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FAMILIAL PREDISPOSITION FOR PELVIC FLOOR SURGERY AND ITS RELATIONSHIP WITH AGE OR PARITY IN A SWEDISH POPULATION

Hypothesis / aims of study

To estimate the degree of familial predisposition for pelvic floor disorders(PFD) and the influence of risk factors such as aging and parity in a Swedish population

Study design, materials and methods

Two Swedish national registers, the Hospital Discharge Register and the the Multi-Generation Register were used for the analysis. We estimated the number of women (probands), given a specific age and final parity, which were at risk and how many of them had been identified from the Hospital Discharge Register as operated for PFD. This quotient was applied to the number of relatives of that age and parity, and an expected number of operated women of each group of relatives (mothers or sisters) was calculated and compared with the observed number. A risk ratio (RR) was calculated as the quotient between the observed and expected numbers (stratified by proband age and final parity at the time of the proband's operation and adjusting for parity in the analysis of age and for age in the analysis of parity).

Results

In this material, the highest risk was presented by sisters to probands operated on at a young age (< 50 years), with a decrease in the relative risk as the age and parity of the probands increased. The mothers to probands also had an increased relative risk, although lower than that for sisters, with the same relation to proband's age (Table 1). The RR was similar for the different pelvic floor compartments within a group, something that suggests a general pelvic floor disorder among relatives. The risk presented by half-sisters and cousins to probands was also analyzed and showed a similar trend. Unfortunately, the number of second grade relatives was too small to draw adequate conclusions.

Interpretation of results

In this study, surgery for stress urinary incontinence or prolapse was used as definition for the respective conditions. This cannot be used as a measure of the true prevalence in the population, as we only took into account women operated on during the observation period, and it is unlikely that all women with the condition were operated. The estimation of the absolute relative risk for first grade relatives is most probably an underestimation, while the ratios between different risk estimates are likely more accurate.

Our results correspond with previous studies showing a possible familial predisposition for developing POP and/or UI (1-3)

The fact that the impact of heredity decreased with increasing age and parity of the proband underlines that those risk factors are probably independent from heredity. A potential bias is that we found a correlation between the mothers' and the sisters' parity. This correlation between the probands', the mothers' and the sisters' parity suggests a "social heredity", which we can neither compensate for nor estimate the influence of. Familial traits such as smoking, exercising, diet and drinking habits, socioeconomic status and the like may have a an effect on the transmission of the risk for pelvic floor disorders. The main strength of our study is the nationwide population based study design and that surgery for the respective conditions was used as definition. Excluding women born outside Sweden enabled an analysis of a homogenous population.

Concluding message

First grade female relatives to women operated for PFD suffer a two- to five-fold increased risk for surgery for the same conditions. Heredity seems to play a lesser role with increasing age and parity. The RR was similar for the different pelvic floor compartments within a group, suggesting a general pelvic floor disorder among relatives.

Table 1: Relative risk for pelvic floor surgery among sisters and mothers to women (probands) operated for urinary incontinence or genital prolapse related to proband's age and parity at surgery.

Proband's age at surgery (years) *	Observed number	Expected number	Relative risk (95% CI)		
Sisters	·				
<50	524	92.1	5.69 (5.27-6.14)		
50-59	893	194.7	4.59 (4.32-4.87)		
>60	353	91	3.88 (3.52-4.28)		
Mothers	·				
<50	974	401.2	2.43 (2.28-2.58)		
50-59	569	294.5	1.93 (1.78-2.09)	.09)	
>60	85	54.8	1.55 (1.26-1.92)		
Proband's parity at surgery **	Observed number	Expected number	Relative risk (95% CI)	<i>p</i> value *** for heterogeneity	
Sisters				<i>p</i> < 0.001	
0	24	5.3	4.53 (3.15-6.53)		
1	182	35.4	5.14 (4.51-5.85)		
2	806	162.2	4.97 (4.67-5.29)		
3	513	115.4	4.45 (4.11-4.81)		
4 or more	245	59.5	4.12 (4.62-6.67)		
Mothers				<i>p</i> =0.02	
0	27	11.8	2.29 (1.59-3.31)		
1	138	76.2	1.81 (1.54-2.13)		
2	760	345.0	2.2 (2.04-2.42)		
3	496	223.4	2.22 (2.04-2.42)		
4 or more	207	94.1	2.2 (1.93-94.1)		

* Adjusted for proband's final parity.

** Stratified for age at the time of the proband's operation

***ANOVA analysis based on χ^2 values. From the sum of χ^2 for each of the five parity strata (5 d.f.) was substracted the χ^2 for the total (irrespective of parity stratum, 1 d.f.), and the remaining χ^2 , based on 4 d.f., estimated heterogeneity between strata.

References

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Disclosures

Funding: none **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** The study was approved by the Ethics committee at Lund University and by the respective registry holders: The Multi-Generation Register, Statistics Sweden, The Hospital Discharge Register, National Board of Health and Welfare. **Helsinki:** Yes **Informed Consent:** No