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Urinary symptoms and impact on quality of life in women after treatment for endometrial cancer

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Abstract

The primary objective of our study is to describe urinary symptoms in women treated for endometrial cancer. We performed a cross-sectional survey of women who had undergone surgical treatment for endometrial cancer. Three validated questionnaires were utilized: the Sandvik Severity Index, the Urinary Distress Inventory-6 (UDI-6), and Incontinence Impact Questionnaire-7 (IIQ-7). Our study included 70 women treated for endometrial cancer; 35.7% (25/70) of women reported adjuvant radiation therapy after surgical staging. Urinary incontinence was reported in over 80% of women. Mean UDI-6 and IIQ-7 scores for women treated with adjuvant radiation therapy were higher compared to women with no adjuvant radiation therapy [47 (± 26.8) vs. 35.6 (± 21.7 ; $p=0.05$)] and [24.4 (± 28.5) vs. 8.1 (± 16.4 ; $p=0.004$)], respectively. Treatment with adjuvant radiation therapy was associated with more severe incontinence symptoms and impact on quality of life.

Keywords

Adjuvant radiation therapy; Endometrial cancer; Quality of life; Urinary incontinence

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Conflicts of interest None.

Introduction

Endometrial cancer is a common female malignancy with over 45,000 new cases diagnosed in the United States in 2005 [1]. In most women, treatment of endometrial cancer primarily involves surgery, including hysterectomy, oophorectomy, and possible lymphadenectomy [2]. When indicated, further treatment can require adjuvant radiation therapy. Prognosis after treatment for early stage endometrial cancer is excellent, with good long-term survival for women after treatment [3].

Few studies report on the prevalence of urinary incontinence after treatment for endometrial cancer. A recent study by Skjeldestad and Hagen reported urinary incontinence in 34% (54/160) of women treated for the three main types of gynecologic cancer (cervical, endometrial, and ovarian) [4]. There is even less information on the impact of bladder symptoms on disease-specific quality of life (QoL) after treatment for endometrial cancer.

The majority of literature about urinary symptoms from radiation therapy comes from the study of complications of pelvic radiation for the primary treatment of cervical cancer and not endometrial cancer [5]. The bladder symptoms which result from pelvic radiation are commonly reported without quantification of these symptoms or description of impact on QoL using validated measures [6–8].

The primary aim of this study is to describe the prevalence of urinary symptoms in women after surgical treatment for endometrial cancer. The secondary aim is to estimate the association between adjuvant radiation therapy and incontinence severity and impact on QoL in women following surgical treatment for endometrial cancer.

Materials and methods

We performed a cross-sectional survey of women who had undergone surgical treatment for endometrial cancer and were returning for surveillance visits at the Gynecologic Oncology Division at a tertiary care center between May 2007 and May 2008. Institutional review board approval was obtained from Women and Infants' Hospital of Rhode Island.

Women were asked to fill out anonymous surveys in the waiting room area. A cover letter describing the surveys was attached, and completion of the survey was evidence of a women's consent to participate. The survey included demographic and clinical information and validated incontinence questionnaires measuring (1) severity of incontinence symptoms using the Sandvik Severity Index (SSI) and the Urinary Distress Inventory-6 (UDI-6) and (2) incontinence specific QoL using the Incontinence Impact Questionnaire-7 (IIQ-7) [9–11]. To minimize the potential for recall or self-selection bias, women were blinded to the secondary aim of the study, specifically to compare women treated with and without adjuvant radiation therapy.

The SSI assesses urinary incontinence severity using two questions quantifying how often a women leaks and the volume of urine leakage with each episode. Scores range from 0 to 12. The UDI-6 also measures incontinence severity with higher scores representing higher distress from symptoms. Questions on the UDI-6 address irritative symptoms, obstructive symptoms, and stress symptoms. Scores range from 0 to 100. Response options on the UDI-6 are (0) not at all, (1) slightly, (2) moderately, and (3) greatly.

