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## Embolization for Hemorrhagic Multiple Intrarenal Microaneurysms Following Percutaneous Renal Biopsy in A Patient with Systemic Lupus Erythematosus

Although patients with systemic lupus erythematosus (SLE) have a high incidence of arterial and venous thrombotic manifestations, intrarenal microaneurysms have been quite rarely reported in these patients, and are probably unrecognized. We report a case of SLE which was complicated with huge retroperitoneal hemorrhage due to rupture of pseudoaneurysm following renal biopsy, associated with multiple microaneurysms. On angiography, multiple microaneurysms of the intralobular arteries and bleeding from the lower pole renal pseudoaneurysm were seen, which was embolized with gel foam. This case represents an unusual presentation of SLE.

**Keywords:** pseudoaneurysm, systemic lupus erythematosus, embolization, microaneurysm

### Introduction

Systemic lupus erythematosus (SLE) is a chronic autoimmune disease characterized by the presence of various antibodies, and inflammation in many organ systems. A variety of vasculopathies such as arterial and venous thromboses have been observed in patients with SLE. However, the arterial involvement as aneurysmal formation, such as seen in patients with polyarteritis nodosa (PAN), is extremely rare among patients with SLE.<sup>1</sup>

Percutaneous renal biopsy provides important information for the diagnosis, management, and prognosis of kidney diseases and patients with lupus nephritis frequently undergo renal biopsies, a rare complication of which is the development of renal pseudoaneurysm.<sup>2-4</sup>

Herein, we report on a case of SLE with symptoms and signs of acute renal bleeding due to pseudoaneurysm or ruptured microaneurysm after renal biopsy that was associated with multiple microaneurysms. To the best of our knowledge, this is the first report of SLE associated with a retroperitoneal hemorrhage, probably secondary to a ruptured renal microaneurysm from renal biopsy.

### Case Report

A 22-year-old woman, known case of SLE for 8 years, was admitted to our medical center in order to undergo percutaneous biopsy of the left kidney because of lupus flare-up in May 2004. Medical history and pathology reports of renal biopsy (8 and 4 years ago) revealed a documented case of SLE.

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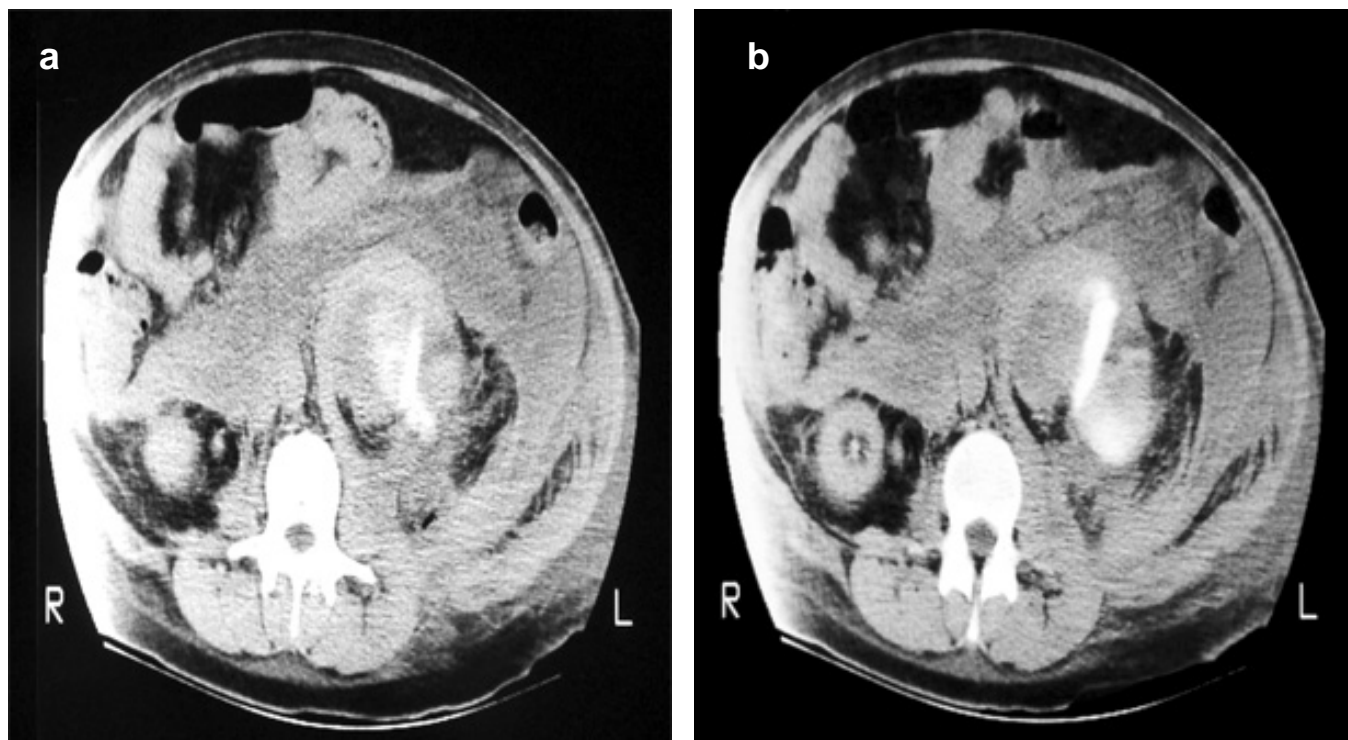
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**Fig 1.** a. Transverse contrast-enhanced CT scan obtained before embolization revealed a huge retroperitoneal hematoma (arrows) and medial displacement of the left kidney. b. Jetting of contrast material is seen (arrow).

