International Journal of Gynecology and Obstetrics 119 (2012) 185–188

Contents lists available at SciVerse ScienceDirect

International Journal of Gynecology and Obstetrics

journal homepage: www.elsevier.com/locate/ijgo

CLINICAL ARTICLE

Prevalence of and risk factors for pelvic organ prolapse and lower urinary tract symptoms among women in rural Nepal

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ARTICLE INFO

Article history:
Received 24 December 2011
Received in revised form 13 May 2012
Accepted 12 July 2012

Keywords:
Cystocele
Lower urinary tract symptoms
Pelvic organ prolapse
Rectocele
Risk factors
Uterine prolapse

ABSTRACT

Objective: To evaluate the prevalence and associated risk factors of pelvic organ prolapse (POP) and lower urinary tract symptoms (LUTS) among women seeking healthcare services in 3 discrete rural areas in Nepal. *Methods:* A cross-sectional study was conducted using a Nepalese-specific questionnaire to obtain demographic and personal information. Urinary symptoms were examined using the Urogenital Distress Inventory Short form questionnaire, while POP severity was staged according to the POP-Q system. The χ^2 test and multivariate logistic regression analysis were used to determine POP risk factors. *Results:* Of the 174 women included in the analysis, 106 (60.9%) had stage II POP or greater. In all, 93 women (53.4%) had cystocele, 63 (36.2%) had rectocele, and 37 (21.3%) had uterine prolapse. Univariate analysis identified high parity; young age at first delivery; menopause; squatting or standing position during delivery; and early return to work after delivery as risk factors for POP. Multivariate logistic regression revealed that delivery in a lying position presented a lower risk for cystocele than squatting or standing (odds ratio 0.34; $P<0.01$). *Conclusion:* Both LUTS and POP are common among women in rural Nepal. Cystocele is the most frequent, advanced, and symptomatic form of POP observed in this population.

1. Introduction

Pelvic organ prolapse (POP), which decreases quality of life owing to associated symptoms and recurrent surgical interventions among postmenopausal women, is a frequent problem affecting the female population in many countries [1]. The US-based multicenter Women's Health Initiative (WHI) found that 41% (n = 16 616) of women aged 50–79 years demonstrated some degree of POP, including 34% with cystocele, 19% with rectocele, and 14% with uterine prolapse [2]. The prevalence of POP in the WHI cohort fell, however, when women of reproductive age were included in the analysis. A study conducted in a general population of Swedish women aged 20–59 years reported a 30.8% prevalence of any degree of prolapse among these women [3]. In another study of 477 women aged 18–82 years and undergoing an annual gynecologic examination, 35% had stage II POP while 2% had stage III POP [4].

The effects of POP may be markedly worse for women in low-income countries like Nepal [5]. A study program supported by the German Agency for Technical Cooperation reported that approximately 25% of women in western Nepal who presented with gynecologic complaints had genital prolapse that affected their quality of life [6]. The high prevalence of symptomatic POP among Nepalese women may result from early childbearing (teenage pregnancy); high parity; low birth spacing; early return to work after delivery; poor birthing practices; frequent heavy lifting; and malnutrition [7]. The suffering caused by POP is seldom shared by these women because of embarrassment, social taboos, fear of abandonment, and isolation. A visit to Nepal, conducted from November 2009 to January 2010, aimed to provide voluntary healthcare services to women in remote areas of the country through mobile medical camps. In addition to general medical complaints, some women of reproductive age presented with a high degree of genital prolapse. Some women experienced severe genital tract infections owing to prolonged and erroneous use of pessaries.

The aim of the present study was to evaluate the prevalence, severity, and risk factors associated with the 3 different compartments of POP among women seeking healthcare in 3 discrete rural areas of Nepal. The occurrence of lower urinary tract symptoms (LUTS) and other adverse symptoms was also investigated among these women.

2. Materials and methods

A cross-sectional study was conducted from March 26 to May 20, 2010, in 3 discrete rural areas in the northern region of Nepal (Myagdi, Sindhupalchowk, and Lamjung). Women who visited the voluntary healthcare service owing to general medical problems were invited

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0020-7292/$ – see front matter
doi:10.1016/j.ijgo.2012.05.031

to participate in the present study. There were no specific exclusion criteria; women were excluded if there was poor communication with the healthcare worker and if completion of the questionnaire was not possible. The study protocol was approved by the Chung Shan Institutional Review Board. After providing informed consent, participants were interviewed and completed the study questionnaire. In addition, all women underwent a pelvic examination.

The study questionnaire was designed and translated into Nepalese by the Nepalese medical staff. The questionnaire covered the participants' general background; obstetric and gynecologic history; menopausal status; time interval from delivery to return to work; position during childbirth; characteristics and duration of daily work; eating habits; and smoking status. Pelvic symptoms and LUTS were investigated using the validated Urogenital Distress Inventory short form (UDI-6). In cooperation with a local non-governmental organization, approximately 10 local healthcare workers were trained to conduct the interviews and were tested on their understanding of the content of the questionnaire. During the interview, women were questioned about the presence of urinary frequency; leakage of urine while coughing, sneezing, or with physical activity; urge urinary incontinence; voiding difficulty and coping methods; and the presence of pain or discomfort in the lower abdominal and genital areas. Definitions of LUTS followed the standardized terminology recommended by the International Continence Society and the International Urogynecological Association [8]. The definitions for LUTS were clearly explained to the healthcare workers and their understanding of the terms was tested by local medical staff. A pilot study was conducted during a 3-day mobile medical camp at Gorkha (north central Nepal) at which time the test–retest reliability of the questionnaire was evaluated (data not shown).

