

Original Article

Urogenital Prolapse and Atrophy at Menopause: A Prevalence Study

E. Versi¹, M.-A. Harvey¹, L. Cardozo², M. Brincat³ and J. W. W. Studd⁴

¹Brigham & Women's Hospital, Boston, USA; ²King's College Hospital, London, UK; ³University of Malta Medical School, Malta; ⁴Chelsea & Westminster Hospital, London, UK

Abstract: For 285 subjects referred to a menopause clinic data were prospectively collected on the time elapsed since the onset of menopause (menopausal age), sexual activity, dyspareunia, smoking, chronic cough and constipation. Prolapse and atrophy were sought on examination. FSH assay confirmed menopausal status. We found an anterior wall prolapse in 51% of the subjects, of which 6% were protruding beyond the introitus. Posterior wall prolapse was present in 27% and apical prolapse in 20%; none was protruding beyond the introitus. No trend was noted between prolapse and menopausal age. Atrophy was evident in 34% of the women, and this was related to menopausal age ($P<0.001$). Forty per cent of the sexually active women admitted to dyspareunia, of which 2/3 were superficial. This correlated with advancing menopausal age ($P<0.02$). In conclusion, genital prolapse was frequent in the population of postmenopausal women, predominantly cystocele, but the prevalence did not correlate with menopausal age.

Keywords: Epidemiology; Female; Menopause; Pelvic organ prolapse; Prevalence; Urogenital atrophy

Introduction

As life expectancy increases, more women than ever before will live more of their lives after the menopause. Indeed, in the west 30% of a woman's life is spent in postmenopause [1]. Consequently, an increased number

Correspondence and offprint requests to: Dr M-A Harvey, Department of Obstetrics, Gynecology and Newborn Care, The Ottawa Hospital – General Campus, 501 Smyth Road, Box 802, Ottawa ON K1H 8L6, Canada. Tel: 613 737 8561; Fax: 613 737 8889; email: maharvey@ottawahospital.on.ca

of women will present with conditions that are a result of longer life or prolonged estrogen deprivation. Urogenital symptoms such as urinary incontinence, pelvic organ prolapse and vulvovaginal atrophy may fall into this category. Although there is some information on urinary incontinence [2] and vulvovaginal atrophy [3–5], the prevalence of pelvic organ prolapse in an asymptomatic group of climacteric women has never been ascertained. Pelvic organ prolapse and its etiology are important, as the condition accounts for over 400 000 surgical procedures annually in the USA [6].

Urinary incontinence is also a common and debilitating problem for about 10%–30% of women [2,7,8]. We have previously reported a study of 285 climacteric women who were attending a menopause clinic because they had climacteric symptoms and had never had estrogen replacement therapy. In this group the symptoms of incontinence, frequency and urgency were very common (about 30%) and only 59% were free of urodynamic pathology when tested by videourodynamics [9]. In this paper we document the prevalence of the symptom of dyspareunia, signs of vaginal atrophy and pelvic organ prolapse in these climacteric women.

Patients and Methods

Data were collected prospectively from women with climacteric symptoms attending a menopause clinic. They did not attend specifically with symptoms of urogenital dysfunction. History included the time that had elapsed since the onset of the menopause (menopausal age), sexual activity and dyspareunia (deep and/or superficial). Data on smoking, chronic cough and constipation were also collected. Physical examination evaluated the degree of prolapse and the presence of atrophy.

Prolapse was categorized based on the degree of descent during straining in the left lateral decubitus position with one experienced examiner (EV) using a Sim's speculum. These data were collected before the publication of standardized pelvic organ prolapse quantification (POP-Q) [10]. Anterior and posterior wall descent was thus defined as slight if the leading edge of the prolapse wall did not pass the introitus, and marked if it protruded beyond the introitus. Apical (uterovaginal or vault) prolapse was graded as first degree (>2 cm descent), second degree (at the level of introitus) and third degree (beyond the introitus)

There is no known validated and published classification system for the clinical evaluation of atrophy. A visual atrophy index (VAI) has been used in a study [4], but no prior validation of that index was published. Therefore, the presence of atrophy was treated as a dichotomic variable: i.e. present or absent, based on lack of moistness, thinning of the mucosa and excoriation.

