

The Evaluation of Renal Replacement Lipomatosis with Computerized Tomography and Magnetic Resonance Imaging Findings: A Case Report

Melike Rusen Metin* and Sinem Ikiz

Atatürk Education and Research Hospital, Ankara, Turkey

*Corresponding author: Melike Rusen Metin, Atatürk Education and Research Hospital, Ankara, Turkey, Tel: 00905054663534, E-mail: melikemetinrusen@gmail.com

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Abstract

Renal sinus lipomatosis is a nontumorous renal lesion that defines the parenchymal atrophy related to adipose tissue proliferation in the renal sinus. Renal replacement lipomatosis (RRL) is a massive version of renal sinus lipomatosis. We aim to define RRL in a patient with the computed tomography (CT) and magnetic resonance imaging (MRI) findings.

Keywords: Renal sinus lipomatosis; Renal replacement lipomatosis; Computed tomography; Magnetic resonance imaging

Introduction

Renal sinus lipomatosis is a nontumorous renal sinus lesion that defines the parenchymal atrophy related to adipose tissue proliferation in the renal sinus, hilar or in perirenal area [1]. Normally the renal sinus contains fat tissue but in the parenchymal destruction or atrophy, endogenous or exogenous steroid exposure and obesity; the amount of fat increases. Although there can be a mass effect of the renal sinus lipomatous' on the collecting system it is not always symptomatic and generally detected bilaterally [1,2]. Renal replacement lipomatosis (RRL) is a milder version of renal sinus lipomatosis that generally detected unilaterally; associated with aging, renal atrophy, chronic urinary tract infections and more often related to the chronic calculous disease [1,3]. The cause is; advanced renal atrophy, destruction and fat tissue proliferation due to hydronephrosis and inflammation induced by chronic calculous disease. The clinical importance of RRL is that it is in the differential diagnosis of fat-containing tumors. Flank pain or fever may occur associated with the urinary tract infection. In this case; we aim to define RRL in a patient with one-sided flank pain with the computed tomography and magnetic resonance imaging findings.

Case Report

A 75-year-old male patient was admitted to our hospital with right-sided flank pain and he was referred to us for the further investigations to define the fat containing lesion in the sinus. Computed tomography (CT) and magnetic resonance imaging (MRI) was performed (Figures 1 and 2).

To see the function of the kidneys; renal dimercaptosuccinic acid (DMSA) scintigraphy indicated; there was no marked uptake in the right kidney localization and the preliminary diagnoses were either nonfunctioning kidney or agenesis. The size of the left kidney was normal and the cortical function was in normal limits. In the CT; there was a solid lesion filling the right renal sinus, forming mass effect on the caliceal structures, with total size of 50 × 40 mm, consisting of significant fat content, with milimetric calcsifications in the atrophic parenchyma.

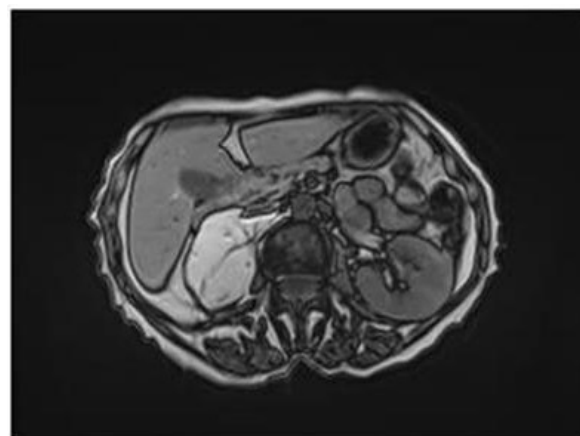


Figure 1: Contrast-enhanced computed tomography; in the coronal image; a solid lesion filling the right renal sinus, forming mass effect on the caliceal structures, significant fat content, with milimetric calcifications in the atrophic parenchyma.

