

Renal Artery Microaneurysm in a Woman With Amyloidosis

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Amyloidosis is an extracellular deposition of abnormal serum proteins. Systemic amyloidosis could involve different organs such as the spleen, liver, and kidneys. Renal artery microaneurysm is very rare in renal amyloidosis. We report a 44-year-old woman who was referred to our general hospital for evaluation of rising serum creatinine level, anemia, and pathological fracture. Two hours following renal biopsy, she developed severe pain in the left flank during voiding and ultrasonography revealed a large perinephric hematoma. She underwent angiography that incidentally showed pseudoaneurysm with diffused renal artery microaneurysm. The feeding artery to the pseudoaneurysm was completely ligated by an interventional radiologist. The subsequent histopathological report of the kidney revealed amyloidosis.

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INTRODUCTION

Amyloidosis is an uncommon disease characterized by an extracellular deposition of abnormal serum proteins. This may involve different organs and may cause progressive organ dysfunction. Renal involvement, pericardial and pleural effusions, cardiomyopathy, and cholestatic liver disease are some of the manifestations of systemic amyloidosis.^{1,2} Renal involvement may cause acute kidney injury with proteinuria of nephrotic syndrome or kidney failure.³ Spontaneous rupture of organs is another complication. Rupture of the spleen and liver was reported in some cases secondary to systemic amyloidosis.⁴ On the other hand, increased risk of bleeding due to renal artery microaneurysm has been linked to some of the diseases which involved the kidney. Renal artery microaneurysm has been presented in some cases of systemic lupus erythematosus and polyarteritis nodosa.⁵⁻⁷ To our knowledge, this is the first report of renal artery microaneurysm with systemic amyloidosis.

CASE REPORT

The patient was a 44-year-old woman with a

history of pathological fracture of the neck of left femur who was consulted for anemia and kidney dysfunction (baseline serum creatinine level was 2.80 mg/dL) which were found during orthopedic surgery. On admission, she was stable with no significant findings on physical examination. Results of laboratory examinations are shown in the Table.

History of the pathological fracture and microcytic anemia suggested the possibility of plasma cell disorders and multiple myeloma; thus, she underwent bone marrow aspiration that showed plasmacytosis (up to 15% of all nucleated marrow cells) with some atypia compatible with plasma cell dyscrasia. However, plasmacytoid lymphocytes were not adequate in number to render a diagnosis is of lymphoplasmacytic lymphoma, and further evaluation with serum protein electrophoresis was suggested. Serum protein electrophoresis levels were not suggestive of multiple myeloma based on the European Society for Medical Oncology's clinical practice guidelines for diagnosis, treatment, and follow-up of multiple myeloma.⁸ Kidney biopsy was performed with no immediate complication. After 2 hours, the patient developed severe pain in right flank during voiding. Ultrasonography

Laboratory Findings

Test	Result	Reference Range
Blood		
Hemoglobin, g/dL	9.4	11 to 16
Mean corpuscular volume, fL	88.3	80 to 100
Mean corpuscular hemoglobin, pg	29.13	27 to 35
Hematocrit, %	28.5	35 to 45
Platelet count, × 109/L	413	150 to 450
Reticulocyte count, %	1.5	...
Serum ferritin, ng/mL	658	11 to 306
Total iron binding capacity, µg/dL	415	250 to 450
Serum iron, µg/dL	48	40 to 150
Erythrocyte sedimentation rate, mm/h	90	< 20
Serum sodium, mEq/L	135	...
Serum potassium, mEq/L	4.9	...
Serum calcium, mg/dL	10.5	9 to 10.5
Serum phosphorus, mg/dL	4.4	2.5 to 4.5
21-hydroxyvitamin D, ng/mL	70	20 to 100
Parathyroid hormone, pg/mL	9.2	10 to 55
Blood urea nitrogen, mg/dL	61	3 to 20
Serum creatinine, mg/dL	3.90	0.4 to 1.1
Serum albumin, g/dL	2.1	3.5 to 5.5
24-hour urine*		
Protein, mg/24 h	1057	20 to 150
Creatinine, mg/24 h	693	600 to 1800
Spot urine		
Protein	2+	Negative
Specific gravity	1.015	1.003 to 1.030
Erythrocyte	0	0 to 5
pH	5	5.5 to 6.5
Leukocyte	0 to 2	0 to 4
Epithelial cells	few	...

*Incomplete urine collection

revealed perinephric large hematoma with the volume of 450 mL in the upper pole and 200 mL in the lower pole of the right kidney. The patient's blood pressure decreased from 110/70 mm Hg to 70/40 mm Hg with a pulse rate of 140 per minute and she was referred to intensive care unit.