We defined any urge urinary incontinence as any affirmative answer to question #2 on the UDI-6. We defined any stress urinary incontinence as any affirmative answer to the stress symptom question #3 on the UDI-6. Consistent with Bradley et al., bothersome symptoms were defined as any answer of (2) moderately or (3) greatly [12] (Table 1). The IIQ-7

assesses the impact of urinary symptoms on quality of life with higher scores suggesting more severe impact on quality of life. Questions on the IIQ-7 address physical activity, travel, social/relationships, and emotional health. Scores range from 0 to 100.

Exclusion criteria included women who retained their uterus during cancer treatment, adjuvant treatment with chemotherapy, recurrence of endometrial cancer, and other concurrent pelvic cancers. Women were also excluded who were unable to complete the anonymous survey written in English at a fifth grade reading level.

To estimate the association between adjuvant radiation therapy and incontinence severity and QoL impact, we categorized women into two groups based on self-report of undergoing adjuvant radiation therapy after surgical treatment of endometrial cancer. Any women reporting any chemotherapy as part of their treatment were excluded.

Statistical analysis included descriptive statistics, chi-square test, Fisher's exact test, and two sample *t* test, as appropriate. Statistical analyses were performed using STATA 10.0 (StataCorp, College Station, TX, USA) statistical software.

Results

Our study included 70 women treated for endometrial cancer. The mean age was 60.1 years (± 12.1) and 91.4% of women reported their race as white. Mean body mass index was 33.5 kg/m² (± 9.8). Mean years from surgical treatment was 4.3 years (± 4.0). Adjuvant radiation therapy was reported by 35.7% (25/70) women. Complete surgical staging which included pelvic and para-aortic lymph node dissection was performed in 80.0% (56/70) of women (Table 2). The UDI-6 and IIQ-7 data were complete for all women. Three women (two no adjuvant therapy, one pelvic adjuvant therapy) did no complete both questions of the SSI and were excluded from analysis of this questionnaire.

The prevalence of urinary incontinence based on responses to the SSI was 83.6% (56/67). Urinary incontinence symptom severity measured using the SSI was mild, moderate, and severe in 31.3%, 34.3%, and 17.9% of women, respectively. Urge urinary incontinence and bothersome urge urinary incontinence was reported by 71.4% and 28.6% of women, respectively. Stress urinary incontinence and bothersome stress urinary incontinence was reported by 74.3% and 34.3% of women, respectively. Overall, the mean UDI-6 and IIQ-7 scores for the study population were 39.6(± 23.9) and 13.9(± 22.7), respectively (Table 3).

For our second objective, we found no difference in age, race, education level, vaginal parity, BMI, or smoking status between women who were not treated with adjuvant radiation therapy compared to women who were treated with adjuvant radiation therapy. Mean UDI-6 scores for women treated with adjuvant radiation therapy were higher compared to women with no adjuvant radiation therapy [47 (± 26.8) vs. 35.6(± 21.7 ; $p=0.05$)]. Mean IIQ-7 scores were significantly higher in women treated with adjuvant radiation therapy compared to women who were not [24.4 (± 28.5) vs. 8.1(± 16.4 ; $p=0.004$)]. No statistically significant differences were found in the SSI between the two groups.

Discussion

The prevalence of urinary symptoms in our study population of women treated for endometrial cancer was 83.6%. Women treated with adjuvant radiation therapy reported more severe incontinence symptoms and a higher impact on QoL.

Based on previous literature, a higher prevalence of urinary incontinence in women treated for endometrial cancer may partially be explained by overlapping risk factors for both

urinary incontinence and endometrial cancer, specifically obesity. Obesity is associated with endometrial cancer with an estimated relative risk of 2 to 5 and is also associated with urinary incontinence with an estimated odds ratio of 4.2 [2,13]. Although hysterectomy alone has previously been reported to be associated with urinary incontinence, a causal relationship has not been demonstrated [14]. More recent studies have contradicted the assumption that hysterectomy causes urinary incontinence in women [15,16].

