

Acute Renal Failure Induced By Bladder Tumor at the Trigone

Youichi Yanagawa MD. PhD^{1*}, Akiko Nakajima MD PhD², Hiroki Nagasawa MD¹, Ikuto Takuchi MD¹, Kei Jitsuiki MD¹, Shunsuke Madokoro MD¹, Hiromichi Ohsaka MD. PhD¹, Kouhei Ishikawa MD. PhD¹, Kazuhiko Omori MD. PhD¹, Ryo Wada MD. PhD³, Kazuhiko Fujita MD. PhD²

¹Department of Acute Critical Care Medicine, Shizuoka Hospital, Juntendo University, Japan

²Department of Urology, Shizuoka Hospital, Juntendo University, Japan

³Department of Pathology, Shizuoka Hospital, Juntendo University, Japan

*Corresponding author

Youichi Yanagawa

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Abstract: A 68-year-old woman noticed abdominal pain, facial edema and foamy urine. At a local clinic, laboratory finding depicted hyperkalemia and hypercreatininemia, so she was directed to a local hospital. There, she was diagnosed with right dominant bilateral hydronephrosis and bladder tumor with acute renal failure (ARF). She was then transferred to our hospital, where she received urgent cystoscopy and renal replacement therapy on the 2nd hospital day, right nephrostomy on the 4th hospital day and transurethral resection of bladder tumor (TURBT) on the 14th hospital day. After TURBT, her hypercreatininemia returned to the normal limit, and she was discharged on the 21st hospital day. This is a rare case of bladder cancer in which ARF was the initial symptom, having been induced by bilateral hydronephrosis created by the cancer. Computed tomography made it easy to diagnose bilateral hydronephrosis and bladder tumor simultaneously.

Keywords: bladder trigone; cancer; acute renal failure.

INTRODUCTION

Acute renal failure (ARF) remains a fatal complication of many diseases. The main causes of ARF are prerenal and intrinsic renal[1]. Post-renal causes account for approximately 10% of ARF cases [2,3]. The main post-renal causes are prostate hypertrophy, neurogenic bladder, retroperitoneal fibrosis and cervical cancer [1]. We herein report a case of ARF induced by bladder tumor at the trigone.

CASE REPORT

A 68-year-old woman with a history of Caesarean section, appendectomy, internal fixation for right femoral fracture and right leg dermatitis noticed abdominal pain, facial edema and foamy urine. She received a laxative under a diagnosis of constipation at a nearby clinic. However, her laboratory findings depicted hyperkalemia and hypercreatininemia, so she was directed to a local hospital. She received a diagnosis of right dominant bilateral hydronephrosis and bladder tumor with ARF (Figure 1) and was then transferred to our hospital. Her vital signs were as follows: Glasgow Coma Scale, E4V5M6; blood pressure, 200/112 mmHg; pulse rate, 92 beats per minute; respiratory rate, oxygen saturation, 99% under room air; 20 breaths per minute and body temperature,

36.4 °C. A physical examination showed only right leg dermatitis. Chest roentgen and electrocardiogram findings were negative. The results of a blood and urine analysis are shown in Table 1. She received urgent cystoscopy and renal replacement therapy on the 2nd hospital day, right nephrostomy on the 4th hospital day and transurethral resection of bladder tumor (TURBT) on the 14th hospital day. The pathology the tumor shows transitional cell carcinoma (Figure 3). After TURBT, her hypercreatininemia returned to the normal limit, and she was discharged on the 21st hospital day.

Computed tomography made it easy to diagnose bilateral hydronephrosis and bladder tumor simultaneously.

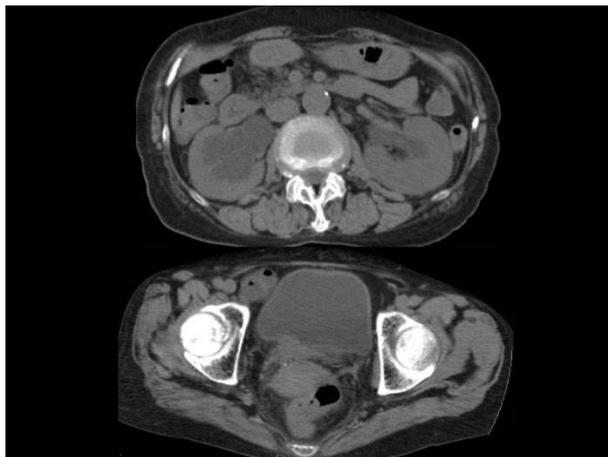


Fig-1: Computed tomography (CT) findings at the referring hospital.

The pathology shows transitional cell carcinoma.

