

RISK FACTORS FOR FEMALE CONSTIPATION: NEW INSIGHT THROUGH AN IDENTICAL TWIN SISTERS STUDY

Hypothesis / aims of study.

Constipation is associated with a detrimental impact on the physical and psychosocial health of the affected individuals. Community-based prevalence studies estimate this condition to affect between 6% to 23% of the general population, with a higher prevalence in women than in men. The explanation for the higher prevalence of constipation in women is currently a matter of debate, and the relative importance of parity and obstetrical factors has been difficult to ascertain, as their effect may be confounded by genetic risk factors. The current study utilized an identical twin-sisters study design in order to allow for optimal assessment of various environmental and obstetrical risk factors for constipation. Such a design is unique in its ability to provide almost absolute control over genetic variance, since every subject is compared to her genetically-identical twin sister.

Study design, materials and methods:

An extensive survey of incontinence symptoms was conducted at the world's largest annual gathering of twins at the 2003 and 2004 Twins Day Festival. Two hundred and seventy one pairs of identical twin sisters (n = 542) answered the question: Do you need to strain too hard to have a bowel movement, or are you unable to completely empty your bowels? Subjects were asked to grade their answer on a Likert scale from 0 (no) to 3 (greatly). In addition, all subjects completed the previously validated Colorectal Anal Distress Inventory (CRADI) questionnaire regarding the presence, frequency and severity of colorectal symptoms (1). The CRADI is composed of 4 subscales of questions: obstructive, incontinence, pain/irritation, and rectal prolapse. The CRADI obstructive subscale, which was used for this study, is composed of the following 3 questions: 1. Do you feel you need to strain too hard to have a bowel movement? 2. Do you feel you have not completely emptied your bowels at the end of a bowel movement? 3. Do you usually have to push on the vagina or around the rectum to have or complete a bowel movement? The mean differences in the total scores were calculated for each potential risk factor. We utilized a stepwise logistic regression model with repeated binary measures in order to account for correlated data within twin pairs. A large number of demographic, medical and obstetrical factors were evaluated in this analysis. In order to maintain statistically valid reference groups, we utilized three different statistical models: The first concentrated on non-obstetrical risk factors for constipation and included all pairs of identical twins (n=542). The second aimed to assess the impact of the mode of delivery (i.e. vaginal vs. cesarean section) on constipation, and included all twin pairs where both sisters underwent at least one childbirth (n=346). The third model was designed to evaluate risk factors specific to vaginal birth (such as instrumental delivery, episiotomy, birth weight, etc.), and included pairs where both sisters had at least one previous vaginal delivery (n=274).

Results:

Ninety percent of the women were Caucasian, 46% were postmenopausal, with a mean age of 47 years (range: 26-86). Seventy three percent of respondents had at least one previous childbirth, and 14% had cesarean deliveries, of which 9 (16%), were elective. Constipation was reported in 32% of all women (20% mild, 9% moderate and 3% severe). A significantly higher risk for constipation was associated with menopause (OR 1.56, p = 0.023), previous hysterectomy (OR 1.62, p = 0.030) and the presence of stress urinary incontinence (OR 1.62, p = 0.012). High CRADI obstructive subscale scores were associated with higher parity (mean difference for ≥ 2 childbirth: 1.4, p = 0.0001), obesity (mean difference 8.69, p = 0.014), and the presence of fecal (mean difference: 24.2, p = 0.042) and stress urinary (mean difference: 17.4, p = 0.001) incontinence. Higher age (mean difference: 4.23, p = 0.13) and menopause (OR 2.02, p = 0.48) were associated with a non-significant increase in CRADI obstructive subscale scores. The mode of delivery (caesarean versus vaginal), obstetric

interventions, and complications did not significantly affect CRADI obstructive subscale scores.

Interpretation of results:

Constipation was reported by almost one third of our community-dwelling women, although most subjects had only mild to moderate symptoms. Menopausal status and previous hysterectomy were found to be the main risk factors for constipation. Higher parity, obesity, and the presence of stress urinary and fecal incontinence were associated with increased CRADI obstructive subscale scores.

Concluding message

Risk factors for constipation and obstructive defecation include: menopausal status, previous hysterectomy, higher parity and the presence of stress urinary and fecal incontinence. These results may explain the higher prevalence of constipation in women than in men.