In the MRI; there was a lobulated solid lesion which was heterogeneous hypointense on T2 weighted images, hypointense on fat-suppressed T1 weighted images, with no contrast enhancement after IV Gadolinium infusion and no restricted diffusion on routinely taken diffusion images. In the out of phase sequences the macroscopic fat containing lesion was not suppressed. Results were interpreted as renal replacement lipomatosis.

Discussion

RRL is usually unilateral, adipose tissue proliferation; as a result of parenchymal destruction and atrophy that occurs generally secondary to stone disease with an incidence of 70%. It can be miscible with xanthogranulomatous pyelonephritis or fat-containing tumors. In the RRL; which is the milder form of sinus lipomatosis; the radiolucent sinus can be detected in the excretory urography. The radiography can demonstrate the Staghorn calculus. In the ultrasound (US) the

enlarged echogenic sinus and Staghorn calculus in the center of the increased fat tissue, in CT and MRI mass-like increased fat tissue and atrophic renal parenchyma can be determined.



Figure 2: MRI out of phase sequence; in the axial image; macroscopic fat containing lesion in the renal sinus is not suppressed.

CT is more valuable to define the fat containing lesions with low attenuation values. Increased fat tissue can be localised in the sinus, hiler region or perirenal space. The most common findings seen on CT are Staghorn calculi and fat tissue surrounding them infiltrating the surrounding plans, renal capsule thickening and renal parenchymal atrophy [4].

MRI and MR urography can be used as an imaging method. Calculi, renal atrophy, increased perirenal soft tissue, diffuse suppressed perirenal and sinus fat tissue and the non functional kidney with dilated ureter can be detected. In the differential diagnosis; angiomyolipoma, fat-containing tumors such as lipoma and liposarcoma, xanthogranulomatous pyelonephritis (XGP) and transitional cell carcinoma (TCC) are conceivable [1,3].

The patients with RRL can be misdiagnosed as Xanthogranulomatous pyelonephritis which is a rare inflammatory disease characterized with destruction and lipid-laden histiocytes taking place of the normal renal parenchyma. There is no real fat density in XGP; which is the main difference between RRL and XGP [5]. In CT hydro and pyonephrosis can also be monitored [6].

Fat containing tumors form mass effect on the collector system in the renal sinus and they are not associated with renal calculi, inflammation or parenchymal atrophy. The fat containing tumors mostly cause extension into the renal parenchyma and extrarenal area.

In TCC of renal sinus; the margins are more definite and there is an invasion of the renal parenchyma. Renal replacement lipomatosis is a benign nontumorous lesion of the renal sinus characterized with increased renal and perirenal sinus fat tissue which can be misdiagnosed as xanthogranulomatous pyelonephritis or fat containing tumors and can occur in patients who had a chronic calculous disease history. With the help of some distinctive points in the imaging methods. RRL can be diagnosed by ruling out the differential diagnoses.

References

1. Rha SE, Byun JY, Jung SE, Oh SN, Choi YJ, et al. (2004) The renal sinus: Pathologic spectrum and multimodality imaging approach. *Radiographics* 24: S117-131.
2. Sonmez G, Mutlu H, Ozturk E, Sildiroglu O, Akyol I, et al. (2008) Replacement lipomatosis of the kidney: MRI Features. *Eur J Gen Med* 5: 184-186
3. Ginat DT, Bhatt S, Dogra VS (2013) Replacement lipomatosis of the kidney sonographic features. E35-E38.
4. Başara I, Akın Y, Serter S, Bozkurt A, Nuhoglu B (2013) Renal sinus lipomatosis. *Kafkas J Med Sci* 3: 48-54.
5. Karasick S, Richard JW (2000) Case 23: Replacement lipomatosis of the kidney. *Radiology* 215: 754-756.
6. Romero FR, Pilati R, Caboclo MF, Silva Ade P, Cravo MA, et al. (2011) Renal replacement lipomatosis and xanthogranulomatous pyelonephritis: Differential diagnosis. *Rev Assoc Med Bras* 57: 262-265.