Risk Factors of Urethral Involvement of Bladder Cancer After Radical Cystectomy with Orthotopic Neobladder in Females

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Abstract

The cystectomy and urethrectomy specimens of 20 females with invasive bladder cancer were studied for evidence of urethral involvement. The bladder showed transitional cell carcinoma in 18 cases (90%) and squamous cell carcinoma in 2 cases (10%). Urethral involvement was found in 5 cases (25%). The trigone was the most common site of tumor (50%) which had 33 per cent chance of urethral involvement. Bladder neck was the next common site of tumor (15%) and had 66 per cent chance of urethral involvement. High stage (T3b, T4) and high grade (III) at trigone also correlated with urethral involvement. The tumor bearing node showed only 20 per cent correlation with urethral involvement. Female patients with high stage / high grade at trigone and any stage / grade at bladder neck are at high risk of urethral recurrence after radical cystectomy and orthotopic neobladder procedure.

Key word : Bladder Cancer, Urethra, Cystectomy

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Orthotopic neobladder, the ideal urinary diversion after cystectomy, is one that could functionally and physiologically replace the bladder. The ileal conduit or continent diversion fails to provide an ideal urinary drainage due to several obstacles such as abdominal stoma, requirement of appliance or catheter and urinary leakage. It seems that the preferred option, orthotopic neobladder, is suitable for two important reasons, firstly it offers normal route of micturition, secondly the cancerous bladder has been removed[1]. Since the standard approach in female patients with bladder is cystectomy and

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urethrectomy, little is known about the risk of urethral recurrence after this procedurex[2]. In contrast, the risk of urethral recurrence in males after cystoprostatectomy has been studied extensively[3,4]. It seems that orthotopic neobladder will be performed often in the future. Therefore, we present our data contributing to the evolving definition of the risk factors for urethral recurrence after cystectomy for bladder cancer in females.

MATERIAL AND METHOD

The medical records of all females with bladder cancer treated at the Division of Urology, Ramathibodi Hospital between January 1980 and December 1999 were reviewed. A total of 20 female patients had radical cystectomy with urethrectomy during that period. The surgical and pathological records provided information on the tumor location, pathological stage, tumor grade, lymph node status, histologic cell type and urethral involvement. Urethral involvement was determined by the presence of malignancy in the urethra that was sectioned at the pathological examination. Pathological staging was based on TNM system and tumor grade was scored by the pathologist from I-III. Lymph node status (positive or negative) and tumor cell type (transitional cell carcinoma, squamous cell carcinoma, mixed or sarcoma) were also determined from the surgical pathology report of the cystectomy specimens. Each of these parameters was analyzed to determine if any were associated with urethral tumor involvement at cystectomy.

RESULTS

The age of the patients ranged from 45-78 years old with a mean age of 61 years. Of the 20 patients studied, five (25%) had urethral involvement in the pathological specimens.

Location

The trigone was the most commonly involved; 10 patients (50%) had tumors involving the trigone. Bladder neck was the next most common site for the tumor in 3 patients (15%). The right and left lateral wall accounted for 2 tumors each. The dome tumor was seen in 2 cases and one patient had anterior wall involvement. Of the five patients with urethral involvement, three had a tumor in the trigone and two had a tumor in the bladder neck. No other primary tumor location was associated with urethral involvement. This corresponds to a 3 of 10 (33%) incidence of urethral involvement with trigonal tumor and 2 of 3 (66%) incidence of urethral involvement with tumor arising from the bladder neck.

Pathological stage

The patients who had trigonal tumor with urethral involvement had T4 in one case and T3b in 2 cases. All of the rest who had T3a and T2 had no urethral involvement. Both cases with bladder neck had T3b and a single patient who had bladder neck tumor without urethral involvement had T2 tumor.

Tumor grade

The tumors were graded from well differentiated (grade I) to poorly differentiated (grade III). Consistent with the typical distribution of grade in cystectomy specimens, no specimens were identified as grade I tumor, 4 tumors were classified as grade II and the remaining specimens revealed grade III tumors. All urethral involvement in trigonal tumor were grade III, of grade II tumor at trigone had no urethral involvement. Bladder neck tumors with urethral involvement were grade II and grade III each.

