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DELIVERY PARAMETERS AND URINARY INCONTINENCE 6 MONTHS POSTPARTUM.

Hypothesis / aims of study

Parity and vaginal delivery are established risk factors for urinary incontinence (UI) among women. It is not clear why vaginal delivery increase the risk for UI compared to caesarean section. Reviews report need for more research to clarify the role of different delivery parameters for the risk UI postpartum [1-2]. This study aims at investigating the association between delivery parameters and incident UI 6 months postpartum.

Study design, materials and methods

Our data is from the Norwegian mother and child cohort study, maintained by the Norwegian Institute of Public Health. We present questionnaire data from week 15 and 30 of pregnancy, and 6 months postpartum. The questionnaires focus on mother's health in association with pregnancy. The questionnaires also obtain descriptive data on the mother's age and BMI.

The data are linked to the Medical Birth Registry of Norwegian, which holds information on the following exposures; parity, birth weight, head circumference, presentation, sphincter rupture, prolonged labour, mode of delivery and use of epidural anesthesia. The outcome is incidence of any UI 6 months postpartum.

To isolate the effect of delivery parameters on UI postpartum, we defined a large cohort of 5,219 primiparous women who were continent before pregnancy and during pregnancy, and delivered by spontaneous vaginal delivery only.

Definitions of UI are based on the ICS definitions. Birth weight and head circumference are categorized according to the 50- and 90 percentile. Risk factors were investigated by logistic regression analyses. We adjusted for confounding factors when appropriate and present adjusted analyses.

Results

Mean age was 27.0 years (range 14 – 44) and mean BMI at 6 months postpartum was 23.6 (range 14.7 – 53.9). A total of 5,219 women had spontaneous vaginal delivery. The incidence of UI 6 months postpartum was 22.7%.

Baby's birth weight between the 50th – 90th percentile (3541 - 4180 g) and > 90th percentile (> 4,180 g) were statistically significant risk factors for incident UI 6 months postpartum (OR 1.4; 95% CI 1.2 – 1.6 and OR 1.6; 95% CI 1.2 – 2.0, respectively) as compared to birth weight below the 50th percentile. Head circumference between the 50th – 90th percentile (35 – 37 cm) was also a statistically significant risk factor for incident UI 6 months postpartum (OR 1.3, 95% CI 1.2 – 1.5).

Fetal presentation, sphincter rupture, prolonged labour and epidural were not risk factors for incident UI 6 months postpartum. For further details, see Table 1.

Table 1. Adjusted odds ratio (OR) for urinary incontinence 6 months after spontaneous vaginal delivery among primiparous women who were continent before- and during pregnancy, according to delivery parameters.

			N		Incontinent women		Adj. analyses	
					N	UI	OR	95 % CI
Birth weight	0 – 3,540 g	(1-50 percentile)	3,678	539	20.4	Ref ¹		
	3,541 – 4,180 g	(51-90 percentile)	1,993	498	25.3	1.4	1.2 – 1.6 *	
	> 4,180 g	(> 90 percentile)	386	98	25.9	1.6	1.2 – 2.0*	
Head circumference	0 - 35 cm	(1-50 percentile)	3,105	640	20.9	Ref		
	35 - 37 cm	(51-90 percentile)	1,693	435	26.1	1.3	1.2 – 1.5*	
	> 37 cm	(> 90 percentile)	193	47	25.0	1.3	0.9 – 1.8	
Fetal presentation	Normal occiput		4,798	1,095	22.8	Ref		
	Breech		75	14	18.7	0.8	0.4 – 1.4	
	Abnormal head presentation		108	23	21.3	0.9	0.6 – 1.5	
Sphincter rupture	No rupture grade 3 – 4		4,923	1,111	22.9	Ref		
	Rupture grad 3 – 4		296	55	19.0	0.8	0.6 – 1.1	
Prolonged labor	No prolonged labor		5,148	1,147	22.6	Ref		
	Prolonged labor		71	19	26.8	1.3	0.7 – 2.1	
Epidural	No epidural		3,712	833	22.7	Ref		
	Epidural		1,507	333	22.5	1.0	0.9 – 1.1	

¹ Adjusted for weight loss from delivery to 6 months postpartum. * p < 0.05

Interpretation of results

In this large cohort study designed to investigate the association between delivery parameters and incident UI, high birth weight and head circumference were associated with increased risk of incident UI 6 months postpartum. Fetal presentation, sphincter rupture, prolonged labour, and epidural were not risk factors for incident UI 6 months postpartum.

Concluding message

Birth weight and head circumference appear to be associated with incident UI postpartum. More research is needed to clarify the role of sphincter rupture and breech presentation on UI postpartum. Our data may contribute to select women who should receive particular advises regarding preventive measures, such as pelvic floor muscle training, perineal warm packages during delivery, and regaining pre-pregnancy weight.

References

1. Fritel X, Ringa V, Quiboeuf E, Fauconnier A. Female urinary incontinence, from pregnancy to menopause: a review of epidemiological and pathophysiological findings. *Acta obstetrica et gynecologica Scandinavica* 2012;91(8):901-10.
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Disclosures

Funding: This study has not received any grants or external funding. **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** • The Norwegian Data Inspectorate approved the Norwegian mother and child cohort study in 1996 and renewed the approval in 2003. The Regional Ethics Committee for Medical Research, Health Region II, has also endorsed the project (project number S-97045 and S-95113). **Helsinki:** Yes **Informed Consent:** Yes