Physical examination showed a pale edematous and chronically ill woman. Her vital signs were a temperature of 36.5°C, respiratory rate of 18/min, heart rate of 85/min and blood pressure of 140/90 mmHg. Laboratory studies showed:

Hb=9.5g/dl, Hct=28.6%, WBC=9700/ml (with normal differential count), PLT=156000/ml; PT= 13.3" (control PT=13"), PTT=33" (normal range=30–40"), INR=1.0; proteinuria +3, RBC=many/hpf and WBC=15–20/hpf in urine analysis, negative urine culture, urine protein=300mg/day; BUN=82mg/dl, Cr=4.2 mg/dl, Na=135 mg/dl, K=4.2 mg/dl.

Serologic investigation showed: ANA (+), Anti-ds DNA(+), low level of C3, low level of C4, low level of CH50, HBS-Ag (-).

After prophylactic antibiotic administration, ultrasound-guided percutaneous needle biopsy under local anesthesia was performed with a Tru-Cut needle, from the lower pole of the left kidney. Relative bed rest, regular check of vital signs, and antibiotics were ordered. Acute abdominal pain and hypovolemic shock occurred 24 hours after the renal biopsy. Her vital signs and laboratory studies then were a temperature of 37.5°C, respiratory rate of 28/min, heart rate of 100/min, blood pressure of 65/50 mmHg, Hb=

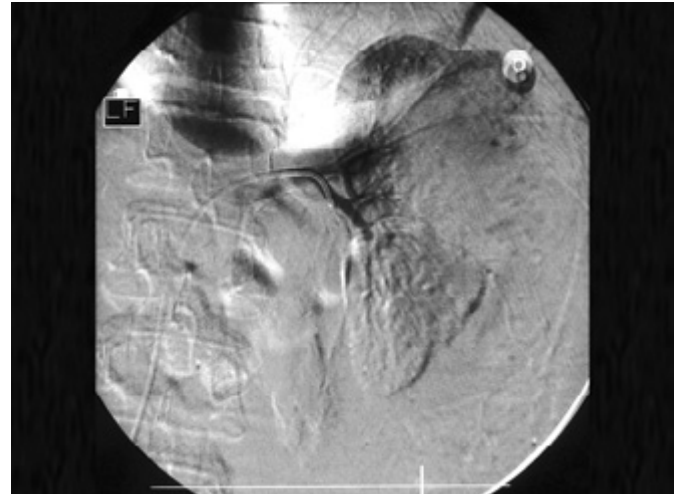
6.5g/dl, PT= 23", PTT= 58", INR= 2.8, PLT= 91000/ml. The patient was resuscitated with 5 units of whole blood transfusion. Immediate contrast-enhanced CT scan revealed a huge retroperitoneal hematoma around the biopsied kidney with medial displacement of the kidney (Figures 1a and 1b).

Semiselective renal digital subtraction angiography was performed transfemorally with a 5-F cobra catheter and confirmed a large bleeding pseudoaneurysm in the lower pole of the left kidney (compatible with the site of the renal biopsy) and multiple microaneurysms in upper and lower segmental arteries (Figure 2). Considering the severity of bleeding, size of pseudoaneurysm and patient's vital signs, semiselective embolization was successfully performed in the middle and lower segmental arteries using 2CC Gelfoam particles suspended in the contrast material (Figure 3).

The control examinations using ultrasonography and CT scan, and the stability of patient's clinical picture and vital signs revealed an excellent result. After four days when the patient's hemodynamic and laboratory examinations were normal, the retroperitoneal hematoma was evacuated with a flank incision.



**Fig 2.** Selective angiography obtained in an anteroposterior projection showed multiple microaneurysms (short arrows), jetting of contrast material (curved arrow) and a bleeding pseudoaneurysm (long straight arrow).



**Fig 3.** The occlusion of the inferior and middle segmental arteries of the kidney.

## Discussion

SLE is a connective tissue disease with multi-organ manifestations.<sup>5</sup> Renal involvement is very common, and it usually presents as active glomerulonephritis, with or without progressive renal impairment. The vascular lesions of SLE are the involvement of small vessels. A variety of vasculopathies have been observed in SLE.<sup>6</sup> Renal artery and vein thrombosis have been documented, especially in those with antiphospholipid antibodies.<sup>7</sup>

Despite vascular lesions being common findings in SLE, true vasculitis and intrarenal microaneurysms have rarely been described.<sup>8</sup>

Our patient had several clinical and laboratory features that fitted SLE. These were serositis, lupus nephritis, seizures, arthritis, positive ANA, positive anti-ds DNA and a low serum C3 level.<sup>9</sup> Fortunately, we did have a chance to perform a renal biopsy and confirmed the diagnosis of SLE.

Clinically significant complications after renal biopsy are unusual. Although greater than 90% of patients have CT-detectable hematomas after renal biopsy, hemorrhagic complications that would require transfusion or other clinical interventions occur in only 1 to 6% of patients.<sup>10, 11</sup>

The majority of arteriovenous fistulas and pseudoaneurysms developing after renal biopsy are either asymptomatic or associated with only transient symptoms.<sup>12</sup> However; life-threatening bleeding due to

pseudoaneurysm, detectable by duplex scanning and angiography has been reported following percutaneous biopsy. Selective angiographic embolization is the initial treatment of choice.<sup>13</sup>

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