

THE ASSOCIATION BETWEEN URINARY INCONTINENCE AND DELIVERY IN A CROSS-SECTIONAL STUDY AMONG JAPANESE WOMEN

Hypothesis / aims of study

The impact of delivery mode and number of deliveries on urinary incontinence (UI) has been debated, and vaginal delivery has been suggested as a risk factor for female UI. Other potential factors include age, body mass index (BMI), parity, smoking, diabetes mellitus, and hysterectomy. We investigated whether delivery mode and number of deliveries is associated with UI among Japanese women.

Study design, materials and methods

We investigated 514 women recruited from outpatient departments (except the departments of pediatrics, psychiatry and ophthalmology) at our university hospital, regardless of the reason for visiting, during a 2-week period (from August 6 to August 17, 2007). All participants were asked to answer a standardized self-reported questionnaire. Using the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF), overactive bladder symptom score (OABSS), and an original questionnaire, we evaluated urinary symptoms and delivery mode history.

We analyzed the impact of mode and number of deliveries on UI. The chi-square test and logistic regression modeling were used for statistical analyses. Values of $P < 0.05$ were considered statistically significant.

Results

A total of 429 individuals completed the questionnaire (response rate, 83.5%). The mean age of respondents was 51 years (range, 23-83 years). The prevalence of each disorder was as follows: stress UI (SUI), 38.5%; urgency UI (UUI), 23.5%; mixed UI (MUI), 16.6%. The prevalence of UI tended to increase with age. The mean number of deliveries was 2 (range, 0-6). The prevalence of delivery mode was as follows: vaginal, 76%; caesarean (and/or vaginal), 12%; and no deliveries, 12%.

Univariate analysis revealed a significant association between number of deliveries and SUI. Age and BMI were also associated with SUI and UUI. In multivariate analysis, the independent risk factors for SUI were age, BMI and number of deliveries (odds ratios (ORs), 1.03, 1.06, and 1.40, respectively). On the other hand, type of delivery was not a risk factor for SUI (Table). For UUI, only age was identified as an independent risk factor (OR, 1.05; $p < 0.05$).

Interpretation of results

Our findings suggested number of deliveries as an independent risk factor for SUI, but revealed no significant relationship between SUI and delivery mode. The mean age of participants in this study was relatively high (51.3 years), so postmenopausal degenerative changes in the pelvic floor with aging might have influenced the results. Further study is needed to investigate these influences on UI in a longitudinal study.

Concluding message

This study revealed the number of deliveries as an independent risk factor for SUI, but showed no significant relationship between UI and delivery mode among Japanese women.

Table. Analysis of association between urinary incontinence and delivery.

Stress urinary incontinence						
Variable	OR	Univariate 95%CI	P-value	OR	Multivariate 95%CI	P-value
Age	1.03	1.02-1.05	<0.05	1.03	1.01-1.04	<0.05
BMI	1.08	1.03-1.14	<0.05	1.06	1.01-1.13	<0.05
No. of deliveries	1.40	1.14-1.72	<0.05	1.40	1.03-1.88	<0.05
Delivery mode						
No deliveries	1 (ref.)			1 (ref.)		
Caesarian	0.54	0.28-1.04	NS	1.52	0.58-4.00	NS
Vaginal	0.77	0.35-1.71	NS	1.03	0.45-2.36	NS

*NS, not significant

Urgency urinary incontinence						
Variable	OR	Univariate 95%CI	P-value	OR	Multivariate 95%CI	P-value
Age	1.06	1.04-1.07	<0.05	1.05	1.03-1.07	<0.05
BMI	1.08	1.02-1.14	<0.05	1.05	0.99-1.12	NS
No. of deliveries	1.22	0.97-1.54	NS	1.19	0.85-1.68	NS
Delivery mode						
No deliveries	1 (ref.)			1 (ref.)		
Caesarian	0.74	0.35-1.53	NS	2.00	0.64-6.18	NS
Vaginal	0.81	0.32-2.05	NS	1.14	0.42-3.08	NS

*NS, not significant

References

1. N Eng J Med 348; 10, 2003
2. Birth 34: 3, 2007
3. Urology 68: 318, 2006

Disclosures

Funding: None **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** The Ethical Committee of The University of Fukui **Helsinki:** Yes **Informed Consent:** Yes