630

Humburg J[1], Troeger C[1], Hoesli I[1]
1. *university woman's hospital, Basel, Switzerland*

RISK FACTORS IN PROLONGED POSTPARTUM RETENTION, NUMBER OR CONSTELLATION?

Hypothesis / aims of study

The prevalence of postpartum urinary retention (PUR) is low, but the reported frequencies vary in recent publications from 0.05% to 14.1% depending on the definitions used [1]. Although PUR may be a transient phenomenon it is well known that even a single episode of bladder distension can irreversibly damage the detrusor muscle, therefore resulting in permanent voiding dysfunction [2].

Several risk factors for the development of PUR are mentioned in literature. Using uni- and multivariate regression analyses several authors describe mostly identical risk factors, but also different independent risk factors, such as prolonged first and second stage of labour, isolated prolongation of the second stage, forceps delivery or vacuum extraction, perineal laceration and nulliparity [1]. Epidural anaesthesia as a risk factor is controversially discussed; its use may at least increase the risk of PUR [1].

All the above mentioned risk factors are quite common in daily obstetrical practice. They also often depend on and may even promote each other. From our clinical practice we hypothesized that a particular number and constellation of risk factors during delivery is required to predispose patients to develop prolonged PUR (PPUR). The aim of our study was to analyze the number and the constellation of known risk factors for prolonged postpartum urinary retention (PPUR) in our own unit to facilitate the identification of patients at high risk for PPUR.

Study design, materials and methods

At our institution, PUR is defined as the lack of spontaneous micturition of more than six hours after vaginal delivery. Patients without spontaneous voiding for within at least seven days after delivery or a post void residual bladder volume (PVRBV) of more than 150 ml qualify as prolonged PUR.

We analyzed our patients suffering from PPUR for the risk factors that were extracted from the literature and were found to be statistically significant in uni- and multivariate analysis. Then we compared the obtained number and constellation of these risk factors with a cohort of women without PUR. We also compared different maternal and fetal characteristics between the two groups. This cohort of patients consisted of consecutive vaginal deliveries with a randomly chosen starting point. We decided to exclude breech term deliveries, multiple pregnancies and premature deliveries due to their obstetrical nature, different obstetrical management and therefore possible confounding nature.

We performed a retrospective study on patients diagnosed with PPUR based on the above criteria over a period of five years. Data of women suffering from PPUR were collected over the years. From their medical records we gained the information regarding the known risk factors. Within the study period, we randomly choose a sample of 110 consecutive women who delivered vaginally. This sample of women was matched with the women suffering from PPUR in the number of occured risk factors.

All cases with PPUR had at least four risk factors. Therefore only cases with five or more risk factors were included in the matched control group.

To test whether the observed frequencies of several risk factors were statistically different between the cases and the control group, Chi-square test was used (SPSS 14.0, Chicago, Illinois, U.S.A.). A p value less than 0.05 was regarded as significant. We also compared maternal characteristics, like age, weight, height and body mass index (BMI), as well as fetal characteristics, like birthweight and fetal head-circumference between the two groups using the non-parametric Mann-Whitney U test to detect differences in these factors (SPSS 14.0, Chicago, Illinois, U.S.A.). A p value less than 0.05 was regarded as significant.

Results

During the study period of five years, a total of 9295 women delivered vaginally at our institution. Amongst them we identified a total of six women who developed PPUR (incidence of 0.06%). PPUR resolved not later than eight weeks.

In the PPUR group, none had a combination of all six known risk factors, but the majority of PPUR patients (four out of six) had at least five out of six risk factors. All women with PPUR had a second stage > 1 hour.

In the randomly chosen group of women, who were matched in the number of risk factors (> 4) we identified 11 women with at least five risk factors, which finally formed the controls. Four of 11 control patients even exhibited the maximum of all six risk factors without developing PUR. Looking at the perineal laceration in detail revealed that all patients in both groups had some sort of perineal trauma. Significantly more patients under prolonged labour with spontaneous perineal tears (but without episiotomies) developed PPUR. In the control group with at least five risk factors, only one patient had a second degree tear. In those patients in whom a mediolateral episiotomy had been performed, only one case of PPUR developed, although the remaining risk stratification including prolonged labour, operative vaginal delivery etc. was identical. No patient in the PPUR group had signs of anterior trauma, i.e. periurethral or clitoral laceration.

Comparing the maternal characteristics,such as age, weight, height and BMI and fetal characteristics, like birthweight and fetal head-circumference, we found a statistically significant difference in the fetal head-circumference between both groups (table 1). The newborns with mothers suffering from PPUR had larger head-circumferences that those of the controls.

Table 1 Maternal and fetal riskfactors

Maternal and fetal characteristics	Controls Mean +/- SD	Women with PPUR Mean +/- SD	p
Age (years)	28.4 +/- 3.7	31.8 +/- 6.1	0.149
Weight (kg)	78.1 +/- 13.8	80.3 +/- 7.8	0.591
Height (cm)	168.5 +/- 5.6	166.3 +/- 5.7	0.462
Body Mass Index (BMI)	27.4 +/- 4.05	29.7 +/- 3.85	0.350
Birth weight (g)	3341.8 +/- 589	3834.2 +/- 354.6	0.062
Fetal head circumference (cm)	34.9 +/- 1.22	36.2 +/- 1.17	0.048

Statistically significant, $p<0.05$

Interpretation of results

Our study shows that prolonged PUR was diagnosed only in those cases that had a combination of at least four of the already known risk factors. In contrast to our hypothesis, the number of risk factors found in combination was not increased in the PPUR cases compared to the controls. An other result was, that the newborn's head circumference was larger in the group, where the mother suffered from PPUR. The only differences between the two groups consisted also of the type of perineal damage and the fetal head circumferences.

Concluding message

Prolongend PUR could be the result of an additive effect of single different risk factors, a question that has yet not been adressed. Fetal head circumference may play a role in the development of PPUR. These factors may convert a simple PUR to a prolonged PUR.

References

1. Yip SK, Sahota D, Pang MW, Chang A. Postpartum urinary retention. Acta Obstet Gynecol Scand 2004;83:881–91
2. Mayo ME, Lloyd-Davies RW, Shuttleworth KED, Tighe JR. The damaged human detrusor: functional and electron microscopic changes in disease. BJU 1973;45:116–125

Specify source of funding or grant	**no grant, no funding**
Is this a clinical trial?	**Yes**
Is this study registered in a public clinical trials registry?	**No**
Is this a Randomised Controlled Trial (RCT)?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**No**
This study did not require ethics committee approval because	**it was a retrospective chart analysis. No impact on the treatment that the patients received.**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**No**