Angiography showed paranchymal pseudoaneurysm with surrounding hematoma in the left kidney. Perirenal space reticulation of the left kidney was noted (Figure 1). Interventional treatment was started using digital subtraction angiography and coil embolization on the feeding artery. Multiple diffused microaneurysm was seen in the renal parenchyma using digital subtraction angiography (Figure 2), and the feeding artery to the pseudoaneurysm was ligated completely using 3 Tornado microcoils (Figure 3). Three days later,

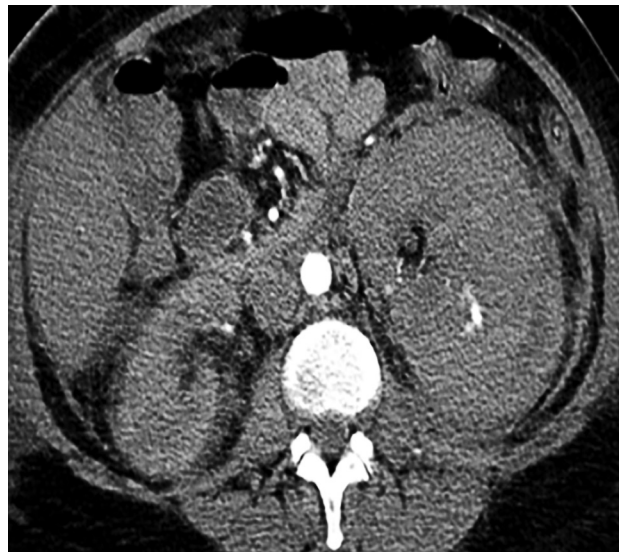


Figure 1. Paranchymal pseudoaneurysm with surrounding hematoma in the left kidney



Figure 2. Multiple diffused microaneurysm in renal parenchyma using digital subtraction angiography

microscopic examination of renal needle biopsy showed deposits of amyloid in the capillaries wall and mesangial matrix. The patient was diagnosed with amyloidosis associated multiple myeloma based on the patient's history, plasma cell dyscrasia, and renal biopsy findings. Finally, the patient was admitted to the Department of Oncology and underwent chemotherapy.

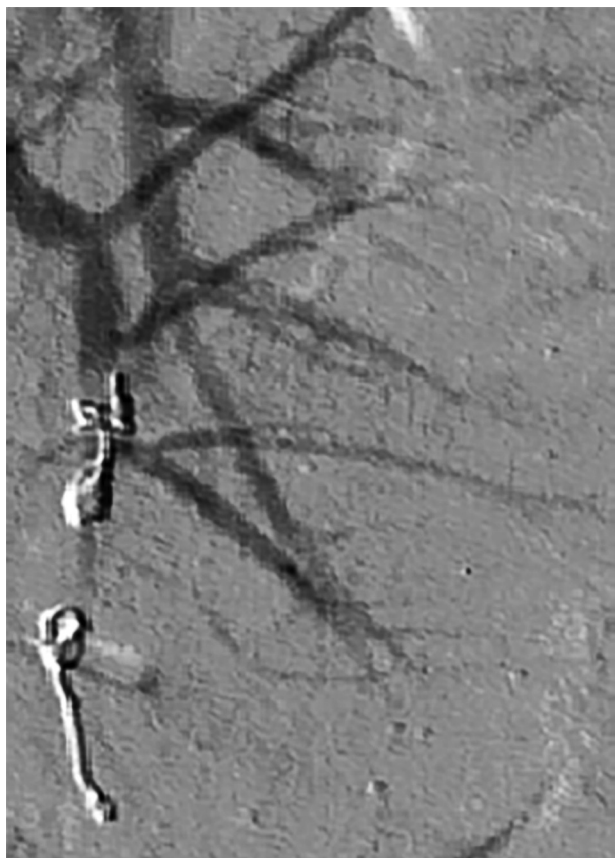


Figure 3. The feeding artery to the pseudoaneurysm was completely ligated using 3 Tornado microcoils.

DISCUSSION

We reported a case of amyloidosis with diffused renal microaneurysm. In 2013, a case of spontaneous rupture of the spleen secondary to amyloidosis was reported.⁹ In that case, after presentation of the patient with signs of spleen rupture, histopathological evaluation of spleen led to the diagnosis of amyloidosis. In this patient, spleen rupture was the first manifestation of the disease.⁹ Also, a case of previously diagnosed amyloidosis was presented with renal rupture.⁴

Renal microaneurysm is another important complication of the renal amyloidosis that may be complicated with bleeding and hypovolumic shock in the patients. Tsai and coworkers reported a case of systemic lupus erythematosus presented with acute abdominal pain and anemia that had renal artery microaneurysm.⁵ Also, a case of polyarteritis nodosa was reported in 2012, which had diffused microaneurysm that involved the kidney, liver, and lung arteries.⁶ Barghi and colleagues reported a case of systemic lupus erythematosus with multiple

intrarenal microaneurysms which caused massive bleeding following percutaneous renal biopsy.⁷

As in our presented patient, artery microaneurysm could be associated with amyloidosis. Accordingly, emergent care should be considered in patients who are likely to have organ amyloidosis presented with hypotension.

CONFLICT OF INTEREST

None declared.

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