well established. Hyperglycaemia with increased urine volume, urinary tract infections, microvascular complications, duration of diabetes, glycaemic control, treatment of diabetes, and peripheral neuropathy have all been suggested as possible mediators.

Based on the previously established increased risk for incontinence in women with diabetes in our study population, the aim of this substudy was to investigate possible direct diabetes-related risk factors for this connection, beyond the established factors age, BMI, parity and smoking.

Study design, materials and methods

The study is based upon the Norwegian HUNT study conducted in the county of Nord-Trøndelag, Norway, during the years 1995-97. 47,313 women were invited to participate in this survey, 34,755 choose to participate by showing up at a screening station, and were defined as our source population (EPINCONT study population). 27,936 women who answered the questionnaire, including questions about urinary incontinence, were defined as the study population, giving a response rate of 80 %. Of the participants in EPINCONT, 21,057 (75 %) answered the question "Do you have or have you had diabetes?" From these confirming, we have diabetes data on a total of 685 women. All women had a non-fasting blood sample taken, which was tested for glucose. The women answering affirmative to the question about having diabetes, then also filled in an extended questionnaire, containing questions on diagnosis, treatment (insulin, tablets), monitoring of their diabetes, membership in the Norwegian Diabetes Association, vision, hospitalization since diagnosis, quality of life, support and tutoring of their diabetes, and foot problems.

Results

The 685 women with diabetes were grouped into women having urinary incontinence (N= 267) and women without (N= 418), and then compared with respect to duration of diabetes, glucose value (non-fasting), HbA1c-value, and treatment of diabetes (divided into insulin, tablets, or diet) (Table 1). No statistically significant differences were found by bivariate analyses (chi squared tests).

Logistic regression analyses showed no significant associations between incontinence and glucose value (non-fasting), HbA1c-value, duration of diabetes or type of treatment for diabetes. After adjusting for age, BMI, parity and smoking, still no significant associations were found.

Table 1. Comparison of diabetes related factors among women with diabetes having or having not urinary incontinence

	Women with UI (N= 267)		Women without UI (N= 418)		P-value
	N	%	N	%	
Non-fasting glucose (n= 683)					
< 11.0 mmol/l	191	71.8	310	74.3	0.465
≥ 11.0 mmol/l	75	28.2	107	25.7	
HbA1c (n= 659)					
≤ 8 mmol/l	139	54.7	231	57.0	0.560
> 8 mmol/l	115	45.3	174	43.0	

Duration of diabetes (n= 506)					
0-10 years	123	64.4	216	68.6	0.364
11-20 years	55	28.8	71	22.5	
21-30 years	8	4.2	20	6.3	
≥ 31 years	5	2.5	8	2.6	
Diabetes treatment (n= 510)					
Insulin	62	31.6	98	31.2	0.814
Tablets	76	38.8	115	36.6	
Diet	58	29.6	101	32.2	
Hospitalizations since diabetes diagnosis (n= 492)					
0-10 times	134	71.7	239	78.4	0.069
11-20 times	26	13.9	37	12.1	
21-30 times	16	8.6	10	3.3	
≥ 31 times	11	5.9	19	6.2	

Interpretation of results

When analysing five disease related factors, neither bivariate nor multivariate analyses showed any statistically significant associations with having urinary incontinence.

Concluding message

In this large community based cohort with a relatively low prevalence of diabetes, we could not identify direct diabetes related risk factors that explained the increased risk for urinary incontinence among women with diabetes.

References

1. J Am Geriatr Soc (2005) 53; 1851-1857.
2. Diabetes Care (2006) 29: 1307-1312.
3. Diabetes Care (2006) 29; 385-390.

FUNDING: No conflicts of interest

HUMAN SUBJECTS: This study was approved by the Ethics committee of Health Region III, Trondheim, Norway and followed the Declaration of Helsinki Informed consent was obtained from the patients.