A single gynecologist (Y-S.L.) performed all of the pelvic examinations and assessed the severity of POP. The POP-Q ordinary stage system adopted by the International Continence Society and the International Urogynecological Association was used to assess the anterior, apical, and posterior compartments of vaginal wall prolapse [8]. Pelvic examinations were conducted with the woman lying in the dorsal lithotomy position and performing the Valsalva maneuver during maximal effort. In all, 5 stages were defined for POP: stage 0 (no prolapse); stage I (most distal portion of the prolapse >1 cm above the hymen); stage II (most distal portion of the prolapse <1 cm proximal or distal to the hymen); stage III (prolapse >1 cm below the hymen); and stage IV (complete eversion of the length of the lower genital tract). Participants were excluded from the analysis if the pelvic examination was not completed.

Data were analyzed using SPSS version 18.0 (IBM, Armonk, NY, USA) and presented as mean ± SD, median, or percentage, depending on the variables. The χ^2 test was used to compare differences between variables of women with different degrees of POP (<stage II vs ≥stage II). The risk factors analyzed included parity (>2 vs ≤2); age at first delivery (<20 years vs ≥20 years); menopausal status; delivery position (squatting and standing vs lying down); and the time interval from delivery to return to work (≤4 weeks vs >4 weeks). A P value below 0.05 was considered statistically significant. Multivariable logistic regression analysis was used to determine the effects of all risk factors simultaneously. The adjusted odds ratio (OR) and 95% confidence interval (CI) were estimated to evaluate the correlation.

3. Results

A total of 187 Nepalese women were successfully interviewed and completed the questionnaire, while 174 (93.0%) finished the pelvic examination for evaluation of POP. The characteristics of the study group are shown in Table 1. The mean age was 40.4 years (range 16–80 years).

The prevalence of POP according to severity is presented in Table 2. Pelvic examination revealed that 68 (39.1%) women had stage I or normal pelvic floor support and 106 (60.9%) had stage II POP or above.

Table 1
Characteristics of the study group (n = 174).[a]

Parameter	Value
Age, y	40.4 ± 14.9 (16–80)
Parity	3 (0–8)
BMI	22.7 ± 3.5
Ethnicity [b]	
Mongolian (i.e. Himalayan)	84 (49.1)
Aryan (i.e. Hindu/Indian)	87 (50.9)
Age at first delivery, y	20.4 (15–30)
Menopausal	55 (31.6)
Smoking/tobacco chewing	47 (27.0)
Working during pregnancy	155 (89.1)
Position of delivery [b]	
Lying down	83 (52.9)
Standing	13 (8.3)
Squatting	61 (38.9)
Time interval from delivery to work [b]	
Within 1 wk	36 (22.6)
2–4 wk	55 (34.6)
>4 wk	68 (42.8)
Heavy lifting (farming and homemaking)	166 (95.4)
Time spent in squatting position, mean h/d	8.5
Presence of a vaginal mass	81 (46.6)

Abbreviation: BMI, body mass index (calculated as weight in kilograms divided by the square of height in meters).
[a] Values are given as mean ± SD, median (range), or number (percentage).
[b] Denominators differ because of missing data.

According to the analysis of the different vaginal compartments, 93 (53.4%) of the women had stage II or greater cystocele, 63 (36.2%) had stage II or greater rectocele, and 37 (21.3%) had stage II or greater uterine prolapse or vaginal vault prolapse.

Women of reproductive age had a high prevalence of advanced POP (Table 3). The prevalence of advanced (≥stage II) POP among women aged 45 years or less was 36.2% (n = 63), while the prevalence of stage I and stage 0 POP in this age group was 30.5% (n = 53). In women older than 45 years, the prevalence of advanced POP was 24.7% (n = 43) and stage I or stage 0 POP was 8.6% (n = 15). The prevalence of advanced cystocele was 31.6% (n = 55) among women aged 45 years or younger, and 18.4% (n = 32) among women aged 35 years or younger. Advanced stage of rectocele had a prevalence of 21.3% (n = 37) among women aged 45 years or younger, and 12.6% (n = 22) among women aged 35 years or younger. The prevalence of advanced uterine prolapse or vaginal vault prolapse was 9.2% (n = 16) among women aged 45 years or younger, and 5.2% (n = 9) among women aged 35 years or younger.

No statistically significant differences were detected between the 2 ethnic groups (Mongolian [i.e. Himalayan] vs Aryan [i.e. Hindu/Indian]) regarding the prevalence of advanced stages of POP: cystocele (47.8% vs 60.9%; $P = 0.06$); rectocele (40.5% vs 32.2%; $P = 0.48$); and uterine prolapsed (23.2% vs 20.9%; $P = 0.7$).

Regarding the presence of LUTS, 53.4% (n = 93) of women had urinary frequency; 56.3% (n = 98) had urine leakage during physical activity; 46.6% (n = 81) reported urgency incontinence; 39.1% (n = 68)

Table 2
Prevalence of pelvic organ prolapse according to severity.[a]

POP stage	Cystocele	Uterine or vaginal vault prolapse	Rectocele
0	14 (8.0)	41 (23.6)	23 (13.2)
I	67 (38.5)	96 (55.2)	88 (50.6)
II	76 (43.7)	24 (13.8)	48 (27.6)
III	12 (6.9)	3 (1.7)	11 (6.3)
IV	5 (2.9)	10 (5.7)	4 (2.3)
Total	174 (100.0)	174 (100.0)	174 (100.0)

Abbreviation: POP, pelvic organ prolapsed.
[a] Values are given as number (percentage).