The bladder is at risk during radiation therapy for the treatment gynecologic malignancies. Most of the literature about urinary symptoms from radiation therapy comes from the study of complications of pelvic radiation for the primary treatment of cervical cancer, not endometrial cancer [5]. The majority of studies reporting on bladder symptoms which result from pelvic radiation commonly report these symptoms without validated measures [6–8]. There may be multiple factors that determine whether a women is at risk for urinary symptoms following radiation therapy, including the pretreatment status of the bladder, individual bladder tolerance to the radiation, the fractionation of the radiation, the field size, and the total dose of radiation the bladder receives [5].

Early urinary complications from radiation therapy can develop from the start of therapy to weeks after completion of treatment. These complications include irritative bladder symptoms, stress incontinence, abnormal voiding function, and radiation cystitis [7,8]. In cervical cancer, severe urinary complications requiring surgery and urinary diversion can present much later after completion of radiation treatment, with one study reporting an average onset of severe urinary symptoms 15 years after radiation treatment [8]. Late complications of pelvic radiation therapy, including urinary incontinence, irritative symptoms, fibrosis, necrosis, late radiation cystitis, hemorrhagic cystitis, bladder ulceration, and vesicovaginal fistula, have been reported from 6 months and up to 30 years after completing treatment [6,17]. Unfortunately, treatment of severe late complications often involve multiple surgical repairs such as augmentation cystoplasty with disappointing results [8]. Jones et al. reported the prevalence of severe bladder complications in women treated with radiation therapy as the primary treatment for cervical cancer as 7.1% (81/1161) and with fistula formation 4.0% (46/1161) the most common major bladder complication [18].

Perkin et al. examined urodynamic findings in 40 women after radiation therapy as the primary treatment for cervical cancer (without hysterectomy) compared to 26 women newly diagnosed with cervical cancer prior to treatment [7]. These authors found a difference in maximum cystometric capacity (284.8 vs. 346.4 ml, $p<0.02$), detrusor pressure (13.9 vs. 4.2 cmH₂O, $p<0.01$), and maximum urethral closure pressure (56.7 vs. 65.8 cmH₂O, $p<0.05$) between the two groups of women. The clinical significance of these changes in urodynamic findings is not known.

The reported prevalence of urinary symptoms following radiation therapy for various gynecologic malignancies is inconsistent. Herwig et al. reported urinary incontinence in 53.7% (22/41) of women with stage I endometrial cancer treated with adjuvant radiation therapy [19]. Skjeldestad and Hagen recently reported on urinary symptoms of 160 women treated for gynecologic cancer in Norway and compared to 432 age-matched controls [4]. Twenty-one percent (34/160) of cases (cancer survivors) were survivors of endometrial cancer and 82.3% (28/34) of endometrial cancer survivors reported adjuvant radiation therapy. Cases were not observed to have a higher association than controls of urinary incontinence. In a retrospective study of 100 women, Behr et al. found that 80 women reported urinary incontinence 2 years after radiation therapy as primary treatment for cervical cancer; however, pretreatment urinary stress incontinence was common 44 (44%) and validated questionnaires were not utilized [20].

Our study is limited by its cross-sectional design. Therefore, we are unable to determine any causal relationship between radiation and incontinence. Another potential limitation is selection bias and we are unable to determine which women did not complete our anonymous survey. Although demographic variables were similar between our study population and the general population of women who receive treatment for endometrial cancer at our institution, inferences about urinary symptoms in women who did not complete the questionnaire cannot be made. Because women were not told of secondary aim of this study to examine the difference between urinary symptoms between women who received adjuvant radiation therapy and those who did not, we postulate that the selection bias between these two groups would be nondifferential. Due to the anonymous nature of our study, it was not feasible to obtain information by voiding diaries or urodynamic evaluation; however, one of the strengths of our study is the use of validated disease-specific questionnaires to measure urinary incontinence symptoms and impact on QoL. Finally, we were not able to collect information about treatment seeking preferences or behaviors for urinary incontinence.

