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The Interesting Case

Ureteral obstruction mimicking parapelvic cysts—a case of intermittent hydronephrosis due to ureteropelvic obstruction

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Introduction

Intermittent hydronephrosis due to obstruction of the ureteropelvic junction (UPJ) is an uncommon finding, especially hydronephrosis caused by an aberrant vessel [1]. Not all investigators agree that an aberrant artery can be the cause of UPJ obstruction [2–5]. When urinary tract obstruction is clinically suspected, ultrasonography is the preferred screening test. If upper urinary tract obstruction is suggested by ultrasonography, IVP is the procedure of choice for defining the anatomy and the location of obstruction. Computed tomography is also sensitive test for diagnosing the cause of hydronephrosis and is useful when the cause remains unclear after ultrasonography or IVP. Sometimes parapelvic cyst may mimic hydronephrosis on nonenhanced computed tomography but it is very unusual to misdiagnose hydronephrosis as parapelvic cyst by computed tomography with contrast enhancement. We experienced a case which on the basis of ultrasound and CT was initially thought to be a huge parapelvic cyst of the left kidney. It was finally prove that it was a case of intermittent hydronephrosis due to UPJ obstruction.

Case report

A 37-year-old female was admitted to our renal unit with two months history of intermittent left flank pain. Intravenous pyelography (IVP) taken two months ago revealed mild ectasia of left renal pelvis (Figure 1). Computed tomography with contrast enhancement at that time showed a 6.7 × 5.4 cm cystic lesion in the left renal hilum suggesting parapelvic cyst (Figure 2). She was admitted to our hospital because of continued left flank pain for cyst aspiration. On the day of cyst aspiration, ultrasound examination of left kidney revealed no evidence of a parapelvic cyst. Under the impression that the parapelvic cyst had ruptured spontaneously the patient was discharged without any procedure. After discharge, she continuously felt dull left flank pain and visited a local clinic to reexamine her kidney. Ultrasound examination of the left kidney showed again a huge cystic mass (Figure 3). Consequently she was referred for reevaluation. She had no history of diabetes mellitus, pulmonary tuberculosis, hypertension or history of trauma to the kidney.

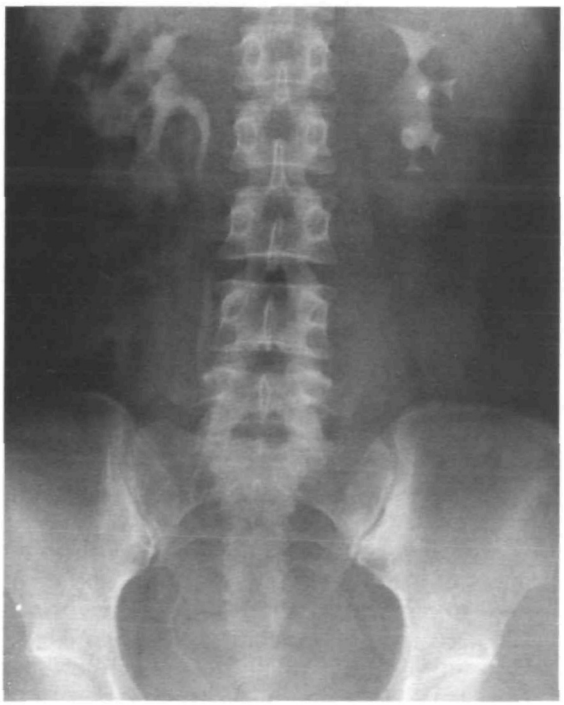

Fig. 1. Intravenous pyelography showed mild dilatation and questionable mass effect of the left renal pelvis.

