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FACTORS INVOLVED IN STRESS URINARY INCONTINENCE 2 YEARS AFTER FIRST DELIVERY

Hypothesis / aims of study

Parity is an established risk factor for stress urinary incontinence (SUI) among young and middle-aged women (1), but the underlying aetiology is not completely understood. It appears that changes on both pregnancy and delivery may play a role. The aim of this study was to investigate the constitutional, pregnancy, labour and delivery factors involved in the risk of stress urinary incontinence 2 years after first delivery.

The study hypothesis was that pregnancy itself plays a substantial role in the prevalence of SUI after childbirth.

Study design, materials and methods

A longitudinal cohort study was undertaken to evaluate the influence of first pregnancy and delivery on the development of stress urinary incontinence. The study group was selected from the primigravid women who came to give birth at our Public Health Hospital from April to October, 2007. Our aim was to investigate only the new cases of SUI, so those women who made reference to any kind of urinary incontinence before pregnancy were excluded from the study. Other exclusion criteria were: multiple pregnancy, gestational age of less than 37 weeks, diabetes mellitus or a maternal history of the condition, previous urogynecological surgery, urogynecological malformations and neurological disorders. Women who had a subsequent pregnancy during the follow-up period were excluded in the follow-up visit. An interview on urinary symptoms was held with pregnant women at term and 2 years after delivery, using the 2002 ICS definitions (2). Pelvic floor contraction strength was evaluated 6 months after delivery, and it was assessed using a perineometer (Peritron®), measuring the strongest of three voluntary pelvic floor contractions. Joint hypermobility was also evaluated at the 6-month follow-up visit according to the modified Beighton criteria. Information about labour, delivery and the newborn was obtained from the clinical charts. Correlation of clinical and demographic characteristics with the presence of SUI 2 years after delivery was examined by comparison of the mean (Student's t test, analysis of variance) and percentages (Chi-square and Fisher's test). Statistical significance was set as p=0.05. A multiple logistic regression model was performed with the variables close to statistical significance (p<0.2).

Results

During the inclusion period, 479 pregnant women at term who came to give birth at Donostia Hospital were interviewed. Twenty-one (4.4%) women complained of UI prior to pregnancy and were consequently excluded. Two years after delivery, 381 (83.2%) attended the follow-up visit. Of those, 109 were excluded because were pregnant or had been pregnant again and the remaining 272 formed the study group. Mean age was 31.3 years (range:18-43) and mean BMI was 23.4 (range:16.6- 44.2). Mode of delivery was vaginal in 235 (86.4%) women and caesarean in 37 (13.6%).

SUI affected 44 (16.2%) women 2 years after first delivery. Out of the total, 18 (6.6%) were new onset after delivery and 26 (9.6%) reported stress incontinence during pregnancy. The results of the univariate analysis performed to correlate SUI with different variables are shown in table 1. Women who were incontinent during pregnancy and with lower pelvic floor muscle contraction strength were more at risk of presenting SUI 2 years after first childbirth. A multiple logistic regression model was performed with the variables close to statistical significance (p<0.2). Maternal age and mode of delivery were also included as potential confounding factors. The multivariant model indicated that the only factor that was independently associated with SUI 2 years after delivery was the new onset of SUI during pregnancy. This factor increased the risk more than four times (OR: 4.33; 95% CI: 2.14–8.77) for suffering from SUI 2 years postpartum. We did not find any statistical association with the other variables.

Pregnancy and delivery factors		**SUI two year postpartum**		*P* value
		No (n=228)	Yes (n=44)	
Maternal age (years)	mean, SD	31.2 ± 3.6	31.7 ± 4.1	0.47
Gestational age (days)	mean, SD	278.4 ± 9.6	279.8 ± 10.5	0.38
Maternal BMI	mean, SD	23.2 ± 3.7	24.1 ± 4.5	0.17
Maternal weight gain in pregnancy (kg)	mean, SD	12.5 ± 4.8	12.2 ± 3.9	0.68
SUI in pregnancy	n, %	54 (23.7)	26 (59.1)	0.000
Joint hypermobility	n,%	23(10.1)	4(9.1)	0.84
Mode of delivery				
Vaginal delivery	n, %	195 (85.5)	40 (90.9)	0.34

Cesarean section	n, %	33 (14.5)	4 (9.1)	
2nd stage of labor ≥ 2 hours	n, %	62 (27.2)	14 (31.8)	0.53
Active 2nd stage of labor ≥ 1 hours	n, %	15 (6.6)	4 (9.1)	0.55
Use of oxytocin	n, %	170 (74.6)	37 (84.1)	0.17
Epidural anaesthesia	n, %	202 (88.6)	42 (95.5)	0.17
Episiotomy in vaginal deliveries	n, %	159 (81.5)	31 (77.5)	0.55
Birth weight (g)	mean, SD	3306 ± 462	3281 ± 421	0.74
Cephalic perimeter of the newborn (cm)	mean, SD	34.4 ± 1.4	34.4 ± 1.3	0.99
Pelvic floor contraction strength (cm H_2O)	mean, SD	39.5 ± 22.5	32.5 ± 12.3	0.05

SUI: stress urinary incontinence; BMI: body mass index, SD: standard deviation
(*) Fisher's test

Table 1 Results of the univariate analysis performed to associate stress urinary incontinence with different variables.

Interpretation of results

The results indicate that the new onset of SUI during pregnancy is strongly associated with the presence of this symptom 2 years after delivery. We were able to demonstrate this independent association taking into account a large number of constitutional, pregnancy, labour and delivery variables.

Concluding message

These results suggest that some of the changes that are involved in the development of SUI after childbirth may have its origin in pregnancy. This fact can indicate that the efforts to prevent postpartum urinary incontinence should start during pregnancy.

References

1. Obstet Gynecol 2001; 98:1004-10.
2. Neurourol Urodyn 2002; 21:167-78.

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Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**Medical Ethics and Investigation Committee of the Hospital Donostia.**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**