CASE REPORT

An unusual presentation of bilateral Hutch diverticula

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SUMMARY

Hutch diverticula are rare congenital diverticula. The general consensus is that they occur secondary to a congenital failure of normal muscle development around the ureteral orifice where Waldeyer sheath anatomically covers the space between the intravesical ureter and muscular layer of the bladder. Our case highlights the radiological appearance of Hutch diverticula and the need for contrast-enhanced imaging to enable accurate evaluation and diagnosis. It illustrates how the presence of periureteric diverticula can contribute to ureteric obstruction and calculus formation; complicate the interpretation of renal tract imaging and the subsequent management of renal calculi.

BACKGROUND

Renal colic represents a common urological presentation to the emergency department. While the interpretation of non-contrast CT imaging in this setting is usually straightforward to the expert eye, it is pertinent to be aware of potential complicating factors. Our case highlights one such pathology—Hutch diverticula. Diverticula can contribute to urinary stasis and ureteric obstruction, and thus may predispose to infection and or stone formation. The series of illustrated images allows the reader to simply follow the stages of progression through evaluation and management of this complicated stone case.

CASE PRESENTATION

A 50-year-old male patient presented to the emergency department with a 2-day history of severe left-sided loin to groin pain. There was no associated fever, sweats, rigours or lower urinary tract symptoms. He reported intermittent moderate-grade pain over the same area for the preceding 7 months. He was non-feverish and haemodynamically stable. Clinical examination of the abdomen showed left flank tenderness, but no evidence of guarding or rigidity. No masses were palpable. The kidneys were not ballotable. Scrotal examination was unremarkable. Digital rectal examination showed a small benign non-tender prostate.

He had a history of cutaneous sarcoidosis. There was no surgical history of note. He was not taking any regular medications. He had no known drug allergies. There was no family history of disease. He was a non-smoker and consumed approximately 8 units of alcohol a week.

Figure 1 Plain film X-ray of the kidneys, ureters and bladder showing a 5 mm calcification in the region of the distal left ureter.

INVESTIGATIONS

Routine haematological and biochemical investigations were unremarkable. Midstream urinalysis showed microhaematuria and calcium oxalate crystals, but was nitrite and leucocyte negative.

Plain film X-ray of the kidneys, ureters and bladder showed a 5 mm calcification in the region of the distal left ureter ([figure 1](#)). A CT urogram was performed. On precontrast imaging, left-sided hydronephrosis was seen and a 6 mm calculus was noted in the region of the left vesicoureteric junction ([figures 2 and 3](#)). The measured stone

Figure 2 Precontrast CT image showing left-sided hydronephrosis and hydroureter; a 6 mm calculus was noted in the region of the left vesicoureteric junction. An associated inflammatory process was seen surrounding the calculus on the left side and a symmetrical focally dilated saccular structure was identified at the right vesicoureteric junction.

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Figure 3 Precontrast CT image showing left-sided hydronephrosis and hydroureter; a 6 mm calculus was noted in the region of the left vesicoureteric junction. An associated inflammatory process was seen surrounding the calculus on the left side and a symmetrical focally dilated saccular structure was identified at the right vesicoureteric junction.

density was 1193 Hounsfield Units, consistent with calcium oxalate composition. An associated inflammatory process was seen surrounding the calculus on the left side and a symmetrical focally dilated saccular structure was identified at the right vesicoureteric junction (figure 4). Intravenous contrast administration with urographic phase imaging followed. Left-sided hydroureteronephrosis was confirmed with periureteric stranding (figure 5). The right ureter opacified, running medial to the focal dilation and was seen to fill the urinary bladder. The saccular dilation on the right side filled with contrast, findings of which were consistent with a Hutch diverticulum. The left side inflammatory mass did not opacify and no significant contrast was seen to fill the bladder from the left vesicoureteric junction, signifying an obstruction to the flow of urine/contrast from the left kidney to the bladder (figures 6 and 7).

TREATMENT

Bilateral blind ending periurethral diverticula were seen at cystoscopy (figure 8). Bilateral ureteroscopy and retrograde pyeloureterography were performed. Right-sided retrograde

Figure 4 Precontrast CT image showing left-sided hydronephrosis and hydroureter; a 6 mm calculus was noted in the region of the left vesicoureteric junction. An associated inflammatory process was seen surrounding the calculus on the left side and a symmetrical focally dilated saccular structure was identified at the right vesicoureteric junction.

Figure 5 Intravenous contrast administration with urographic phase CT image. Left-sided hydronephrosis and hydroureter was confirmed with periureteric stranding. The right ureter opacified and filled the urinary bladder. The left side inflammatory mass did not opacify and no significant contrast was seen to fill the bladder from the left vesicoureteric junction.

pyeloureterogram was within normal limits (figures 9 and 10). Left-sided retrograde pyeloureterogram showed left hydroureteronephrosis (figures 11 and 12). A saccular area of contrast accumulation just proximal to the left vesicoureteric junction was seen, consistent with the CT-detected Hutch diverticulum (figure 13). The left ureteric orifice was oedematous and inflamed and at ureteroscopy a 6 mm calculus was removed from the left-sided diverticulum using a Dornier ureteroscopic basket device. A left-sided 6×24 cm polytetrafluoroethylene ureteric stent was placed (figure 14).