Lymph node status

Nodal disease was present in 3 of patients (15%). Nodal disease was classified as either positive or negative. Of the patients with urethral involvement only 1 case had nodal involvement (20%).

Tumor cell type

Transitional cell carcinoma represented the most common histologic type, involving 18 patients (90%). Squamous cell carcinoma was the histologic type in 2 patients (10%) and no patient had other histologic type including adenocarcinoma, sarcoma or mixed tumor. All of the urethral involvement tumors were transitional cell carcinoma.

DISCUSSION

The usage of orthotopic neobladder reconstruction after radical cystectomy has dramatically improved the quality of life in many male patients [1]. Since there is an increasing interest to offer this type of operation to women, an adequate assessment of the risk factors for concomitant urethral tumor involvement and cancer recurrence in the retained urethra is vital[5]. The concept of preserving the urethra and supporting tissue as much as

possible to optimize continence should not overwhelm the primary goal of radical cystectomy, on giving the patient the best chance of being tumor free or the lowest possible chance of tumor recurrence[6].

Several studies have reported the varied incidence of concomitant urethral involvement with primary bladder tumors (1.4-36%)[7-9]. The investigative methods partly explain the wide range of these reported results. Bercovich et al and Stenzl et al have reported a low frequency of urethral involvement 1.4-2 per cent, but these two studies were based on cystoscopic examination and transurethral biopsy included all grades and stages of tumors[10,11]. The present study had a higher rate of urethral involvement as only cystectomy were examined which inherently involved invasive and/or high grade tumors. Other series that retrospectively reviewed pathological reports from cystectomy specimens showed the higher rate of urethral involvement, between 13-36 per cent which is similar to this present study (25%)[9,12]. As only patients with advanced disease were considered for radical cystectomy and continent urinary diversion, the studies to determine the risk of associated urethral tumor should ideally be conducted in this same patient group. A small study group studied tumors at the bladder neck and trigone showed 33 per cent of bladder neck tumor involved urethra and 20 per cent of urethral involvement in trigonal tumors[13]. This study also showed that the bladder neck and trigonal tumors have a high risk of urethral involvement 66 per cent and 33 per cent respectively. Higher tumor stage (T3b or T4) also correlated with high risk of urethral involvement. High grade (grade III) in trigonal tumor correlated with high risk of urethral involvement. But with regard to tumor bearing node the association with urethral involvement was only 20 per cent.

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ปัจจัยเสี่ยงต่อการเกิดมะเร็งใหม่ที่หลอดปัสสาวะภายหลังการผ่าตัดเอากระเพาะปัสสาวะออก และสร้างกระเพาะปัสสาวะใหม่ในผู้ป่วยมะเร็งกระเพาะปัสสาวะ

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ได้ศึกษาชิ้นเนื้อที่ได้จากการผ่าตัดรักษามะเร็งกระเพาะปัสสาวะโดยวิธี radical cystectomy และ urethrectomy ในผู้ป่วยหญิง 20 ราย พบว่าเป็นมะเร็งชนิด transitional cell 18 ราย (ร้อยละ 90) และ squamous cell carcinoma 2 ราย (ร้อยละ 10) พบว่ามะเร็งกระจายมาที่หลอดปัสสาวะ 5 รายคิดเป็นร้อยละ 25 ตำแหน่งที่พบมะเร็งบ่อยที่สุดคือ trigone คือ 10 ราย (ร้อยละ 50) และมีเนื้อมะเร็งกระจายมาที่หลอดปัสสาวะร้อยละ 33 ส่วนมะเร็งที่ bladder neck พบ 2 ราย และมีเนื้อมะเร็งกระจายมาที่หลอดปัสสาวะร้อยละ 66 มะเร็งระยะ T3b และ T4 รวมทั้งเกรดสูง มีโอกาสพบว่ากระจายมาที่หลอดปัสสาวะได้มาก ส่วนมะเร็งที่กระจายไปที่ต่อมน้ำเหลืองมีโอกาสกระจายมาที่หลอดปัสสาวะเพียงร้อยละ 20

คำสำคัญ : มะเร็งกระเพาะปัสสาวะ, หลอดปัสสาวะ, การตัดกระเพาะปัสสาวะ

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