

Horseshoe kidney mimicking cross-fused ectopia on ^{99m}Tc -EC renal dynamic scintigraphy

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ABSTRACT

The 'horseshoe kidney' is the most common renal fusion anomaly. In this disorder, two developed kidneys are connected to each other at the lower part and grow together. We report a case of horseshoe kidney mimicking cross-fused ectopia in ^{99m}Tc -EC renal dynamic scintigraphy.

Keywords: ^{99m}Tc -EC, cross-fused ectopia, horse shoe kidney, renal dynamic scan

Herein, we present a case of 32 years male with a two-month history of bilateral flank pain. He also had history of burning micturition. X-ray kidney, ureter, and bladder (KUB) revealed a radio-opaque calculus in the left kidney. Ultrasonography of KUB showed hydronephrotic left kidney with cortical thinning and altered corticomedullary differentiation with normal right kidney. Further, a calculus was noted in the left kidney. Blood urea was 22 mg/dL (normal <40 mg/dL) and serum creatinine was 1.0 mg/dL (normal <1.5 mg/dL). Patient was referred for renal dynamic scintigraphy to assess the differential function of both kidneys. ^{99m}Tc -ethylenedicycysteine (EC) renal dynamic scintigraphy was performed using dual-head protocol, which revealed normal function and drainage pattern of the right kidney. Left kidney was interpreted as ectopic in location and was fused to lower pole of right kidney with a good perfusion and tracer uptake and the non-obstructive drainage pattern, which was well appreciated on the anterior view images [Figure 1]. The provisional diagnosis of left to right crossed fused ectopia was considered. Further evaluation with intravenous urography (IVU) showed both kidneys to be of normal size showing prompt appearance of contrast in the nephrographic phase. Radio-opacity (approximately. 27×16 mm) was seen in left renal fossa suggestive of left renal

calculus. The lower pole of both kidneys was fused in midline at L3-L4 level. Prompt excretion was seen on right side in the pyelographic phase. No excretion occurred on left side [Figure 2]. In view of IVU report, renal scan report was reviewed. On reviewing, what we considered as ectopic left kidney was actually found to be the isthmus of horseshoe kidney and the left kidney was in fact a non-functioning moiety.

Fusion abnormalities of the kidney can be categorized into two groups: Horseshoe kidney and crossed fused ectopia. The 'horseshoe kidney' is the most common renal fusion anomaly. It is a congenital disorder affecting about 1 in 500 people.^[1] Horseshoe kidney is twice as common in males as in females.^[2] Intravenous urography (IVU), computed tomography (CT) scanning, magnetic resonance imaging (MRI), and scintigraphy depict horseshoe kidney with a high degree of accuracy.^[3,4] Scintigraphy plays an important role for determining function and drainage pattern of moieties. On imaging differentiation between horseshoe kidney and crossed fused ectopia may not always be possible. Individual cases of complex anatomical situations require further examination like CT.^[5] Scintigraphy best demonstrates the fusion if the isthmus consists of functioning parenchymal tissue, because this imaging modality depends not only on the structure of the tissue but also on the function of the tissue. The present case reveals how a horseshoe kidney with non-function of one of the moieties can closely mimic a crossed fused ectopia. This case reiterates the importance of correlating the findings on renal dynamic scintigraphy with modalities like USG and IVP, which show good morphological details thus proving useful for correct scan interpretation.