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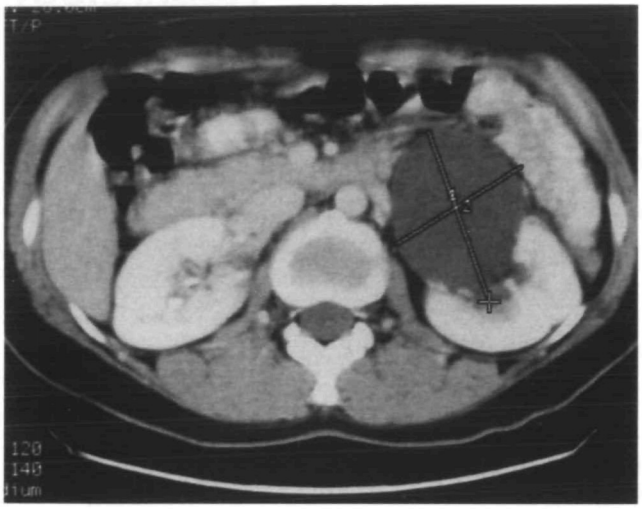

Fig. 2. Abdominal computed tomography showed 6.7 × 5.4 cm large cystic mass in the left renal hilum suggesting parapelvic cyst.

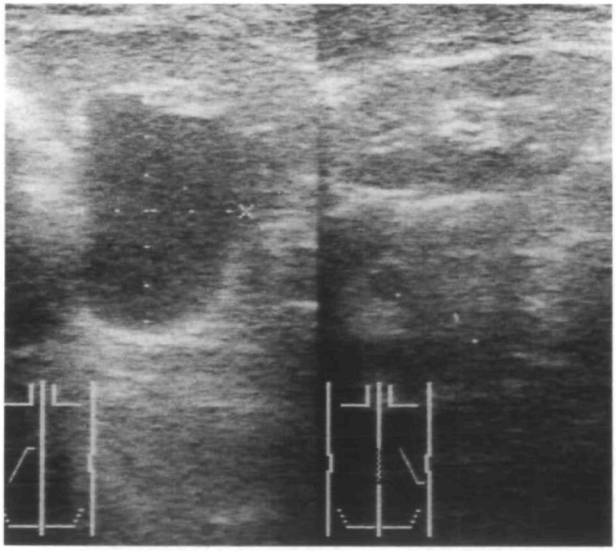

Fig. 3. Ultrasound examination of the left kidney showed 6.6 × 4.0 cm echo free lesion on the left renal pelvis.

On physical examination the blood pressure was 120/80 mmHg, body temperature 36.4°C, and the pulse rate 86/min and regular. Chest and heart examinations were normal. The abdomen was not remarkable, except mild left CVA tenderness. Laboratory data showed a white blood cell count of 4800/mm^3 with normal differential. Hemoglobin was 13.5 g/dl, platelet count 231000/mm^3, BUN 14.4 mg/dl, serum creatinine 0.8 mg/dl, serum AST 16 U/L, ALT 11 U/L, total protein 7.3 g/dl, and serum albumin 4.5 g/dl. Urinalysis was normal and stool occult blood was negative. Abdominal ultrasound examination showed a 2.2 × 2.9 cm sized echo-free lesion in the hilum of left kidney. IVP showed mild dilatation of calycopelvic system of the left kidney and non-visualization of the left ureter and suspected intermittent hydronephrosis of the left kidney (Figure 4). To confirm the diagnosis,

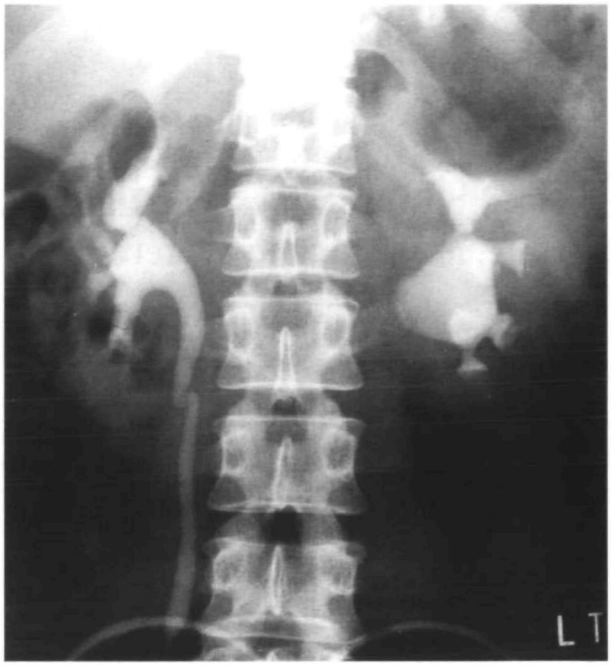

Fig. 4. The follow-up IVP showed mild dilatation of calyceopelvic system of the left kidney with abrupt obstruction at UPJ.

