Urological Image

A rare diagnosis of renal replacement lipomatosis

Rajnandini Dasgupta, Chandan J Das, Amit Gupta*

Department of Radiodiagnosis and Interventional Radiology, All India Institute of Medical Sciences, New Delhi, India

*E-mail: amit.aiims2014@gmail.com

ABSTRACT

Renal replacement lipomatosis (RRL) is a rare, benign entity characterized by marked fat proliferation within the renal sinus and perinephric space. We present images of a patient with RRL.

INTRODUCTION

Renal replacement lipomatosis (RRL) is a rare condition characterized by marked fat proliferation within the renal sinus and perinephric space with underlying gross renal parenchymal atrophy. It is usually seen in association with obstructive renal calculi, chronic infective states, and long-standing hydronephrosis.[1] Renal calculus disease accounts for more than 70% of the cases of RRL.[2]

CASE REPORT

A 46-year-old male patient, a known case of bilateral nephrolithiasis, presented with right flank pain. Noncontrast computed tomography (CT) of the abdomen was done to look for the status of renal calculus disease. CT showed gross parenchymal atrophy of the right kidney with fatty proliferation in the renal sinus, hilum, and perinephric location. The minimal residual renal tissue showed the presence of two calculi and loss of renal architecture [Figure 1]. In view of the pathognomonic imaging features, a diagnosis of RRL was made. The left kidney appeared normal except for the presence of a tiny calculus in the lower pole calyx with no evidence of hydronephrosis.

DISCUSSION

RRL is a rare entity. The usual presentation is in the form of a nonfunctioning kidney with marked fatty replacement in the renal sinus and perinephric space, most commonly in the background of long-standing nephrolithiasis.

The hypothesized pathogenetic mechanisms include expansion of renal sinus fat by chronic inflammatory induction resulting in pressure atrophy of renal parenchyma or alternatively compensatory fatty proliferation following atrophy of renal parenchyma.[3]

There are no specific clinical findings to diagnose this condition, and RRL remains an imaging-based diagnosis. Abdominal radiograph reveals renal calculi but only rarely depicts the increased radiolucency of fat, suggesting the diagnosis of RRL. Ultrasonography will demonstrate an echogenic mass replacing the renal parenchyma suggestive of fat proliferation, with or without demonstration of calculi with posterior acoustic shadowing. CT is the mainstay for the diagnosis of RRL. CT can demonstrate the fatty nature of RRL, differentiate it from other focal renal lesions, delineate the extent of fat infiltration, demarcate any residual atrophic renal tissue, and detect associated complications like perinephric abscess formation. Magnetic resonance imaging (MRI) is rarely required for diagnosing RRL; however, fatty proliferation in RRL is also well-visualized on MRI.[3]

The major differential diagnosis for RRL is xanthogranulomatous pyelonephritis (XGP), as both are characterized by chronic inflammation and obstructing

Access this article online	
Quick Response Code:	Website: www.indianjurol.com
	DOI: 10.4103/iju.iju_24_23

Received: 18.01.2023, **Revised:** 19.02.2023,

Accepted: 09.03.2023, **Published:** 31.03.2023

Financial support and sponsorship: Nil.

Conflicts of interest: There are no conflicts of interest.

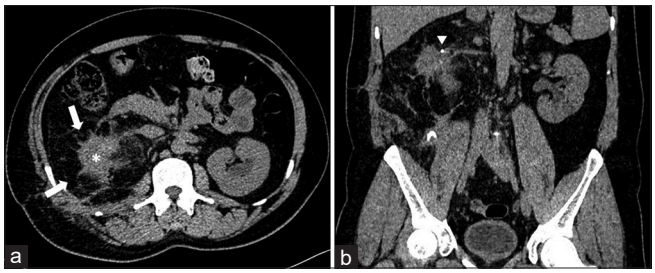

Figure 1: Noncontrast Computed tomography abdomen. Axial (a) and coronal (b) sections showing gross parenchymal atrophy of the right kidney (asterisk) with fatty proliferation in the perinephric location (white arrows). Note is made of a small calculus in the residual renal tissue (arrowhead)

calculus. In XGP, lipid-laden macrophages infiltrate the renal parenchyma and CT shows pyonephrosis along with distended renal calyces having low-attenuation contents giving a multiloculated appearance. RRL may have a mass-like appearance, in which case other fat-containing masses such as renal angiomyolipoma and retroperitoneal liposarcoma may be considered in the differentials.[4] However, an atrophic kidney with the presence of nephrolithiasis helps to make a confident diagnosis of RRL.

Simple nephrectomy is the treatment of choice in view of the nonfunctioning kidney with excision of the entire fatty "mass".[5]

CONCLUSION

RRL is a rare benign inflammatory diagnosis with pathognomonic imaging findings. An accurate preoperative diagnosis should be made and must not be misinterpreted as other more ominous fat-containing renal masses.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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How to cite this article: Dasgupta R, Das CJ, Gupta A. A rare diagnosis of renal replacement lipomatosis. Indian J Urol 2023;39:165-6.