

Urinary Infection and Spontaneous Subcapsular Renal Hematoma

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Abstract: Spontaneous subcapsular renal hematoma is an uncommon entity. We report a 54-year-old lady presenting with high fever, dysuria followed 5 days later by acute onset left flank pain and uncontrolled hypertension. Ultrasound, computed tomography and magnetic resonance imaging showed a subcapsular hematoma in the left kidney. Except urinary tract infection and hypertension, no particular cause for the condition could be found. Symptoms and size of the collection decreased on conservative treatment. The collection disappeared on MRI at 6 weeks follow-up. She was asymptomatic at 23 months follow-up.

Keywords: Renal hematoma, spontaneous renal rupture, subcapsular.

INTRODUCTION

Spontaneous subcapsular renal hematoma (SPH) is a diagnostic dilemma. It is a rare condition in clinical practice. Although lots of research has been done in the subject, still it remains elusive. Previously, renal tumor was thought to be the underlying cause when there was no obvious etiology and radical nephrectomy was advised. We report our experience of a case who developed SPH in association with urinary tract infection. She was treated conservatively with good outcome.

CASE REPORT

A 54-year-old female presented with a long history of intermittent micturition and dysuria. She started having high grade fever 5 days ago. On the day of presentation, she had acute onset of left flank pain. It was sudden in onset and severe in intensity and associated with nausea and hematuria. On examination, her blood pressure for as much as 150/96 mmHg about 10 years. Not taking any antihypertensive medications.

The left flank was exquisitely tender. There was no organomegaly. Genital and pelvic examinations were normal. Laboratory examination revealed hemoglobin of 92 g/L, RBC $3.18 \times 10^{12}/L$, WBC $36.54 \times 10^9/L$, N 0.94, and platelet count of $2.89 \times 10^{11}/L$. Urine culture grew *Citrobacter freundii*, sensitive to moxalactam, which was promptly started.

On abdominal ultrasonography, the left kidney was enlarged and showed a subcapsular collection extending from upper to lower pole (Fig. 1). Renal parenchyma was compressed by the collection. Doppler study ruled out any arteriovenous fistulae. Right kidney, urinary bladder and rest of the abdominal organs were within normal limit. Computed tomography (CT) (Fig. 2) revealed well-defined subcapsular pocket of fluid of size 6.3×5.5 cm on the anterior aspect compressing the left kidney.

The Hounsfield unit of the collection was 79, suggestive of clotted blood. There was no solid component or abnormal contrast uptake in the collection. Magnetic Resonance Imaging (MRI) was done. The upper pole of the left kidney revealed the 4.0×2.9 cm of circular signal shadow. There were for high T2WI signal and for the low signal T1WI. The renal capsule around the left kidney under visible arc liquid signal shadow. T2WI displayed contour signal, T1WI displayed contour mixed signal. Around the left kidney liquid signal and the upper pole of the kidney cystic lesions interlinked (Fig. 3). Both kidneys were functioning normally and both the ureters and urinary bladder were normal. Complete bed rest was advised, proper analgesia and antibiotic was given and she responded well to this treatment. Her symptoms decreased within 10 days. Her blood pressure was brought under control with two drugs - metoprolol and amlodipine. The erythrocyte sedimentation rate, and C-reactive protein became negative. Follow-up laboratory examination revealed hemoglobin of 110 g/L, RBC $3.86 \times 10^{12}/L$, WBC $6.02 \times 10^9/L$, N 0.94, and platelet count of $3.56 \times 10^{11}/L$. The MRI was repeated after 6 weeks, and showed marked regression of the collection (Fig. 4). She was asymptomatic at 23 months follow-up and her blood pressure was well controlled without any medication.

DISCUSSION

“Spontaneous renal capsule apoplexy” was first described by Bonnet in 1700, however only in 1856 gave Wunderlich give his name to this rare condition. A recent literature review on spontaneous renal hemorrhages [1] pointed out that tumors and angiomyolipoma represent more than 50% of the causes. Only one case of spontaneous perirenal hematoma following low-dose aspirin treatment has been reported [2].

