Kidney trauma management in patient with crossed fused renal ectopy: a case presentation


ABSTRACT

Ectopic kidney is the result of an abnormality in the migration of the ureteral bud and metanephric blastema towards the renal fossa. Location can be thoracic, iliac, pelvic, and/or crossed, with or without fusion with the contralateral kidney unit.

Objective: To present a case of closed abdominal trauma in a patient with crossed fused ectopic kidney and excluded kidney function.

Clinical case: Patient is a 37-year-old man who was admitted to the emergency room for macroscopic hematuria secondary to closed abdominal trauma. Study protocol was carried out and plain and contrasted abdominal film showed bilateral ectopic kidney with right kidney in pelvic position and left kidney in pelvic position that was crossed fused at right kidney inferior pole. Hematuria stopped spontaneously 72 hours after commencement of conservative treatment. Kidney scintigram showed functional exclusion of left kidney and so patient underwent left nephrectomy 2 months after hematuria event. There were no complications from the procedure and patient had good postoperative progression. He was released from the hospital on the fourth postoperative day.

RESUMEN

La ectopia renal es el resultado de una anomalía de la migración hacia la fosa renal de la ampolla ureteral y del blastema metanéfrico. La localización puede ser torácica, ilíaca, pélvica y/o cruzada, con o sin fusión con la unidad renal contralateral.

Objetivo: Presentar un caso de trauma abdominal cerrado, en un paciente con ectopia renal cruzada con fusión y exclusión renal funcional.

Caso clínico: Hombre de 37 años de edad que ingresó a urgencias por cuadro de hematuria macroscópica secundario a trauma abdominal cerrado. Se realizó protocolo de estudio encontrando en la tomografía abdominal simple y contrastada ectopia renal bilateral, con riñón derecho en posición pélvica y riñón izquierdo en posición pélvica cruzada en polo inferior del riñón derecho. La hematuria cedió espontáneamente a las 72 horas, con tratamiento conservador. Se realizó gammagrafía renal: mostró exclusión funcional del riñón izquierdo, por lo que se sometió a nefrectomía izquierda dos meses después del evento de hematuria, procedimiento realizado sin complicaciones, con buena evolución posoperatoria y dado de alta hospitalaria al cuarto.
Discussion: Ectopic kidney with or without fusion is a congenital disorder not frequently seen that can progress asymptotically. However, its association with vesicoureteral reflux and obstructive uropathy may lead to kidney function deterioration. These patients should be managed with function tests and concomitant anatomical variations should be determined in order to carry out adequate surgical procedure.

Key words: Kidney trauma, crossed ectopic kidney, fusion, Mexico.

INTRODUCTION

Simple congenital ectopy refers to a low, frequently pelvic kidney on the side of incomplete ascent. In these cases vascularization proceeds from adjacent vessels and the ureter is short in contrast to nephroptosis or acquired ectopy. Prevalence is from 8-11 cases per 10,000 live births and incidence is from 0.05-0.1% of the population. Crossed renal ectopy is a low incidence pathology that affects males more frequently with a 2:1 ratio. Renal ectopy from left to right is three times more frequent. Of all cases 90% are associated with fusion. The most frequent is the upper pole of the ectopic kidney with the lower pole of the normal placed kidney. Ectopic kidney is usually asymptomatic and it is often incidentally found during routine abdominal examination when the patient has sought medical attention for repetitive urinary infection or obstructive uropathy.

Objective: The objective of this article is to present the case of a patient who sought medical attention at the emergency room for macroscopic hematuria secondary to closed abdominal trauma that resulted in the finding of crossed fusion renal ectopy and functional exclusion during evaluation protocol.

Clinical case: Patient is a 37-year-old man with no past medical history of importance. He was hit by a car receiving blunt abdominal trauma and had no initial medical attention. Forty-eight hours later he presented with macroscopic hematuria with amorphous clots and went to the hospital.

Patient's vitals on admittance were: blood pressure 110/70, heart rate 97 beats per minute, respiratory rate 20 breaths per minute, and temperature 37°C. Patient was conscious and alert with no cardiopulmonary impairment. Abdomen was soft and depressible with active peristalsis and no signs of peritoneal irritation. External genitals were unaltered, extremities were integral with immediate capillary filling. Laboratory tests reported: hemoglobin 14, hematocrit 42, and platelets 367,000. Urinalysis: hemoglobin +++ and innumerable erythrocytes. Simple and contrasted abdominal computed tomography (CT) showed left kidney in the pelvic position with the presence of a hydronephrotic sac and scant contrast medium during elimination phase. No lesions or hematoma were observed and so patient was managed conservatively. Hematuria ceased spontaneously after 72 hours (Figures 1 and 2). Kidney scintigram with diethylenetriaminepentaacetic acid (DTPA as radiomarker) was later done and reported: right kidney glomerular filtrate 38.52 mL/minute and left kidney 8.18 mL/minute; right kidney plasmatic flow 186.4 mL/minute and left kidney 0. Renal magnetic resonance angiography showed crossed fusion renal ectopy of upper pole of left kidney with lower pole of right kidney. In addition it showed that renal vasculature was dependent on the accessorial branches of the aorta and the iliac artery (Figure 3). Elective simple left transperitoneal nephrectomy was carried out two months after diagnosis with no complications. The kidneys were in pelvic position, left kidney was ectasic with intense hydronephrosis and fused crossed with the upper pole of the left kidney fused with lower pole of right kidney. Patient showed improvement and was released from hospital on fourth postoperative day.

DISCUSSION

Crossed renal ectopy is an uncommon congenital malformation. It is the most common type of fusion and the second most common abnormality after horseshoe
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Figure 1. Abdominal CT.

Figure 2. Abdominal CT showing renal ectopy.

Figure 3. Magnetic resonance angiography.

kidney. Its etiology is not completely understood but there is an alteration in metanephric blastema ascent at approximately the fourth week of gestation. The most accepted theory is the presence of aberrant umbilical arteries that impedes the upward migration of the metanephric blastema and as a result there is tissue persistence that fuses both kidney units. Multiple configurations have been described including inferior and superior displacement, L-shaped kidney, and sigmoid kidney. In the majority of cases, the kidney cannot ascend and is accompanied by bad rotation. There is vesicoureteral reflux association in 20% of cases with crossed fused renal ectopy, making it the most frequent abnormality. Patients can have recurrent urinary infections that present in early infancy. Up to the present time, 62 cases of crossed fusion renal ectopy have been published representing only 10% of renal ectopy cases. The large majority are diagnosed incidentally due to some other condition. However, only 30% of these cases are accompanied by vesicoureteral reflux which is the most frequent cause of functional deterioration of ectopic kidney. Regardless of the type of fusion found, vascularization of each kidney is variable and unpredictable. Ectopic kidney irrigation is supplied by one or more branches of the aorta or common iliac artery. Therefore preoperative renal angiography, CT angiography, or magnetic resonance angiography is essential for planning surgical dissection.

BIBLIOGRAPHY