

# Appearance of Renal Replacement Lipomatosis on Computed Tomography

## Rare pseudotumour

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ظهور الأستبدال الشحمي الكلوي في التصوير المقطعي  
شبه ورم نادر

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**Figure 1:** Plain abdominal radiograph showing a mass with soft tissue density in the left upper quadrant pushing the colon segments medially (arrows) in a patient with renal replacement lipomatosis.

**A**N 81-YEAR-OLD MALE PATIENT PRESENTED to the Urology Department of GATA Haydarpaşa Training Hospital, Istanbul, Turkey, in May 2014 complaining of left lumbar pain and a sense of abdominal fullness. On physical examination, left lumbar tenderness and a palpable mass were observed. A urine analysis showed an increased number of red blood cells. Plain abdominal radiography demonstrated soft tissue density at the left upper quadrant pushing the colon segments medially [Figure 1]. Abdominal ultrasonography revealed a

significant increase in the size and echogenicity of the left kidney and its margin could not be clearly differentiated from the surrounding fat tissue. In addition, a decrease in the left renal parenchymal thickness was noted.

Computed tomography (CT) and magnetic resonance imaging (MRI) were performed without the administration of intravenous contrast due to elevated serum creatinine levels. The CT scan [Figure 2] and axial T2-weighted MRI images revealed a fatty mass in the left kidney (approximately 22 x 18 x 14 cm in

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**Figure 2:** Non-contrast computed tomography showing a fatty renal mass (arrows) in a patient with renal replacement lipomatosis. The mass caused significant left renal enlargement and distortion on the surrounding structures.

size) with areas of linear and patchy fibrous tissue. The mass caused significant enlargement of the left kidney and distortion of the surrounding structures. There were no areas of restricted diffusion within the lesion on diffusion-weighted images. A biopsy of the mass was performed and a pathological examination revealed mature fat tissue. As a result of these findings, the left renal mass was considered to indicate renal replacement lipomatosis (RRL). Ultrasonography performed three months after the initial diagnosis revealed no changes in the size and imaging characteristics of the lesion.

## Comment

RRL is a marked proliferation of fat within the renal sinus and perirenal region where the renal parenchyma is replaced by fatty tissue.<sup>1</sup> While renal sinus lipomatosis is a mild proliferation of fatty tissue in the renal sinus, RRL is considered to be an advanced or aggressive form of renal sinus lipomatosis.<sup>2,3</sup> The condition is the result of severe atrophy of the renal parenchyma and fatty proliferation and is usually accompanied by chronic infections, obstructive kidney stones and long-standing hydronephrosis. It generally occurs unilaterally, contrary to renal sinus lipomatosis, and extends to the perirenal and periureteral areas.<sup>3,4</sup> *Calculi* are also seen in approximately 70% of cases.<sup>3</sup>

Xanthogranulomatous pyelonephritis (XGP), *malakoplakia* and tumours including fat-like lipomas,

liposarcomas and angiomyolipomas should be considered in the differential diagnosis for RRL. XGP is defined as a chronic granulomatous inflammatory disorder of the kidney that is characterised by microscopic lipid-laden foamy macrophages.<sup>4</sup> For patients with this condition, CT scans show xanthogranulomatous hypodense regions in the renal cortex and *medulla*, reduced renal function, detection of staghorn *calculi*, hydronephrosis and pyonephrosis.<sup>4</sup> *Malakoplakia* is a rare inflammatory disorder that may affect the kidneys. This condition is characterised by foamy histiocyte accumulation in the renal parenchyma and may represent a variant of XGP.<sup>2</sup> Lipomas and liposarcomas are generally seen in the intrarenal or extrarenal regions, outside of the renal sinus. Liposarcomas should be considered if the lesion has irregular borders and invasion of the surrounding structures or if heterogeneity or a mass effect are present.<sup>5</sup> Angiomyolipomas are generally seen in patients with tuberous sclerosis; they are differentiated by the presence of normal renal function and the absence of renal *calculi* on CT scans. The complications of RRL generally include perirenal abscesses and *fistulae*.<sup>1</sup>

In conclusion, RRL is a rare condition that should be considered in the presence of significant perirenal and intrarenal fatty infiltration. Early recognition of this condition would avoid unnecessary medical and surgical treatment. CT scans are an effective imaging modality in the diagnosis and follow-up of this condition.

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