Ultrasound is extremely valuable for rapid identification of the condition. Sometimes, they might be misdiagnosed as renal tumor or an abscess [3]. The findings have to be confirmed by CT scan. It has higher sensitivity and

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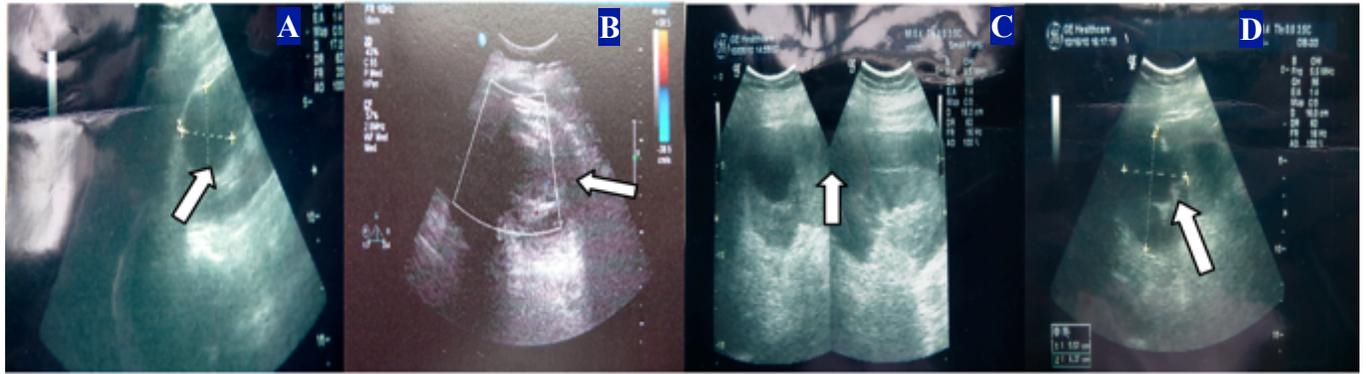


Fig. (1). Ultrasonography at presentation. Before renal cyst rupture A (2010-9-25), After renal cyst rupture B (2010-9-29), C (2010-10-5), D (2010-10-22).

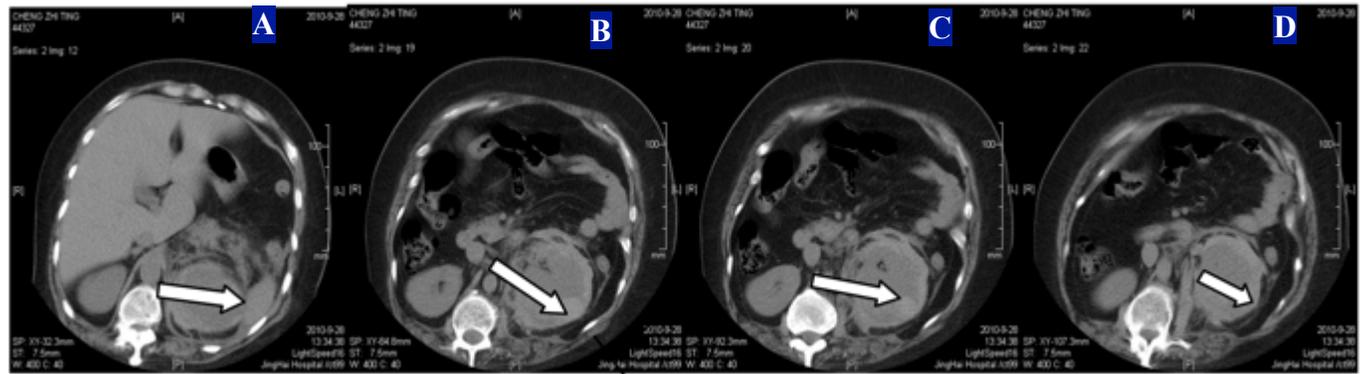


Fig. (2). Computed tomography at presentation (2010-9-28). Computerized tomography of abdomen demonstrated hematoma around the left kidney (arrow).