Despite the large number of effective treatments, many women suffering from urinary incontinence do not seek treatment. Melville et al. reported 37% of women with severe urinary incontinence had not discussed their symptoms with their healthcare provider [21]. Our findings will hopefully encourage providers who care for women after treatment for endometrial cancer to ask these women about urinary symptoms and determine help-seeking preferences.

In conclusion, this study demonstrates a high prevalence of urinary symptoms in women treated for endometrial cancer. Women treated with adjuvant radiation therapy report a significantly greater impact of incontinence symptoms on disease specific quality of life. Reasons for these differences and treatment seeking preferences of this understudied population warrant further study.

Acknowledgments

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Table 1

Questions about urinary incontinence on the UDI-6

Outcome	Definition
Urge urinary incontinence	Do you experience, and, if so, how much are you bothered by urine leakage related to a feeling of urgency? ^a
Any	Any affirmative answer (1), (2), or (3)
Bothersome	An answer of moderately (2) or greatly (3)
Stress urinary incontinence	Do you experience, and, if so, how much are you bothered by urine leakage related to physical activity, coughing, or sneezing? ^b
Any	Any affirmative answer (1), (2), or (3)
Bothersome	An answer of moderately (2) or greatly (3)

^aUDI-6 question #2^bUDI-6 question #3

Table 2

Demographics and clinical characteristics

	No adjuvant therapy (n=45)	Adjuvant radiation therapy (n=25)	p value
Age (mean $\pm$ SD)	60.0 $\pm$ 12.9	60.2 $\pm$ 10.5	NS
Race			
White, n (%)	41 (91.1)	23 (92.0)	NS
Education level			
Less than high school, n (%)	4 (8.9)	1 (4.0)	NS
High school graduate, n (%)	10 (22.2)	7 (28.0)	
Some college or beyond, n (%)	31 (68.9)	17 (68.0)	
Parity			
Vaginal (median)	2 (0, 6)	1 (0, 4)	NS
Cesarean (median)	0 (0, 3)	0 (0, 3)	NS
BMI (mean $\pm$ SD)	32.7 $\pm$ 9.5	34.7 $\pm$ 10.2	NS
Smoking status			
Current user, n (%)	3 (6.7)	4 (16.0)	NS
Past user, n (%)	23 (51.1)	9 (36.0)	
Never user, n (%)	19 (42.2)	12 (48)	
PPLND at time of surgical staging, n (%)	36 (80.0)	20 (80.0)	NS
Years since diagnosis (mean $\pm$ SD)	3.9 $\pm$ 3.40	4.9 $\pm$ 4.50	NS

SD standard deviation, NS not significant, PPLND pelvic and para-aortic lymph node dissection

Table 3

Urinary symptoms based on UDI-6 and IIQ-7

	No adjuvant therapy (<i>n</i> =45)	Adjuvant radiation therapy (<i>n</i> =25)	<i>p</i> value
UDI-6 score (mean ± SD)	35.6±21.7	47±26.8	0.05
IIQ-7 score (mean ± SD)	8.1 ±16.4	24.4±28.5	0.004
Any urge urinary incontinence, <i>n</i> (%)	30 (66.7)	20 (80.0)	NS
Bothersome urge urinary incontinence, <i>n</i> (%)	10 (22.2)	10 (40.0)	NS
Any stress urinary incontinence, <i>n</i> (%)	31 (68.9)	21 (84.0)	NS
Bothersome stress urinary incontinence, <i>n</i> (%)	11 (24.4)	13 (52.0)	0.02

UDI-6 Urinary Distress Inventory-6, IIQ-7 Incontinence Impact Questionnaire-7, SD standard deviation, NS not significant