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Case report

SPONTANEOUS BILATERAL SUBCAPSULAR RENAL HEMATOMAS IN A 20-YEAR-OLD WOMAN: IMAGING FINDINGS.

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ABSTRACT

Spontaneous bilateral subcapsular renal hematoma is an extremely rare condition. In international literature, very few cases have been reported. We here present a rare case of a 20-year-old female with silent anamnesis, who presented to the Emergency Department of our center with abdominal epigastric pain and relapsing febrile peaks. Different imaging techniques were performed (Ultrasound (US), Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) with contrast agent) demonstrating spontaneous bilateral subcapsular renal hematomas. This patient had no risk factors and traumatic origin was excluded, as well as all other more common causes. The patient was treated conservatively in our center. The patient ultimately recovered and continued to be followed in an outpatient setting without any serious long-term complications

1. Introduction

Subcapsular renal hematoma is a rare condition in clinical practice, usually of traumatic origin and unilateral.
Spontaneous renal hematoma into the subcapsular or perinephric space, known as Wunderlich syndrome (WS), is a non-traumatic, highly uncommon condition[1]. The patients affected usually present flank pain, flank palpable mass and hypovolemic shock (Lenk's triad)[2, 3], even if the onset symptoms may be variable and depend on the extent and duration of the bleeding[4].
The etiology is divided between neoplastic (more common) and non-neoplastic causes. Among the neoplastic causes, the most frequent of benign origin is angiomyolipoma, while the most common malignant one is renal cell carcinoma. Among the non-neoplastic causes, vascular pathologies are the most frequent and include vasculitis and vascular anomalies, followed by kidney infections and idiopathic forms[5].
We here present a case of spontaneous bilateral renal subcapsular organizing hematomas in a 20-year-old woman and the use of different imaging techniques to assess active bleeding and to research its etiology.

2. Case Presentation

We report the case of a 20-year-old woman from Bangladesh, who presented at the Emergency Department due to epigastrium pain and relapsing febrile peaks to 38.5° C. She had silent anamnesis and stable clinical parameters, without any sign of recent trauma. On physical examination, abdomen was treatable and painful on deep palpation.
Laboratory examinations and complete blood count (CBC) revealed hemoglobin (Hb) of 9.8 g/dl, red blood cells (RBC) 3.51 x 10^{12}/L, INR 1.21, aPTT ratio 1.22, normal white blood cells (WBC) and platelets count and PCR 84.5 mg/L.
Chemical-physical examination of the urine showed presence of Hb (+3) and RBC. Urine culture and blood culture gave negative results.
The first US examination (Figure 1) noted inhomogeneous hyperechoic fluid collection in the perirenal space bilaterally, with a maximum thickness of 17 mm on the right and 13 mm on the left. Regular kidneys by morphology, volume and echo structure, in the absence of kidney stones or signs of hydronephrosis.
The patient was then admitted to the Nephrology Department, where

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antibiotic therapy was set up and blood-chemical tests were repeated, which reported a further reduction in RBC and Hb and an increase of PCR. The further drop in Hb made transfusion therapy necessary.

To exclude a bilateral pyelonephritis an MRI of the abdomen was performed with a 1.5 Tesla implant, multiplanar and multi-echo sequences, without use of Gadolinium contrast agent (Figure 2-3).

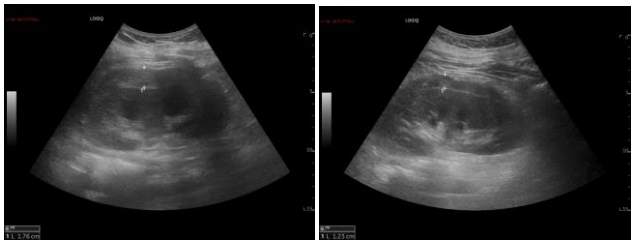

Figure 1. Abdomen Ultrasonography (US) documented the presence of inhomogeneous hyperechoic fluid collection in the perirenal space bilaterally, with a maximum thickness of 17 mm on the right (left figure) and 13 mm on the left (right figure).

