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Case Report

Snakes and Bladders: The Case of a Simple, Single-System Ureterocoele

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ABSTRACT

We present the case of a patient with a ureterocoele and an interesting radiological finding. A ureterocoele is a saccular dilation of the distal ureter. It is a well-known pathological feature within the paediatric population; it is less common in the adult urology setting. Presenting features are varied and include pain, haematuria, urinary obstruction and recurrent urinary tract infections.

A 41-year old man presented with a short history of severe flank pain and microscopic haematuria. Intravenous urography performed at this time, now 10 years ago, was prior to routine use of multi-slice CT diagnostics. This case demonstrates the classical radiological feature of a 'Cobra Head' sign. While now a rarely used radiological investigation, intravenous urography has been replaced by modern imaging tech-niques including MRI and CT.

CASE PRESENTATION

A 41-year old man presented with a one-day history of left flank pain, radiating to his left iliac fossa. Routine blood screen revealed a marginally raised creatinine and elevated inflammatory markers. Urinalysis detected microscopic haematuria. No obvious calculi were demonstrated on plain films. An outpatient intra-venous urogram (IVU) was arranged.

IMAGING FINDINGS

The patient attended for IVU which revealed a left-sided, single collecting system, ureterocoele. Lodged in the terminal segment of the left ureter is a radio-opaque calculus. This has resulted in a bleb forming on the inner surface of the bladder, where the left ureter enters. It has given rise to a partially obstructed system, whereby dilatation of the ureter distal to the calculus is the conse-quence (Figure 1). The distal end of the ureter opens out onto a central calculus and a radiographic dark halo appears to circumference the ureterocoele. In this case a classical 'Cobra Head' sign is clearly visible (Figure 2 & 3).

A further radiological feature is seen within the renal calyces. Apparent blunting of the calyceal fornices may indicate that hydronephrosis is also present.

DISCUSSION

A ureterocoele is a congenital saccular dilatation of the distal portion of the ureter. Several theories exist on how ureterocoeles are thought to form including persistence of Chwalle's membrane [1]. The incidence of ureterocoeles is reported to range from

1 in 500 [2] to 1 in 4000, [3] and are thought to be 4-6 times more common in females than in males. Around 80% are associated with a ureteral duplex system [4].

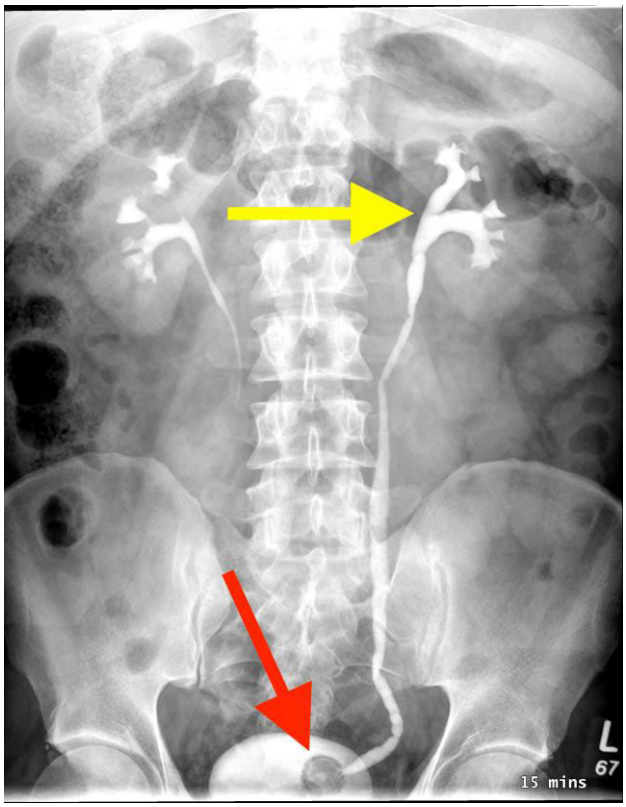

Figure 1: Intra-Venous Urogram – 15 minute standing column. Showing left-sided ureterocoele (red arrow) and associated mild hydronephrosis (yellow arrow).

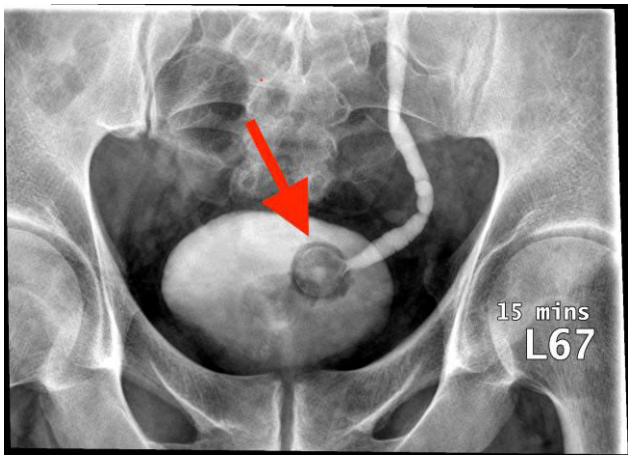

Figure 2: Intra-Venous Urogram - 15 minute standing column (magnified film). Demonstrating the classical 'Cobra Head' Sign (red arrow).

Figure 3: Intra-Venous Urogram – Post micturition film.

They may be entirely asymptomatic but presenting features may include recurrent urinary tract infections, haematuria, flank pain or obstructive voiding symptoms. Ureterocoeles can be demonstrated using a variety of imaging techniques. The most sensitive of which is ultrasonography. A fluid filled intra-vesical mass may be visible. However, may be missed if the bladder is empty or over filled. Voiding Cystourethrography (VCUG) may be used to assess ureterocoele size, position or presence of vesico-ureteric reflux. Nowadays use of intra-venous urography has been confined to the literature. However previously it was most useful for assessing renal anatomy. It can reveal evidence of hydronephrosis and ureteral displacement by hydroureter. As in this case, distal ureter extension may show a classic Cobra head sign.

Multi-slice CT urography (CTU) is now an established imaging modality and in this case would be the investigation of choice. CTU can offer improved image acquisition speed and higher resolution images of the urinary tract [5].

On the other hand, MR urography is beneficial when the upper urinary tract is complex or functional assessment is required [6]. Simple single-system ureterocoeles are usually intra-vesical and

primarily detected in adulthood, as this case demonstrates. Most however, are detected in the paediatric setting [7], these are usually ectopic. An ectopic ureterocoele is a protrusion of the distal segment of an ectopic ureter into the bladder. These are most frequently associated with a duplex collecting system. Indications for surgical management include persistent pain, impairment of renal function, recurrent obstruction or infection. They can be managed with transurethral endoscopic incision of the ureterocoele, [8] with surgical re-insertion of the ureter to preserve renal function. More recently Holmium laser therapy has been described as a surgical option [9].

CONCLUSION

Whilst the imaging techniques of IV urography have largely been superseded by CT urography, the figures clearly demonstrate the classical feature described in the literature of a Cobra head. In this case, the appearance results from the known complication of an obstructing ureteral calculus. Although rare, the differential diagnosis of transition cell carcinoma (TCC) or urothelial carcinoma as to oppose calculus obstruction must be considered. This may not be apparent on imaging, thus illustrating importance of direct visualisation with cystoscopy. During which further diagnostic and therapeutic intervention may be carried out.

CONFLICTS OF INTEREST

No conflicts of interest to declare.

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