Case Report

Symptomatic uraemia from bilateral obstructive uropathy secondary to metastatic urinary bladder cancer showing only unilateral hydronephrosis: a case report

Macaulay A. C. Onuigbo

1College of Medicine, Mayo Clinic, Rochester, MN, 2Department of Nephrology, Midelfort Clinic, Mayo Health System, 1221 Whipple Street, Eau Claire and 3Mayo Health System Practice-Based Research Network (MHS PBRN), Mayo Clinic, Rochester, MN, WI 54702, USA

Correspondence and offprint requests to: Macaulay A. C. Onuigbo; E-mail: onuigbo.macaulay@mayo.edu

Abstract

Bilateral hydronephrosis is classic for supravesical obstructive uropathy causing uraemia with dual functioning kidneys. Recently, a patient presented with uraemia and metastatic urinary bladder carcinoma but only unilateral right-sided hydronephrosis. A right ureteral stent was placed retrograde and no further intervention was planned since the left kidney appeared normal, and since the left ureteric orifice was not visualized. We insisted on a left percutaneous nephrostomy which was successful with prompt urine return. A left nephrostogram revealed unrecognized hydroureter/hydronephrosis. Following haemodialysis, kidney function normalized at 3 weeks. For symptomatic uraemia from obstruction, an antegrade and/or a retrograde decompression must be attempted bilaterally to improve renal salvage.

Keywords: metastatic urinary bladder cancer; nondilated obstructive uropathy; unilateral hydronephrosis; uraemia

Background

Symptomatic supravesical obstructive uropathy in a patient with dual functioning kidneys is classically characterized by bilateral hydrourerets/hydronephrosis and an empty urinary bladder [1]. This obstruction may be secondary to metastatic abdomino-pelvic and retroperitoneal malignancies, ureteric calculi and retroperitoneal fibrosis [2–5]. The evidence for obstruction may be partially or totally absent on ultrasound or computerized tomography, in one or both kidneys [6–8]. Our recent experience with a uraemic 56-year-old Caucasian showing only unilateral moderate right-sided hydronephrosis is presented.
Table 1. Trends in serum creatinine, electrolytes and urine output over time

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</thead>
<tbody>
<tr>
<td>Serum creatinine (μmol/L)</td>
<td>894.6</td>
<td>907.9</td>
<td>717.8</td>
<td>354.5</td>
<td>236.9</td>
<td>194.5</td>
<td>152.0</td>
<td>107.0</td>
</tr>
<tr>
<td>Urine output (ml/day)</td>
<td>60</td>
<td>225</td>
<td>Patient on continuous bladder irrigation</td>
<td>Patient on continuous bladder irrigation</td>
<td>Patient on continuous bladder irrigation</td>
<td>2300</td>
<td>Not available</td>
<td>Not available</td>
</tr>
<tr>
<td>Serum phosphorus (mmol/L)</td>
<td>2.6</td>
<td>2.8</td>
<td>2.1</td>
<td>1.6</td>
<td>1.0</td>
<td>1.0</td>
<td>1.1</td>
<td>Not available</td>
</tr>
<tr>
<td>Serum potassium (mmol/L)</td>
<td>6.2</td>
<td>4.3</td>
<td>4.4</td>
<td>3.9</td>
<td>3.4</td>
<td>3.5</td>
<td>3.7</td>
<td>5.1</td>
</tr>
<tr>
<td>Serum CO2 (mmol/L)</td>
<td>15</td>
<td>15</td>
<td>24</td>
<td>27</td>
<td>30</td>
<td>26</td>
<td>27</td>
<td>23</td>
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<tr>
<td>Haemodialysis</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>—</td>
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<tr>
<td>Decompressive procedure</td>
<td>+</td>
<td>Right retrograde ureteral stent</td>
<td>+</td>
<td>Left percutaneous nephrostomy</td>
<td>+</td>
<td>+</td>
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<td>—</td>
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</tbody>
</table>

Fig. 1. Noncontrast computerized tomography confirming unilateral moderate right-sided hydronephrosis.

Hydronephrosis, bilateral nephric stranding and urinary bladder wall thickening suspicious for transitional cell cancer (Figure 1). Cystoscopy, on Day 3, revealed a sessile urinary bladder tumour, which was resected. The right ureter was successfully cannulated and a right ureteric stent was placed with prompt urine drainage. The left ureteric orifice was not visualized. The next day, with a strong push from nephrology, the patient consented to a percutaneous left nephrostomy procedure despite the normal appearing left kidney. A percutaneous left nephrostogram revealed a previously unrecognized mild hydronephrosis/hydroureter with obstruction at the ureterovesical junction. There was prompt return of urine from the left kidney. After six haemodialysis sessions, his serum creatinine was 152.0 μmol/L, with increasing urine output (Table 1). Haemodialysis was stopped. The left nephrostomy tube was subsequently internalized. The serum creatinine was 107.0 μmol/L after 3 weeks. The pathology report revealed high-grade urothelial carcinoma, Grade 3 of 3, with invasion of the muscularis propria. The patient is currently discussing treatment options with his Oncologist.

Discussion

A patient with dual functioning kidneys presenting with uraemic symptoms and suspected to have obstructive uropathy must be presumed to necessarily have bilateral renal obstruction [6–10]. This is without prejudice to the findings on conventional renal imaging with ultrasound or computerized tomography [3,6–10]. There are false negative tests with these imaging modalities, the so-called syndrome of ‘non-dilated obstructive uropathy or non-dilated obstructive nephropathy’ [6–10]. Clinical conditions associated with the absence of hydronephrosis on ultrasound and computerized tomography despite obstructed kidney(s) include acute early obstruction, the presence of retroperitoneal fibrosis or infiltrative metastatic abdomino-pelvic cancers, dehydration or septic shock and severe oliguria [2–10]. Our patient was not dehydrated and was not hypotensive but was severely oliguric (Table 1). We note that we did not rule out the presence of retroperitoneal fibrosis in our patient. This would require diagnostic pathology from biopsy material [3].

The classic picture of bilateral hydronephrosis with hydroureters and an empty urinary bladder, in symptomatic uraemia following supravesical obstruction, in patients with dual functioning kidneys, is well acknowledged [1,3]. However, the presentation of new-onset symptomatic uraemia concurrent with only unilateral hydronephrosis/hydroureter on conventional imaging (ultrasound, computerized tomography) should raise the plausibility of non-apparent obstruction of the contra lateral kidney. In such instances, the more sensitive albeit invasive percutaneous nephrostogram of the apparently normal appearing kidney is therapeutic and will lead to greater renal salvage [6–8]. We would like to remind practicing providers that symptomatic uraemia presenting in the setting of suspected obstructive uropathy must be assumed to imply bilateral renal obstruction, regardless of...
Unilateral hydro with bilateral obstruction

the results/interpretations of any form of conventional renal imaging. Therefore, necessarily, every attempt to decompress both kidneys must be the rule. This approach would result in early and improved renal salvage. Left undiagnosed and therefore untreated, this potentially reversible cause of renal failure can lead to irreversible renal failure if bilateral, [9], or to significant residual loss of renal function if missed on one side only [7,8]. We note that we were not able to carry out any split renal functional testing after recovery as the patient’s primary attention at this point was to find out treatment options for his cancer.

Conflict of interest statement. None declared.

References


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