Oncological and Functional Outcome of Radical Cystectomy in Patients With Bladder Cancer and Obstructive Uropathy

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Purpose: We present our experience with the perioperative, functional and oncological outcomes of radical cystectomy in patients with bladder cancer and obstructive uremia.

Materials and Methods: From 1998 to June 2006, 58 patients with bladder cancer, and concomitant obstructive uropathy and azotemia presented to our institution. Mean ± SD serum creatinine at presentation was 9.2 ± 4.5 mg% (range 2.4 to 16.5). Radical cystectomy, bilateral pelvic lymphadenectomy and urinary diversion were performed after stabilizing renal function with and without percutaneous nephrostomy in 28 and 8 patients, respectively. Various preoperative variables were evaluated for predicting long-term treatment failure and renal deterioration. Mean followup was 34 months.

Results: Mean serum creatinine at surgery was 1.85 mg%. An ileal conduit was used in 32 patients and cutaneous ureterostomy was used in 4. One patient died of chest infection in the perioperative period. All patients had muscle invasive disease, while 15 had positive lymph nodes. At the mean followup 15 patients (41.6%) were free of disease and 21 had treatment failure. Of the factors evaluated pathological tumor stage, grade and lymph node involvement predicted the long-term oncological outcome, while serum creatinine greater than 2.5 mg% at surgery and ileal conduit diversion predicted long-term renal deterioration.

Conclusions: Patients with bladder cancer who have obstructive uremia usually present with locally advanced disease. Radical cystectomy is not associated with additional morbidity, provided that patients are adequately prepared before surgery by optimizing renal function. An adequate number of these patients achieve long-term disease-free survival after radical cystectomy. As the urinary diversion of choice, an ileal conduit appears to be safe in patients with serum creatinine less than 2.5 mg% at surgery.

Key Words: bladder; bladder neoplasms; carcinoma, transitional cell; uremia; urinary diversion

Patients with bladder cancer can present with features of azotemia due to obstruction of the 2 ureteral orifices or unilateral ureteral obstruction in a solitary functioning kidney. Bladder cancer in these patients is usually invasive and advanced.[1] Ureteral obstruction occurs due to mechanical blockage by tumor or by tumor invading the intramural ureter.[2] In addition to hematuria, these patients can present with acute renal failure and its sequelae (metabolic acidosis, oliguria/anuria and dyselectrolemia), and pyonephrosis. Also, due to advanced cancer and uremia these patients can be nutritionally depleted and cachectic.

These patients are at double risk for uremia and advanced malignancy.[3] The management of this cohort of patients is a dilemma with only a few reports in the literature addressing this issue. It is a challenge for the urologist to decide whether to treat and how aggressive management should be. It is not known whether the outcome after definitive management in these patients is influenced by factors other than those known for patients without uremia. We reviewed the records of patients who presented with bladder cancer and uremia at our institution, and report surgical and oncological outcome. We also determined whether any preoperative variables predict the long-term oncological and functional outcome in these patients.

MATERIALS AND METHODS

From 1998 to June 2006, 410 patients with stage T2 or greater bladder cancer presented to our institution, of whom 58 (14.1%) had obstructive uropathy. Radical cystectomy was performed in 364 patients, of whom 38 (10.4%) had obstructive uropathy. Mean age of the patients who presented with obstructive uropathy was 58.3 ± 9.2 years (range 42 to 78). Mean Scr at presentation was 9.2 ± 4.5 mg% (range 2.4 to 16.5). Initial management of uremia in these patients was based on various clinical and laboratory findings, such as 1) Scr at presentation, 2) general patient condition and performance status, 3) evidence of sepsis and 4) disease stage. Proper informed consent was obtained from the patient or relatives before any intervention.

The treatment adopted in our patients is shown in algorithm 1 (fig. 1). Two patients elected no further intervention after HD and they were discharged home. Eight patients underwent radical cystectomy directly without PCN with or without preoperative HD. Mean Scr in these patients was 3.0 mg% (range 2.4 to 3.4).Ten patients had severe meta-