we performed retrograde pyelogram (RGP) which revealed dilated left renal pelvis. The contrast media injected into the left kidney still remained in the dilated renal pelvis 24 h after the procedure due to UPJ obstruction (Figure 5). On the eighth day, an operation was carried out to confirm the cause of UPJ obstruction. This revealed an aberrant vessel compressing the left UPJ. Reductive pyeloplasty was performed. Postoperatively symptoms were improved. Follow-up IVP taken 3 months after operation showed prompt drainage of the contrast media through both calyceopelvic systems (Figure 6).

Discussion

Upper urinary tract obstruction is usually classified as either intrinsic or extrinsic. Extrinsic ureteral obstructions as shown in this case are usually divided into four major categories: vascular lesions, lesions of the female reproductive system, lesions of the gastrointestinal system, and primary disorders of the retroperitoneum [6]. In this case, we suspected intermittent UPJ obstruction caused by an aberrant vessel or fibrous band. In 1909, Braasch reported intermittent hydronephrosis caused by anomalous renal blood vessels [7]. After that time it was thought that extrinsic obstruction from crossing vessel was the main cause of UPJ obstruction. Recently it has been thought that vessels rarely played a role in the obstruction of the UPJ and that virtually all these obstructions were caused by intrinsic stenosis [2–4]. The underlying anatomic relationships that lead to vascular obstruction at the UPJ were not well understood, Stephens