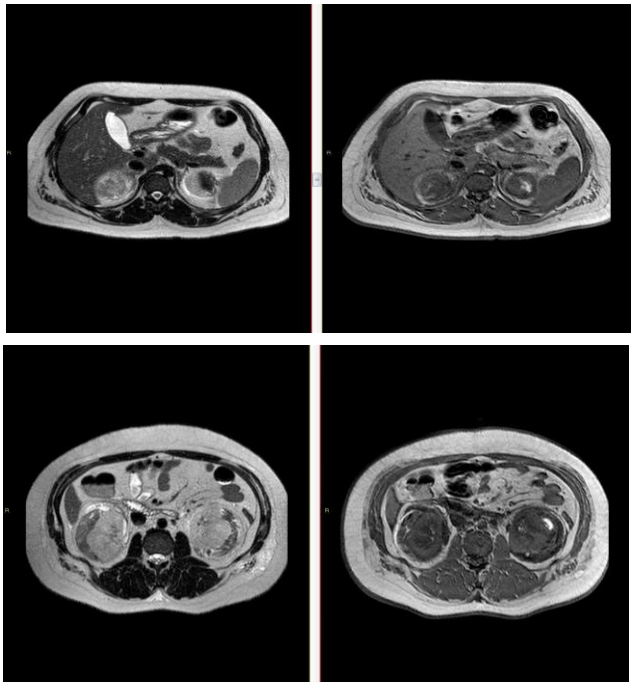

Figure 2 A (upper) and B (lower). Upper Abdominal MRI with 1.5 Tesla implant, on axial planes, T2-weighted sequences on the left and T1-weighted sequences on the right.

MRI exam shows bilateral perirenal subcapsular inhomogeneous collections (maximum thickness of 24 mm on the right and 22 mm on the left) with hyperintensity bands in T1 sequences compatible with blood signal. These collections were diagnosed as organizing hematomas determining compression of the renal parenchyma and medial displacement of both kidneys.

In the two figures on the left T2w, a millimetric amount of fluid can be noted in sub-hepatic and peri-splenic spaces.

MRI investigation didn't show any area of signal restriction in DWI/ADC sequences to refer to acute pyelonephritic foci. On the other hand, presence of bilateral perirenal subcapsular inhomogeneous collections was confirmed, with a maximum thickness of 24 mm on the right and 22 mm on the left, determining compression of the renal parenchyma and medial displacement of both kidneys. These collections bilaterally presented hyperintensity bands in T1 sequences compatible with blood signal, then diagnosed as organizing hematomas. Moreover, a millimetric amount of fluid was observed in sub-hepatic, peri-splenic and perirenal space.

In the same day, an urgent CT with contrast agent was performed (figure 4-6) to exclude active bleedings. CT confirmed bilateral subcapsular perirenal organizing hematomas and noted multiple bilateral contrast agent blushes into the hematomas during late excretory phase.

A consultation with the Angiographer Radiologist was then requested: because of the multiple foci of bleeding it was not possible to suggest an endovascular intervention.

Autoantibodies profile blood test was performed and resulted negative.

Our patient remained hospitalized in the Nephrology Department, where she was administered tranexamic acid for the entire period of hospitalization (about two weeks).

She underwent repeated CBC and US follow-up, which showed gradual normalization of Hb and RBC and thickness reduction of the hematomas until they disappeared.

The patient was discharged with diagnosis of idiopathic spontaneous renal hematomas after exclusion of all possible underlying causes.

Our patient will undergo biannual US checkups.

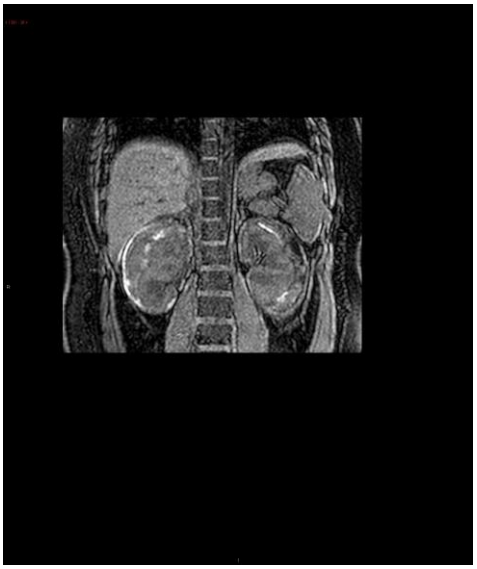

Figure 3. Upper Abdominal MRI with 1,5 Tesla implant, on coronal plane, Thrive sequence. MRI shows hyperintensity into the renal capsular space compatible with blood signal.

