Magnetic resonance imaging as problem-solving tool in renal pseudotumor in chronic kidney disease: A case of nodular compensatory hypertrophy

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A 52-year-old female with chronic kidney disease on medical management for past 7 months was referred to us for magnetic resonance imaging (MRI) in view of suspected renal mass in the left kidney. The suspicion was based on an exophytic lesion with increased vascularity found on ultrasound and non contrast computed tomography (CT) done elsewhere [Figure 1]. Her blood urea was 60 mg/dl, and serum creatinine was 2 mg/dl. Both kidneys were small in size and showed mild hydronephrosis, diffuse surface nodularity, and parenchymal thinning. On MRI, the exophytic lesion was similar in signal intensity to the rest of the renal parenchyma on all the sequences, namely T1, T2, and gradient based sequences (balanced fast field echo) [Figures 2 and 3]. The lesion measured ~3.2 cm × 3.1 cm. Gadolinium was not given because of elevated renal parameters. Normal renal vessels were seen passing from the hilum toward the left renal exophytic lesion [Figure 2c]. Hence, diagnosis of compensatory nodular hypertrophy was considered. The patient was reassured, with no further work up for the renal lesion.

Renal pseudotumors appear like neoplasm on imaging, but they contain normal/non neoplastic renal tissue on histology. Congenital causes of renal pseudotumors include hypertrophied column of Bertin, fetal lobulation, dromedary hump and cross-fused ectopic kidney. Nodular compensatory hypertrophy, acquired cause of renal pseudo tumor, occurs in the setting of extensively scarred kidneys, where the regenerating nodule gives rise to a tumor – like appearance.[1] Other acquired causes are renal sinus lipomatosis, xanthogranulomatous pyelonephritis, infections such as renal tuberculosis and actinomycosis, Wegener granulomatosis, and arteriovenous malformation.[2] It is important to identify pseudotumors of the kidney to avoid unnecessary surgery/nephrectomy. The lesions may be diagnosed using a combination of modalities like such as ultrasound, radionuclide scan, CT, MRI,

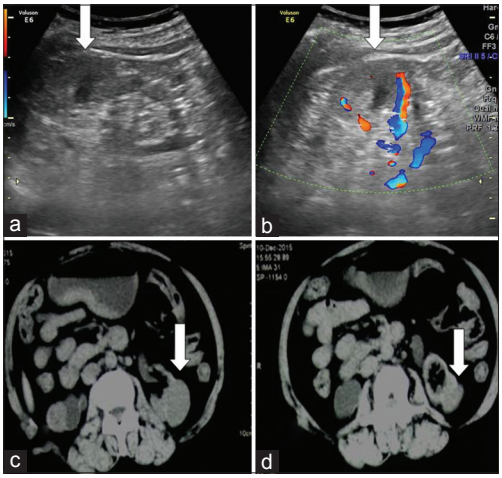

Figure 1: Gray scale ultrasound (a) shows an isoechoic area in mid pole of shrunken left kidney and Doppler (b) shows multiple vessels in the same region. Computed tomography (c and d) shows isoechoic exophytic soft tissue density lesion (white arrows) in the mid pole of left kidney

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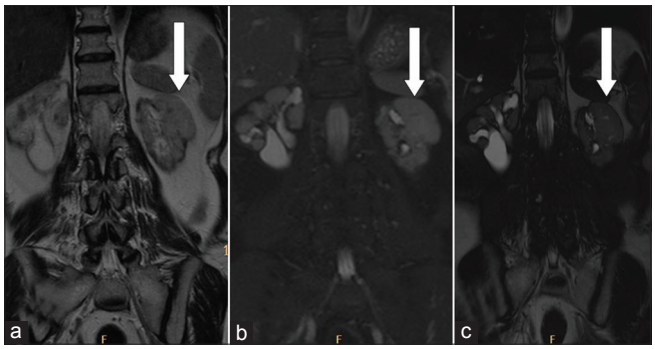

Figure 2: Coronal MRI sections T2 (a), T2-fat saturation (b) and balanced fast field echo (c) show a partly exophytic lesion in the mid pole of left kidney showing the same signal as the rest of the renal parenchyma (white arrows). Both kidneys appear shrunken with nodular surface and mild hydronephrosis

or angiography.[1,3] Use of contrast enhanced CT and angiography would not be possible in patients with coexisting renal failure, as in our case. Ultrasound and noncontrast CT may be inconclusive in lesion characterization in such instances. In such cases, nuclear scans and non contrast MRI with diffusion weighted images may act as problem-solving tools.[3,4] To conclude, renal tumors show altered signal intensity on conventional MRI sequences and restricted diffusion on diffusion-weighted images; nodular compensatory hypertrophy shows signal intensity similar to the rest of the renal parenchyma, with no restricted diffusion. These classical findings obviate the need for further imaging or invasive procedures.

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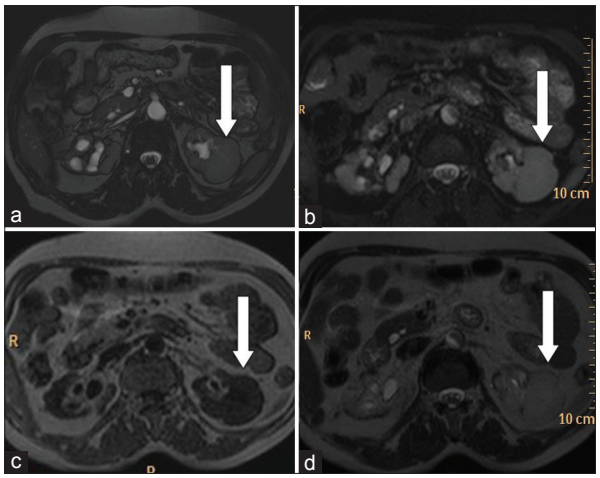

Figure 3: Axial MRI sections balanced fast field echo (a), T2-fat saturation (b) and T1 (c) and T2 (d) show a partly exophytic lesion in the mid pole of left kidney showing the same signal as the rest of the renal parenchyma (white arrows). Both kidneys appear shrunken with nodular surface and mild hydronephrosis

Conflicts of interest

There are no conflicts of interest.

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