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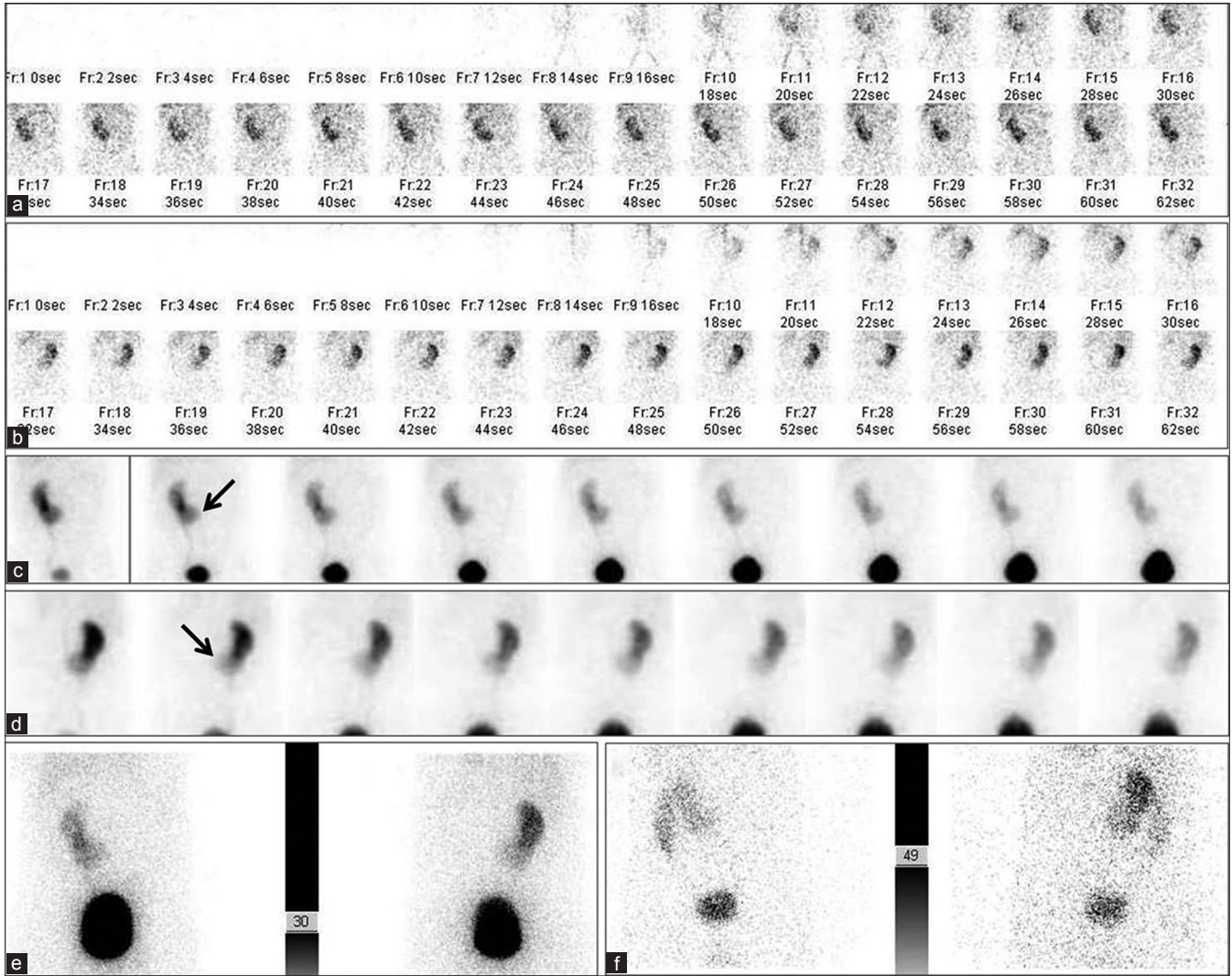


Figure 1: Dual head ^{99m}Tc-EC renal dynamic scintigraphy revealing normal perfusion (anterior view a, posterior view b) and tracer uptake (anterior view c, posterior view d) in right moiety and the isthmus (arrows) of horse-shoe kidney with non-obstructive clearance. Left moiety of horse-shoe kidney was not visualized till delayed 4 hr static image (e and f) with visualization of only the functioning isthmus. The filling phase showed normal functioning right moiety and isthmus with non-functioning left moiety mimicking left to right cross-fused ectopia

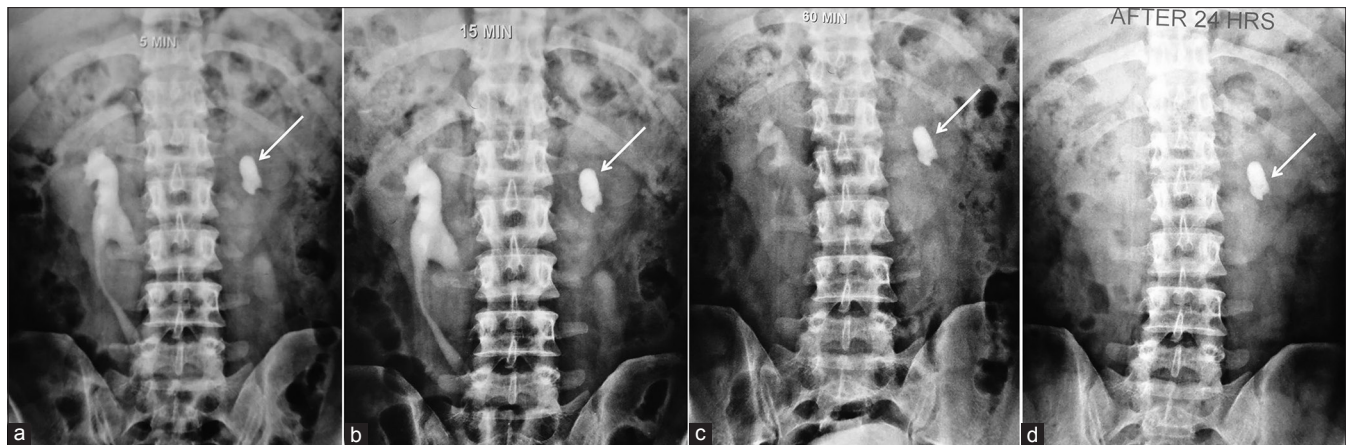


Figure 2: Intravenous urography images (a-d) of pyelogram phase revealing radio-opacity (approximately 27 × 16 mm) in left-renal fossa, which was a calculus (arrows). Prompt excretion was seen on right side. No excretion occurred on left side

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