Menopausal status was confirmed by FSH assay. Menopausal age was based on history and taken from the last menstrual period, or from the onset of climacteric symptoms in women who had undergone a hysterectomy. Women were classed as perimenopausal if they had climacteric symptoms, menstrual irregularities and menopausal hormonal profiles. They were classed as postmenopausal if they had been amenorrhic for more than 6 months and had a serum FSH >40 IU/l.

Statistical analysis of comparison of the degree of prolapse at different menopausal age strata was performed using the method proposed by Armitage [11] using χ^2 tests. Analysis for trend with increasing menopausal age was performed using the extended Mantel-Haenzel χ^2 test for linear trend.

Local ethical committee approval and informed consent was obtained from patients before entry into the study.

Results

Three hundred and twenty-four consecutive women were seen at the Dulwich Menopause Clinic in London. Twenty-two refused to enter the study and 17 patients had incomplete information. Data from 285 climacteric women were thus collected prospectively on a standardized questionnaire formatted for computerization. Subjects were peri- or postmenopausal women consulting for non-urogenital complaints (e.g. vasomotor disturbances) related to the climacteric. They had never used hormone replacement therapy.

On physical examination anterior wall prolapse was found in 51% of the women, but of these the protrusion was beyond the introitus in only 9 (6%). Posterior wall prolapse was seen in 27% and in none of these was it beyond the introitus. Prolapse of the anterior or posterior wall did not significantly increase with increasing menopausal age. Nonetheless, a nearly significant increase of anterior wall prolapse was seen when patients

in their first postmenopausal year were compared to those more than 1 year postmenopause ($\chi^2 = 3.66$, $P = 0.056$).

Apical descent >2 cm was seen overall in 20% of the women, and in no-one was it protruding beyond the introitus. No statistically significant increase in prevalence was seen with increasing menopausal age, although a non-significant increase was noted when comparing perimenopausal to postmenopausal subjects (Mantel-Haenzel χ^2 test = 3.74, $P = 0.053$). Figure 1 shows the prevalence of anterior, apical and posterior compartment prolapse with advancing menopausal age.

Ninety-seven women (34%) had signs of atrophy. At the perimenopause 15% of the women had evidence of atrophy, versus 34% 1 year after menopause, and this increase reached a maximum 4 years later. A statistically significant linear trend of vulvovaginal atrophy was seen with increasing menopausal age (extended Mantel-Haenzel χ^2 test for linear trend = 28.059, $P < 0.001$). Figure 2 shows the prevalence of the symptoms of superficial dyspareunia and the sign of vulvovaginal atrophy. Both increase with menopausal age, but the increase in vulvovaginal atrophy is more pronounced.

Seventy (25%) women reported no sexual activity, for unknown reasons. Trend analysis showed that sexual activity declined with time from the menopause (Mantel-Haenzel χ^2 test for linear trend = 7.046, $P < 0.01$). Of the 215 women who were still sexually active, 86 (30% of the total, or 40% of the sexually active) admitted to dyspareunia, which was superficial in 63 (22%) and deep in 23 (8%). Trend analysis revealed

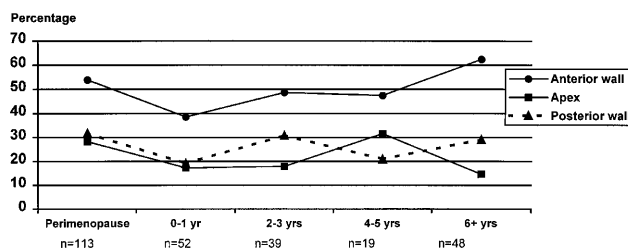


Fig. 1. Prevalence of urogenital prolapse (anterior wall, posterior wall and vault/uterus) by menopausal age strata.

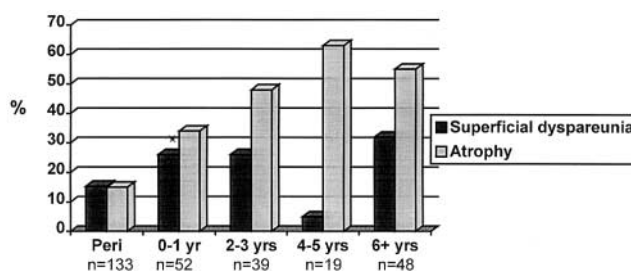


Fig. 2. Prevalence of superficial dyspareunia and vulvovaginal atrophy by menopausal age, in percentages. The prevalence of both is statistically correlated with advancing menopausal age (see text). *Implies a statistically significant difference with the previous menopausal age strata. Number indicates women in each menopausal age category.

no increase in the prevalence of deep dyspareunia with menopausal age, but a trend was noted for superficial dyspareunia (extended Mantel–Haenzel χ^2 test for linear trend = 8.147, $P < 0.005$). In the perimenopause only 15% admitted to superficial dyspareunia, but in the postmenopause this had risen to 28% (Mantel–Haenzel χ^2 test = 6.17, $P < 0.02$).