OUTCOME AND FOLLOW-UP

Stone analysis showed the stone to be composed purely of monohydrate calcium oxalate.

Interval removal of the ureteric stent was performed. The patient made an uneventful recovery.

Figure 6 Intravenous contrast administration with urographic phase CT image. Left-sided hydronephrosis and hydroureter was confirmed with periureteric stranding. The right ureter opacified and filled the urinary bladder. The left side inflammatory mass did not opacify and no significant contrast was seen to fill the bladder from the left vesicoureteric junction.

Figure 7 Intravenous contrast administration with urographic phase CT image. Left-sided hydronephrosis and hydroureter was confirmed with periureteric stranding. The right ureter opacified and filled the urinary bladder. The left side inflammatory mass did not opacify and no significant contrast was seen to fill the bladder from the left vesicoureteric junction.

At outpatient follow-up 6 months postoperatively, he reported no recurrence of pain. Plain film X-ray of the kidneys, ureters and bladder showed no renal, ureteric or bladder calculi (figure 15).

DISCUSSION

Bladder diverticula are most commonly seen in older men as a manifestation of bladder outlet obstruction secondary to benign prostatic enlargement, prostatitis or carcinoma of the prostate. They may also be seen with urethral stricture and congenital

Figure 8 A blind ending periurethral diverticulum lateral and cephalad to the right ureteric orifice.

Figure 9 Right-sided retrograde pyeloureterogram was unremarkable. No hydronephrosis is seen.

urethral valve or stricture in infants. Congenital bladder diverticula that are not associated with posterior urethral valves or neuropathic bladder are uncommon but not rare and occur almost exclusively in men, arising as a result of herniation of the bladder mucosa through the detrusor muscle. The wall of the diverticulum is usually quite thin but does contain muscle, adventitia and bladder mucosa.

True congenital bladder diverticula are usually asymptomatic but can present as recurrent urinary tract infections or rarely

Figure 10 Right-sided retrograde pyeloureterogram was unremarkable. No hydronephrosis is seen.

Figure 11 Left-sided retrograde pyeloureterogram showing left hydroureteronephrosis.

Figure 12 Left-sided retrograde pyeloureterogram showing left hydroureteronephrosis.

Figure 13 A saccular area of contrast accumulation just proximal to the left vesicoureteric junction, consistent with the CT-detected Hutch diverticulum.

Figure 14 A left-sided ureteric stent satisfactorily placed extending from the left renal pelvis to the urinary bladder.

Figure 15 Follow-up plain film X-ray of the kidneys, ureters and bladder showing no renal, ureteric or bladder calculi.

can be a cause of bladder outlet obstruction. Narrow-mouthed diverticula will drain slowly and are more prone to stasis and infection than are the wide mouthed. The stasis of urine and narrowing of the ureteric lumen can contribute to stone formation as shown in this case. Congenital forms are more often wide mouthed and are most often adjacent to ureteral orifice. The left-sided diverticulum in this case was accessible with manipulation of the semirigid ureteroscope, using fluoroscopy

to aid localisation of the stone. A temporary ureteric stent was placed secondary to the oedematous nature of the diverticulum and distal ureter, in an attempt to alleviate postprocedure colic pain and to ensure adequate drainage of the left kidney.

A diverticulum that occurs at the vesicoureteric junction is called a periureteric diverticulum, classically known as Hutch diverticulum. Hutch diverticula are rare congenital diverticula that are felt to occur secondary to a congenital failure of normal muscle development around the ureteral orifice where Waldeyer sheath anatomically covers the space between the intravesical ureter and muscular layer of the bladder. They are usually solitary and are more common in young men. They are characteristically located laterally and cephalad to the ureteral orifice. This form is usually associated with vesicoureteric reflux as the presence of the diverticulum alters the normal configuration of the ureteric insertion and can be associated with ureteral obstruction.

Treatment of patients with Hutch diverticula is aimed at relieving symptoms related to obstruction or reflux. When significant reflux or obstruction is present, the diverticula can be surgically excised with reimplantation of the ureter. In mild cases, such as that shown, serial follow-up is all that is required.

Learning points

- ▶ True congenital bladder diverticula are usually asymptomatic.
- ▶ A diverticulum that occurs at the vesicoureteric junction is called a periureteric diverticulum, classically known as Hutch diverticulum.
- ▶ Treatment of patients with Hutch diverticula is aimed at relieving symptoms related to obstruction or reflux.

Contributors DMF compiled and revised the case and was the main operator. MM was the radiologist involved. RP was the supervising urologist and case reviewer.

Competing interests None.

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