Renal Replacement Lipomatosis Associated with Renal Calculus-Incidentally Detected at Autopsy: A Case Report of Two Cases

Ranbir Singh¹, Anitha Padmanabhan², Pushkar Admane³, Nitin Gadgil⁴, Felice Faizal¹
¹Post Graduate Student, Department of Pathology, Lokmanya Tilak Municipal Medical College, Mumbai, Maharashtra, India, ²Assistant Professor, Department of Pathology, Lokmanya Tilak Municipal Medical College, Mumbai, Maharashtra, India, ³Chief of Lab, Dr. Lal Pathlabs Private Limited, Raipur, Chhattisgarh, India, ⁴Associate Professor, Department of Pathology, Lokmanya Tilak Municipal Medical College, Mumbai, Maharashtra, India

Renal replacement lipomatosis (RRL) is a rare benign condition in which the renal sinus, hilum, and perirenal spaces are replaced with mature adipose tissue.¹ It can be idiopathic or associated with calculus and pyelonephritis.² Patients sometimes present with renal mass and on radiological imaging it can mimic lesions like angiomyolipoma or renal abscess or other tumor with adipose tissue.³

### INTRODUCTION

Renal replacement lipomatosis (RRL) is a rare, benign condition in which the renal sinus, hilum, and perirenal spaces are replaced with mature adipose tissue.¹ It can be idiopathic or associated with calculus and pyelonephritis.² Patients sometimes present with renal mass and on radiological imaging it can mimic lesions like angiomyolipoma or renal abscess or other tumor with adipose tissue.³

The pelvicalyceal system was dilated, distorted and harbored a staghorn calculus measuring 1 cm × 2 cm × 2 cm. Lining of pelvis was ulcerated. No normal renal parenchyma was identified. Multiple sections studied shows extensive fatty infiltration of the renal parenchyma. Few atrophic tubules and occasional sclerosed glomeruli were seen admixed with fat. Blood vessels were markedly thickened, and there was moderate inflammatory infiltrate composed of lymphocytes, plasma cells and few macrophages (Figures 2 and 3).

No evidence of pyelonephritis was seen. The pelvicalal lining was ulcerated and showed inflammation beneath.

The opposite kidney was unremarkable. Other organs were unremarkable except for lungs that showed evidence of bilateral tuberculous bronchopneumonia. Cause of death was ascertained as tuberculous bronchopneumonia. The diagnosis of right RRL associated with renal lithiasis was also made.

### CASE REPORTS

**Case 1**

A 45-year-old female was admitted to our hospital with complaints of fever, breathlessness and pain in abdomen. On examination, she was febrile with low blood pressure and tenderness in abdomen. There was no significant past history. Her general condition was not stable and she expired within 2 hours of admission. Routine blood investigations including complete blood count and blood urea nitrogen were within normal limits.

A complete autopsy performed showed tuberculous bronchopneumonia. The right kidney weighed 600 g and measured 9 cm × 9 cm × 6 cm. The shape of the kidney was maintained. On the external surface, capsule was intact. Cut surface the entire renal parenchyma was replaced by adipose tissue (Figure 1).

**Corresponding Author:**
Dr. Ranbir Singh, College Building, Room no. 507, 5th Floor, New Opd building, Lokmanya Tilak Municipal Medical College, Sion, Mumbai - 400 022, Maharashtra, India. Phone: +91-9930694168. E-mail: ranbir.s.chawla86@gmail.com
Singh, et al.: Two Cases of Renal Replacement Lipomatosis

blood investigation revealed anemia (hemoglobin 7.2 g/dl) with peripheral neutrophilia (total white blood cell count 41 × 10^3/µl with polymorphs 86%) and elevated blood urea nitrogen of 56 mg/dl. Ultrasonography of left kidney showed grossly altered echotecture, increased echogenicity with perinephric collection. Right kidney showed evidence of Grade I medical renal disease.

A complete autopsy was performed. The left kidney weighed 200 g and measured 10 cm × 7 cm × 4 cm, the shape of the kidney was maintained. Cut surface showed entire renal parenchyma was replaced by adipose tissue, and there was oozing of pus from the upper pole of the left kidney. The pelvicalyceal system was distorted and a calculus measure 1 cm × 1 cm × 1 cm was present in renal pelvis. Normal renal parenchyma was identified (Figure 4).

Multiple sections studied shows extensive fatty infiltration of the renal parenchyma with multiple microabscesses. Occasional atrophic tubule and dense inflammatory infiltrate composed of lymphocytes, neutrophils, and few plasma cells were seen. The right kidney weighed 310 and external surface showed pus flakes and deep scars. Section studied shows few sclerosed glomeruli, patchy atrophy and thyroidization of tubule. Interstitium shows mixed inflammatory infiltrate composed of lymphocytes and polymorphs.

Urinary bladder showed thickening of wall and section showed moderate cystitis. Prostate was enlarged showed features of benign prostatic hypertrophy.

Cause of death was ascertained septicemia following acute on chronic pyelonephritis.

Diagnosis of RRL of the left kidney was made.

DISCUSSION

RRL, renal sinus lipomatosis and fibrolipomatosis of kidney are the terms representing different spectrum of same condition.\(^4\)
Renal sinus lipomatosis, which is usually unilateral, occurs in elderly and is associated with obesity, atherosclerosis, and exogenous steroids. There is the proliferation of fat and fibrous tissue within the renal sinus. Whereas, RRL represents an extreme form of renal sinus lipomatosis. This is generally associated with infection (especially Tuberculosis), long-term hydrenephrosis, and renal calculi. There is severe renal parenchymal atrophy. It is usually unilateral. The patients present in the fifth decade and usually complains of dull aching flank pain. Sometimes they also present with urinary tract infection due to urinary stones or as a mass in the abdominal cavity.

Computed tomography (CT) scan, magnetic resonance imaging scan was not done in our case but these investigation appear to be the accurate methods for demonstrating the distribution of adipose mass in the renal sinus and perirenal space. Macroscopically the kidney is usually enlarged and appears to be a fibro-fatty mass in the lumbar region. Although the shape of the kidney is usually maintained. The entire renal parenchyma is replaced by adipose tissue. Pelvicalyceal system is generally dilated and may harbor renal stones obstructing the outflow tract as seen in our both cases. Histologically the renal parenchyma is totally replaced by mature adipose tissue admixed with sclerosed glomeruli and atrophied renal tubules. There is a variable amount of chronic inflammatory infiltrate.

Finally, the RRL can be easily confused with renal lipomatous neoplasms and xanthogranulomatous pylonephritis, especially on imaging that has a different line of treatment.

**CONCLUSION**

RRL is a rare condition and should be considered in the differential diagnosis of cases in which there is a replacement of the renal parenchyma by adipose tissue of a hypo-functioning or non-functioning kidney leading to end-stage renal disease. Accurate diagnosis is possible with CT scan and magnetic resonance imaging scan and thus helping in the proper management.

**REFERENCES**


How to cite this article: Singh R, Padmanabhan A, Admane P, Gagdi N, Faizal F. Renal replacement lipomatosis associated with renal calculus-incidentally detected at autopsy: A case report of two cases. IJSS Case Reports & Reviews 2014;1(7):15-17.

Source of Support: Nil, Conflict of Interest: None declared.