Of the 285 women 189 (66%) were non-smokers, with 26% smoking more than 10 cigarettes a day. Twenty-four (89%) of these women admitted to having a chronic cough. The average body mass index (kg/m^2) was 25.1. One hundred and five (37%) women admitted to some constipation, in 12% of whom it was a frequent problem. None of these variables changed significantly with menopausal age, nor could they be correlated with the presence of prolapse.

Discussion

Life expectancy has dramatically improved, now being 80.5 years for disease-free life expectancy and 73.9 years for disability-adjusted life expectancy, in women of established market economies in 1997 [12]. In addition, the postwar ‘baby boom’ will increase the number of postmenopausal women, with consequently more and more women presenting with genital atrophy and prolapse requiring medical management. The prevalence of this problem in climacteric patients is therefore of interest and largely unknown.

Only two previous studies report on the prevalence of uterovaginal prolapse, but none addressed the general climacteric population. Bump [13], in a comparison of black and white women, reported a 24% and 23% prevalence of severe prolapse in black and white women, respectively. However, this was a population referred for genitovaginal prolapse, and hence was not representative of the general climacteric population. The National Health Interview Survey Data [14] reported a prevalence rate of 2.1 per 1000 women for the condition of prolapse. The estimated annual incidence of the condition was 97 034 women per year. This was, however, based on in-home interview of non-institutionalized civilians. The diagnosis was reported by the patient and not verified by chart review, and this study excluded women who were more than 50 years old (range 18–50); it was therefore only partially relevant to the climacteric period.

One group reported on the incidence of pelvic organ prolapse and urinary incontinence surgery in a retrospective cohort study [15]. They found that the lifetime risk of undergoing at least one surgery was 11.1%, with a third having repeat surgeries. This study underscores the importance of pelvic organ prolapse, but did not answer the question of the prevalence of the problem.

To the best of our knowledge this is the first prevalence study of climacteric women involving pelvic organ prolapse at the time of menopause from a population of women without primary urogenital complaints. Our study established a 51%, 27% and 20% prevalence of anterior wall, posterior wall and apical prolapse, respectively,

almost all being slight (i.e. not protruding beyond the introitus). The documentation of apical prolapse did not allow for differentiation of uterine from vault prolapse. No increase with advancing menopausal age was documented as being significant, although a trend for anterior and apical prolapse was noted. Unfortunately, no data on the symptoms of prolapse were collected, making it impossible to correlate symptomatology with physical findings. Similarly, we could not evaluate the presence of a correlation between vulvovaginal atrophy and the diagnosis of prolapse.

The referral basis for the menopause clinic visit was a possible source of bias in our study. Women were either self-referred or were sent by their primary care doctor. Had they had symptoms of genital prolapse they would have been referred for gynecologic treatment. This may have resulted in an underestimate of the prevalence in our population. In addition, we have no detailed data on prior surgery. It is therefore unknown whether the women in our study had had previous prolapse repair and whether, once these are excluded, the prevalence of prolapse is changed. This situation might in fact lead to an underestimation of the prevalence: if some women had indeed a prolapse corrected prior to this study, they would now show either no prolapse or a lesser degree of prolapse. Thus, it is likely that our prevalence estimates are conservative.

The relationship between the symptoms of superficial dyspareunia, vulvovaginal atrophy and the hypoestrogenic state has found its way into most gynecologic textbooks. However, this understanding has been largely apocryphal, as databased documentation in the literature is scant. The present study shows that the prevalence of superficial dyspareunia and vulvovaginal atrophy increases with time from the menopause compared to perimenopausal women, thus substantiating the current dogma. It was interesting to note that this increase was evident as early as the first year postmenopause, suggesting that atrophy may be an earlier manifestation of the climacteric than previously thought [3].