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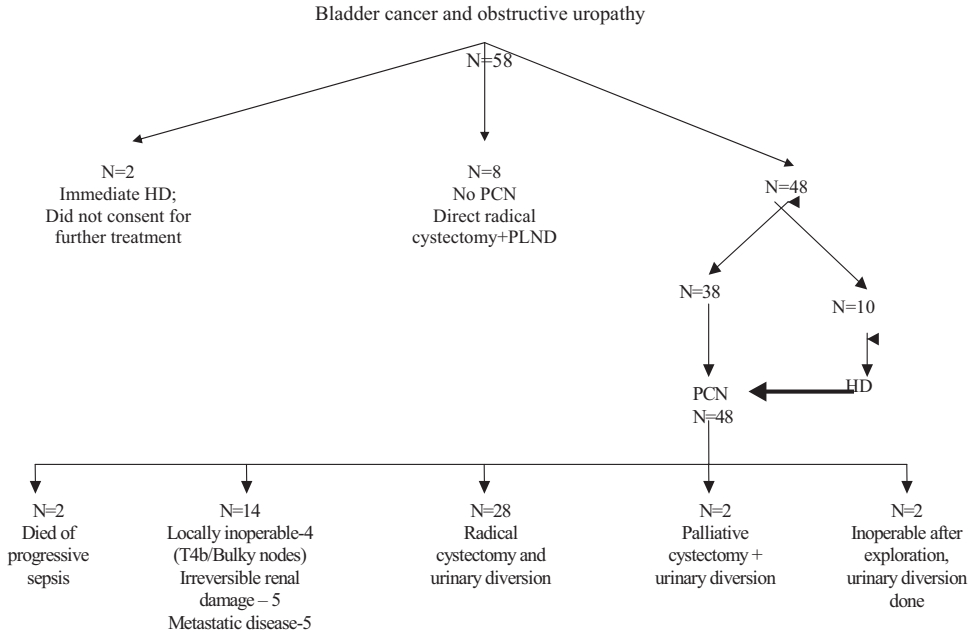

FIG. 1. Algorithm 1 shows patient treatment

bolic acidosis and hyperkalemia, requiring urgent HD before PCN, while 38 underwent PCN directly, which was bilateral in 26 and unilateral in 22. Two patients died after PCN due to progressive sepsis and multi-organ failure.

PCN was done under ultrasound guidance with broad-spectrum antibiotic coverage. PCN was done to stabilize renal function, improve general patient condition and treat underlying sepsis. In patients with bilateral obstruction PCN was done on each side simultaneously to achieve a rapid decrease in Scr. After nadir Scr was achieved bimanual examination and radiological imaging was performed for local staging and metastatic assessment. Computerized tomography was done in patients with nadir Scr less than 2 mg% and magnetic resonance imaging was performed in those with Scr more than 2 mg%.

A total of 14 patients had locally inoperable (pelvic side wall or rectal infiltration) or metastatic disease, or Scr failed to improve significantly. These patients were discharged home with a permanent nephrostomy catheter after explaining the prognosis to the patient and family. The PCN tracts in these patients were dilated under local anesthesia under fluoroscopic guidance and the standard 10Fr pigtail catheters were replaced with 18Fr Foley catheters. In 40 patients who were considered to have operable tumors radiological imaging revealed a stage T2 bladder mass in 7, stage T3 in 24 and stage T4a in 9. Two patients had a diffusely thickened, small capacity bladder. In 1 patient a periureteral urinoma secondary to forniceal rupture was seen, extending from the kidney down to the bladder.

Patients who were candidates for surgery proceeded to surgery with the intention of radical cystectomy and B/L PLND. Informed consent for urinary diversion (ileal conduit/cutaneous ureterostomy) was provided in case the tumor was inoperable during surgery. A short ileal conduit was used in patients who underwent this form of diversion. Details on intraoperative findings, postoperative complications, postoperative renal function and histopathological features were recorded. Patients were followed at 3-month intervals during the first 2 years, every 6 months in year 3 and yearly thereafter. Followup included history with physical examination, biochemical profile, chest radiography and ultrasonography of the abdomen. Based on this preliminary evaluation further imaging by computerized tomography/magnetic resonance imaging was done for suspected local or distant recurrence.

Various preoperative variables, such as patient age, Scr at presentation and before surgery, duration of preoperative drainage and pathological stage, were studied to predict long-term treatment failure (local recurrence and/or distant metastasis). Scr at presentation and hospital discharge, diversion type and the number of functioning renal units were studied for predicting long-term renal deterioration in these patients. Renal deterioration was defined as a 50% increase in Scr compared to Scr at discharge home. Differences were analyzed using the log rank test with $p < 0.05$ considered significant. Based on our experience we developed a treatment algorithm for treating patients with bladder cancer who present with obstructive uropathy and azotemia (fig. 2).

RESULTS

Mean ± SD preoperative PCN drainage was 22 ± 4.2 days (range 5 to 48). The duration of preoperative drainage required did not correlate with pre-PCN Scr. Complications due to PCN were noted in 10 procedures, including septicemic shock in 2, postobstructive diuresis in 4, hematuria due to PCN in 3 and slipping of the PCN in 4. None of the complications contributed to renal function deterioration or delayed ultimate treatment.

Mean preoperative Scr in 40 patients who underwent surgery was 1.85 ± 0.8 mg% (range 1.2 to 3.4). Eight patients who underwent surgery without prior PCN had resectable tumors and underwent radical cystectomy, B/L PLND and ileal conduit diversion. No major perioperative complications were observed in this group. Mean postoperative Scr in these patients was 1.6 mg% (range 1.2 to 1.7) 1