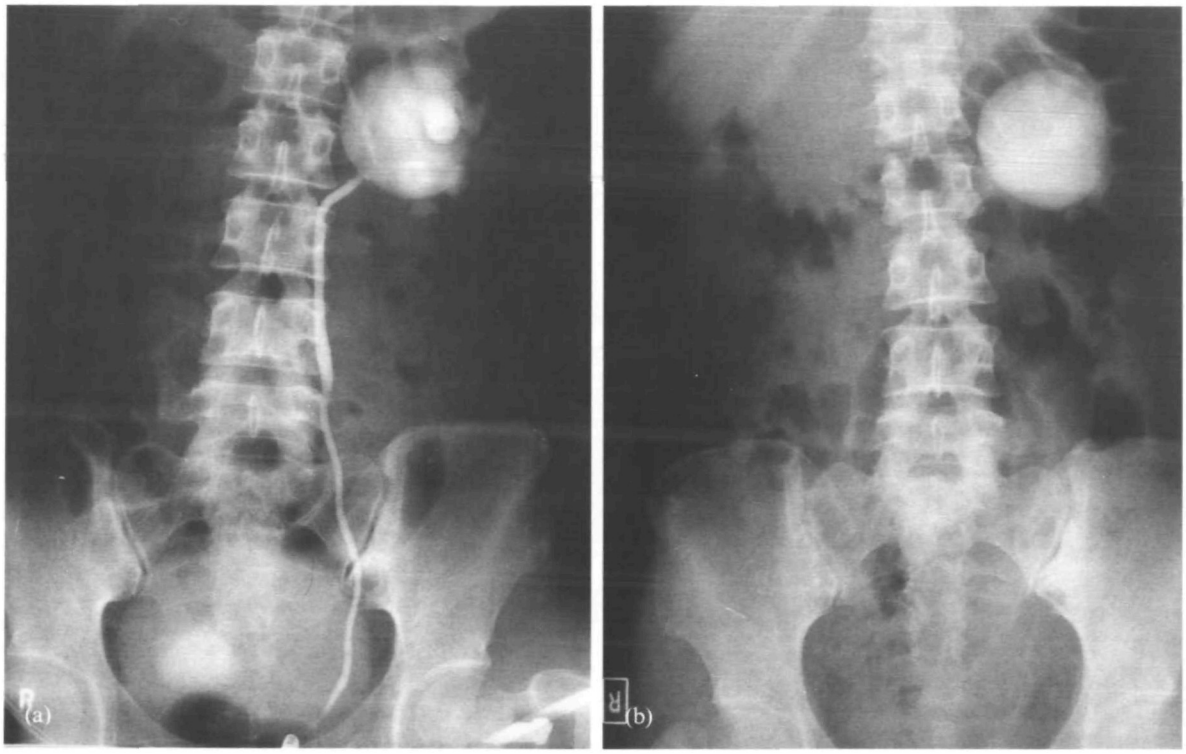

Fig. 5. (a) The retrograde pyelography showed cystic dilatation of the left renal pelvis and no-definite filling defect of the entire left ureter. (b) The 24 h delayed film after RGP showed retention of contrast media in the left renal pelvis.

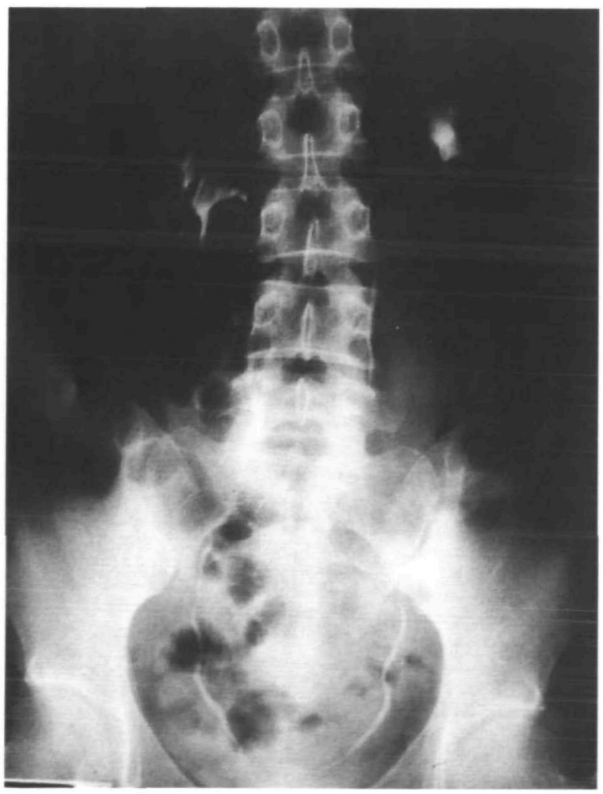

Fig. 6. Follow-up IVP, 3 months after discharge, showed the normal calyceopelvic system and ureter.

[3] believed that extrinsic UPJ obstruction from a crossing renal vessel was a primary phenomenon caused by incomplete rotation of the kidney so that the relatively anterior pelvis was obstructed by a normally placed lower-pole vessel. Intermittence of obstruction from a crossing vessel at the UPJ has been previously reported by some authors [1,8] but there is no reasonable explanation for this phenomenon. When urinary tract obstruction is suspected, ultrasonography is the preferred screening test because of its high sensitivity for detecting hydronephrosis. But the false positive rate is between 10% [9] and 20% [10]. False positive results are primarily due to the presence of an extrarenal pelvis, calyceal diverticular, congenital megacalyces, forced diuresis, a distensible renal pelvis, ('baggy pelvis') or renal cysts [9]. In this case, we thought initially that pelvic dilatation was due to a parapelvic cyst found on the CT finding with contrast enhancement (Figure 2). It is very unusual to misdiagnose localized hydronephrosis as parapelvic cyst by CT with contrast enhancement study. The intermittence of the obstruction in this case delayed the correct diagnosis of hydronephrosis. Timing of diagnostic study is more important than diagnostic modality because initial IVP (Figure 1) showed only mild ectasia of the left renal pelvis.

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