In a study of frequency of intercourse and the prevalence of atrophy, Leiblum et al. [4] interestingly noted reduced atrophy among postmenopausal women maintaining sexual activity compared to abstinent women. Consequently, women who are rarely sexually active may be more at risk of dyspareunia. A quarter of women in our study were not sexually active and, in those who were, our results are in agreement with the study by Rekers et al. [5], where the prevalence of dyspareunia was greater in postmenopausal women. However, it should be borne in mind that it is difficult to separate the effect of age from that of estrogen deprivation on urogenital symptoms, and prevalence studies are difficult to interpret with regard to this question.

To date, the role of estrogen status on pelvic organ prolapse has not been elucidated. We have previously reported [16] on a small prospective study of 12 climacteric patients treated with estradiol implants. These women were assessed before and 12 months

after treatment with videourodynamic studies, and on fluoroscopy were noted to have less bladder base descent (cystocele) 1 year after treatment. Clearly, more studies are needed in this field, as our data are rudimentary and require corroboration. Given the demographic changes that will occur in the near future, such studies are urgently required to meet the challenges that face the urogynecologists.

References

1. Central Statistical Office. Annual Abstract of Statistics. No 127. London: HMSO, 1991
2. Burgio KL, Matthews KA, Engel BT. Prevalence, incidence and correlates of urinary incontinence in healthy middle-aged women. *J Urol* 1991;146:1255–1259
3. Stenberg A, Heimer G, Ulmsten U. The prevalence of urogenital symptoms in postmenopausal women. *Maturitas* 1995;22(Suppl):S17–S20
4. Leiblum S, Bachman G, Kemmann E, Colburn D, Swartzman L. Vaginal atrophy in the post-menopausal woman. The importance of sexual activity and hormones. *JAMA* 1983;249:2195–2198
5. Rekers H, Drogendijk AC, Valkenburg HA, Riphagen F. The menopause, urinary incontinence and other symptoms of the genito-urinary tract. *Maturitas* 1992;15:101–111
6. Mallett VT, Bump RC. The epidemiology of female pelvic floor dysfunction. *Curr Opin Obstet Gynecol* 1994;6:308–312
7. Harrison GL, Memel DS. Urinary incontinence in women: its prevalence and its management in a health promotion clinic. *Br J Gen Pract* 1994;44:149–152
8. Diokno AC, Brock BM, Brown MB, Herzog AR. Prevalence of urinary problems and other urological symptoms in the noninstitutionalized elderly. *J Urol* 1986;136:1022–1025
9. Versi E, Cardozo L, Studd J, Brincat M, Cooper D. Urinary disorders and the menopause. *Menopause* 1995;2:89–95
10. Bump RC, Mattiasson A, Bø K et al. The standardization of terminology of female pelvic organ prolapse and pelvic floor dysfunction. *Am J Obstet Gynecol* 1996;175:10–71
11. Armitage P. Statistical methods in medical research. Oxford: Blackwell Scientific, 1971;207–211
12. Murray CJL, Lopez AD. regional patterns of disability-free life expectancy and disability-adjusted life expectancy: global burden of disease study. *Lancet* 1997;349:1347–1352
13. Bump RC. Racial comparison and contrasts in urinary incontinence and pelvic organ prolapse. *Obstet Gynecol* 1993;81:421–425
14. Kjerulff KH, Erickson BA, Langenberg PW. Chronic gynecological conditions reported by US women: findings from the National Health Interview Survey, 1984–1992. *Am J Publ Health* 1996;86:195–199
15. Olsen AL, Smith VJ, Bergstrom JO, Colling JC, Clark AL. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. *Obstet Gynecol* 1997;89:501–506
16. Versi E, Cardozo L, Studd J. Long-term effect of estradiol implants on the female urinary tract during the climacteric. *Int Urogynecol J* 1990;1:87–90

EDITORIAL COMMENT: Studies attempting to define the prevalence of pelvic organ prolapse in defined populations are important. Knowing the extent of this problem can aid in resource planning for our aging society, and will also help to define the natural history of prolapse and allow us to identify the point at which a known defect becomes a clinical problem. Knowing the prevalence will also be important in defining risk factors, which can lead to identifying at-risk groups and eventually developing preventive strategies. This study is a starting point. Future studies should include larger subject numbers, better quantification of the prolapse using the ICS-accepted pelvic organ prolapse quantification system, and more information on patient characteristics, such as race, urinary incontinence symptoms and prior surgeries.