THE PRESENCE OF HYDRONEPHROSIS IN STAGING BLADDER CANCER: AN OMINOUS SIGN

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ABSTRACT

Objective: We investigated whether the presence of unilateral or bilateral upper tract obstruction could accurately predict advanced cancer stage.

Methods: Six hundred and ten patients with bladder cancer entered into the tumor registries of our institutions between January 1990 and December 1994. The median patient age was 64 years (range 35 to 80). A total 75 (12%) patients had unilateral or bilateral hydronephrosis on an IVP at the time of initial diagnosis of the bladder cancer. Preoperative screening included physical examination, chest radiograph, complete blood count, blood urea nitrogen, creatinin, electrolyte analysis and IVP. Furthermore, patients were usually evaluated by bone scan and computerized tomography (CT). The diagnosis of transitional cell carcinoma was made by cystoscopy and transurethral resection of the tumor. Staging transurethral resection was done in all cases.

Results: During a 5-year period 75 of 610 patients with carcinoma of the bladder had ureteral obstruction on excretory urography at the time of the initial diagnosis. Preoperative IVP revealed unilateral and bilateral hydronephrosis in 55 (73%) and 20 (27%) patients, respectively. Pathological staging revealed predominantly pT1 lesions for patients with unilateral obstruction. There were 30 (55%) patients with pT1, 10 (18%) with pT2, and 15 (27%) with pT3. Pathological staging revealed predominantly pT2 lesions for patients with bilateral obstruction. Pathological stage was pT2 in 10 (50%) cases, pT3 in 5 (25%), and pT4 in 5 (25%).

Conclusion: IVP can be used in staging because hydronephrosis may indicate the presence of a muscle-invasive bladder cancer, especially, bilateral hydronephrosis was strongly associated with advanced stage disease.

Key Words: Bladder cancer, excretory urography, clinical stage, pathological stage, transurethral resection.

INTRODUCTION

Transitional cell carcinoma of the bladder is the second most common genitourinary malignancy. There are 54.000 new cases per year and 12.500 bladder cancer related deaths (1). Bladder cancer is most accurately staged by transurethral resection (TUR) of the bladder lesion. Pathological stage has been accepted as the gold standard to predict the survival of patients with bladder cancer (2,3). Excretory urography is commonly obtained early in the evaluation of the bladder tumor patient. Given the potential field change nature of urethelial neoplasm, this study is certainly warranted to exclude concomitant upper tract disease. Despite the development of new imaging techniques, clinical staging for bladder cancer continues to be inaccurate (3). We investigated whether the presence of unilateral or bilateral upper tract obstruction could in excretory urography (IVP) accurately predict advanced cancer stage.

METHODS

Six hundred and ten patients with bladder cancer entered into the tumor registries of our institutions between January 1990 and December 1994. The median patient age was 64 years (range 35 to 80). A

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total of 75 (12%) patients had unilateral or bilateral hydronephrosis on an IVP at the time of initial diagnosis of the bladder cancer. Preoperative screening included physical examination, chest radiograph, complete blood count, blood urea nitrogen, creatinin, electrolyte analysis and IVP. Furthermore, patients were usually evaluated by bone scan and computerized tomography (CT). The diagnosis of transitional cell carcinoma was made by cystoscopy and transurethral resection of the tumor. Staging transurethral resection was done in all cases. The tumors were graded according to the World Health Organization Grading System and staged by TNM Classification (4,5).

RESULTS

Six hundred and ten patients with bladder cancer who underwent transurethral resection at our institutions between January 1990 and December 1994, were retrospectively reviewed. During a 5-year period 75 of 610 patients with carcinoma of the bladder had ureteral obstruction on excretory urography at the time of the initial diagnosis. Preoperative IVP revealed unilateral and bilateral hydronephrosis in 55 (73%) and 20 (27%) patients, respectively. Of the patients presenting with unilateral obstruction 64% had left ureteral obstruction and 36% had right ureteral obstruction. Pathological staging revealed predominantly pT1 lesions for patients with unilateral obstruction. There were 30 (55%) patients with pT1, 10 (18%) with pT2, and 15 (27%) with pT3. Pathological staging revealed predominantly pT2 lesions for patients with bilateral obstruction. Pathological stage was pT2 in 10 (50%) cases, pT3 in 5 (25%), and pT4 in 5 (25%). Distribution of patients by cancer cancer stage and hydronephrosis status are shown in table I.

Table I. Distribution of patients by cancer stage and hydronephrosis status

	Hydronephrosis		
Stage	Unilateral (n,%)	Bilateral (n,%)	Overall (n,%)
pT1	30 (55)	-	30 (40)
pT2	10 (18)	10 (50)	20 (27)
pT3	15 (27)	5 (25)	20 (27)
pT4	-	5 (25)	5 (6)
Totals	55	20	75

DISCUSSION

Appropriate and accurate tumor staging is an underlying principle of modern surgical oncology. Because tumor stage is important in determining therapy, accurate staging of bladder cancer is desirable. Nevertheless, there are considerable staging erros in bladder cancer. Bladder cancer is most accurately staged by transurethral resection of the bladder lesion. Imaging tests such as ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) tend to overstage superficial disease. Bimanual examination may help to identify the potential of resectability by determining pelvic wall fixation. It has little discriminatory value for localized or superficial lesions (2,3,6).

Excretory urography is indicated in all patients with hematuria or cystoscopic evidence of bladder cancer. Some investigators have reported the association of ureteral obstruction and advanced stage carcinoma of the bladder (7-11). But, the accuracy of this finding in predicting advanced stage disease is unclear (12-14). Nichols and Marshall first reported the association of ureteral obstruction with grade and stage of bladder cancer. Of their patients with ureteral obstruction 70% had high stage, high grade lesions (7). Hatch et al found that 35 (92%) of 38 patients with bladder tumor who had ureteral obstruction had muscle-invasive tumors (11). For bilharzial bladder cancer, ureteral obstruction proved much less specific, as 83% of the patients with superficial disease demonstrated this finding (14). A series by Lang revealed that only 7 of 88 patients with pathologic stage B disease had ureteral obstruction or renal nonfunction on excretory urogram, with a sensitivity of 8% (8). Most studies investigating obstruction and cancer stage have not distinguished unilateral from bilateral obstruction (8,11). Recently, Haleblian et al found that more than 90% of patients with bilateral obstuction had disease with extravesical extension. Of the patients with unilateral obstruction one third of them had disease confined to the bladder with a significant proportion confined to the bladder mucosa (10). Our results showed that among the patients with hydronephrosis 60% had advanced stage tumors. Bilateral hydronephrosis was a strong predictor because all of these patients had advanced stage disease. Unilateral hydronephrosis was associated with advanced stage disease in 45% of the cases.

Finally, IVP can be used in staging since hydronephrosis may indicate the presence of a muscle-invasive bladder cancer. Especially, bilateral hydronephrosis was strongly associated with advanced stage disease.

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