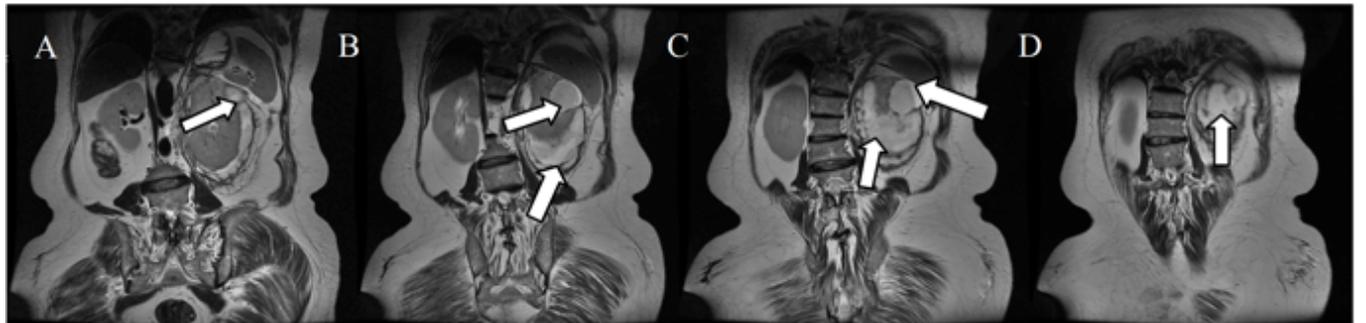


Fig. (3). Magnetic resonance imaging at presentation (2010-10-9). Magnetic Resonance Imaging of abdomen demonstrated hematoma around the left kidney (arrow).

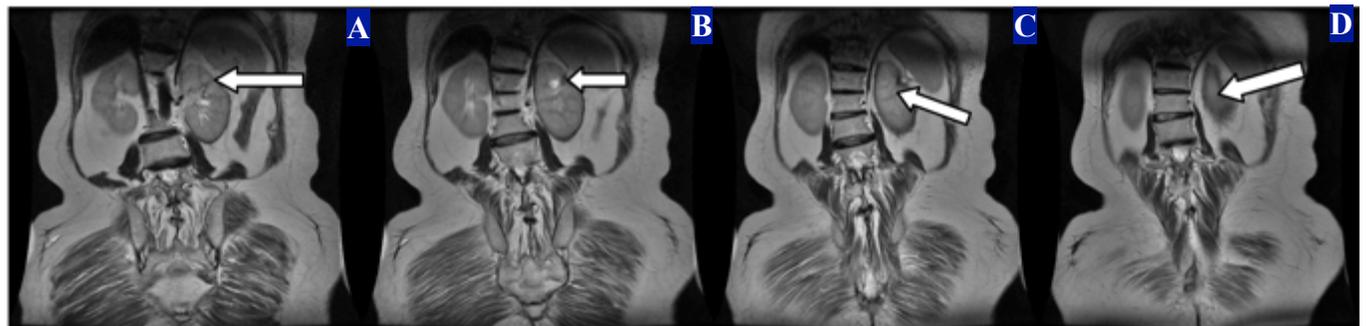


Fig. (4). Magnetic resonance imaging after the treatment of 6 weeks (2010-11-13). Magnetic Resonance Imaging of abdomen demonstrated disappearance of hematoma and simple cyst in the upper pole of the left kidney (arrow).

specificity than ultrasound for identification of an underlying mass [4] and gives valuable information regarding the cause of hematoma and about the contralateral kidney [5]. If there is fat density in the hematoma, then it strongly suggests angiomyolipoma. Magnetic Resonance Imaging (MRI) is a useful alternative. It scores over CT scan as far as diagnosing small tumors are concerned.

McDougal *et al.* reviewed the literature in 1989. He found that of a total 123 cases, tumor was responsible for bleeding in 57-87% cases, vasculopathy was present in 11-26% cases and infection accounted for 5-10% of cases [6].

There are two schools of thought regarding management of such cases. Kendall *et al.* proposed radical nephrectomy as a treatment of such conditions where there is no apparent etiology and normal contralateral kidney with careful pathological examination because of high incidence of small renal tumors [7].

In contrast, Morgentaler *et al.* proposed nephrectomy only in patients with non fatty lesions other than hematoma. All other patients were followed by serial CT scan [8]. Bosniak *et al.* claimed that operative exploration is not necessary in most unexplained cases because of the diagnostic accuracy of contrast CT scan using 5 mm sections [9]. If etiology cannot be determined at the primary examination, follow-up CT should be performed at 3 month intervals until the hematoma resolves and a definite diagnosis is possible. Conservative management is also supported by Koo *et al.* [10]. Infection can lead to renal cyst rupture by increasing the internal pressure and making the surrounding tissues fragile. Inflammation from obstruction leads to increased pressure inside the capsule which can cause idiopathic capsule hemorrhage. In our patient, infection and hypertension seems to be the predisposing cause for the condition as malignancy and vasculopathy were ruled out. We believe not all patients with SPH require nephrectomy.

CONCLUSION

Spontaneous subcapsular renal hematoma might arise from a variety of situations. Although initially small renal cell carcinoma was thought of as the most common reason, the cause might not be evident in many cases. We propose that urinary tract infection might be one of the causes. Proper control of hypertension can save the kidney.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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