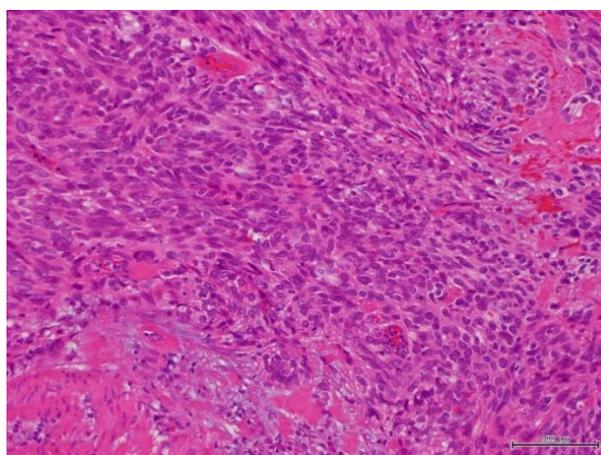


Fig-3: Pathology of the bladder tumor

Table-1: Results of the blood and urinary analysis

Cell blood count and biochemical analysis: White blood cell count, 10,100/ μ l; hemoglobin, 11.1 g/dl; platelets, 21.8×10^4 / μ l; total bilirubin, 0.6 mg/dl; total protein, 7.4 g/dl; aspartate aminotransferase, 13 IU/l; alanine aminotransferase, 10 IU/l; creatine phosphokinase, 67 IU/l; amylase, 43 IU/l; blood urea nitrogen, 78.8 mg/dl; creatinine, 13.25 mg/dl; glucose, 86 mg/dl; sodium, 138 mEq/l; potassium, 6.2 mEq/l; chloride, 105 mEq/l; c-reactive protein, 1.38 mg/dl; activated partial thromboplastin time, 30.3 (25.2) s; PT-INR, 1.03; fibrinogen degradation products 7.62 μ g/ml.

Urinary culture analysis: protein, 1+; glucose, -; occult blood cell, 2+; white blood cell, -.

DISCUSSION

This is a rare case of bladder cancer in which ARF was the initial symptom, having been induced by bilateral hydronephrosis created by the cancer.

Hematuria, which is typically intermittent, painless and at times present throughout micturition, is the classical and most common presentation of bladder cancer [4,5]. However, irritative symptoms, such as dysuria, urgency, urge incontinence and frequency, as well as obstructive urethral symptoms can also be experienced [5]. Among the signs and symptoms of metastases or advanced-stage disease, abdominal, bone, flank, or pelvic pain; anorexia, cachexia, or pallor; lower extremity edema; renal failure; respiratory symptoms (e.g. cough, dyspnea, hemoptysis); and suprapubic palpable mass are typical [5]. However, ARF as the initial symptom is rare, as unilateral obstruction of the ureter and hydronephrosis usually does not accompany ARF. As in the present case, bilateral obstruction of the ureter by bladder cancer was required to induce ARF[6].

Safari *et al.* reported the epidemiology of 770 cases of acute kidney injury (AKI) from an emergency department in Tehran [7,8]. Among them, 683 (88.7%) cases had pre-renal or renal causes. Among the post-renal cases, there were 30 cases caused by kidney stone, 22 by benign prostate hypertrophy, 20 by other causes

and 15 by malignancy (1.9%). The details or mechanisms of the malignancy were not described in the report. However, Caddeo *et al.* reported that AKI is common among urology patients, as there were 587 episodes of AKI among 410 urology patients in a urology department in the United Kingdom, giving an overall incidence of 6.7% [9]. A total of 137 (33.4%) were elective cases, of whom 58 had undergone nephrectomy (either radical or partial) [9]. Urinary obstruction and sepsis were the predominant causes of AKI in the 273 patients (66.6%) admitted emergently [9]. Among these 273 patients with non-elective urological admissions, hydronephrosis induced by bladder cancer was the fourth most-frequent cause (5.8%) (in descending order: retention of urine with a benign cause, 14.1%; urinary tract infection, peno-scrotal infections or sepsis, 10.0%; obstructing ureteral/renal calculi, 8.3%)[9]. Given these previous findings, we feel that ours is a rare case of ARF induced by bladder cancer.

This case was diagnosed based on CT findings. ARF is usually evaluated by ultrasound in order to diagnose the size and shape of the kidney, hydronephrosis and stenosis of the renal artery [10-12]. However, CT is useful for evaluating and determining the stage of bladder cancer [13,14]. While the present case was a rare one, CT facilitated the simultaneous diagnosis of bilateral hydronephrosis and bladder tumor, suggesting that this modality may be useful for diagnosing such complications when assessing the cause of ARF.

CONCLUSION

This is a rare case of bladder cancer in which ARF was the initial symptom, having been induced by bilateral hydronephrosis created by the cancer. CT made it easy to diagnose bilateral hydronephrosis and bladder tumor simultaneously.

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Conflicts of Interest

The authors declare no conflicts of interest in association with the present study.

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