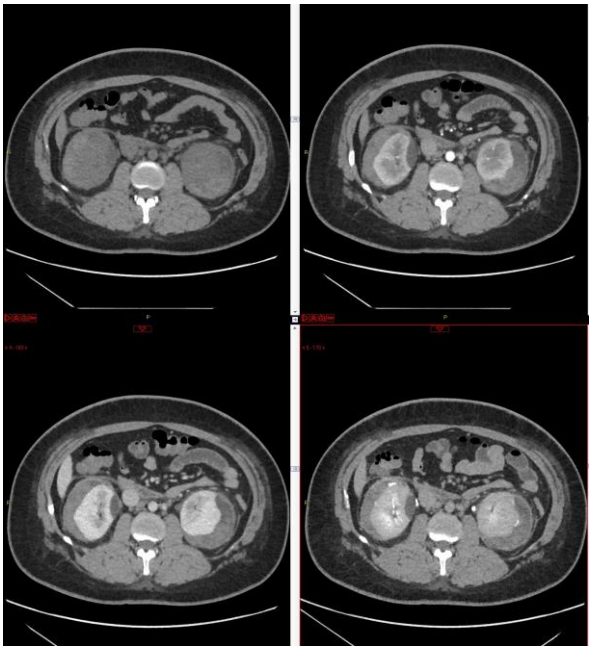

Figure 4. CT before and after contrast agent administration, on axial planes. On the basal phase (upper figure on the left) spontaneous hyper-attenuation in perirenal subcapsular space could be noted. On late excretory phase (lower figure on the right) multiple bilateral contrast agent blushes into the hematomas may be noted, diagnosed as multiple bilateral active bleedings.

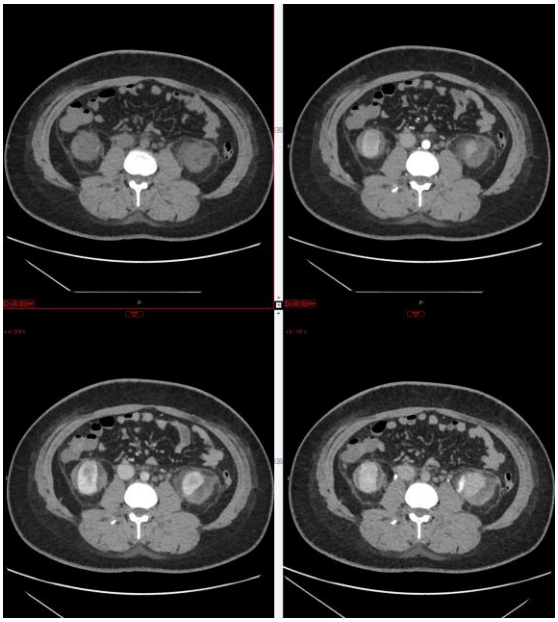

Figure 5. CT before and after contrast agent administration, on axial planes. On late excretory phase (lower figure on the right) an extended contrast agent blush may be noted into the left perirenal hematoma, diagnosed as active bleeding.

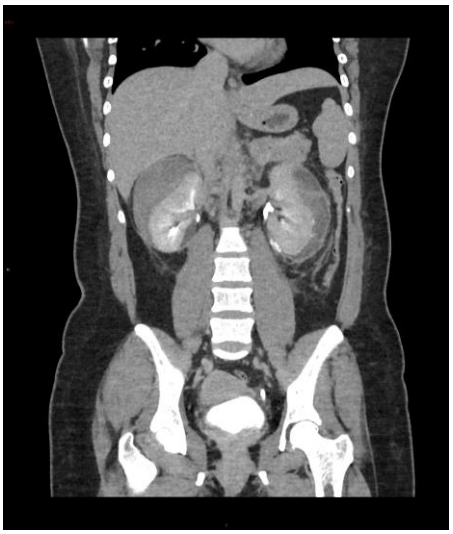

Figure 6. CT after contrast agent administration on late excretory phase, on coronal plane. CT scans show multiple bilateral contrast agent blushes into the hematomas, diagnosed as multiple bilateral active bleedings.

3. Discussion

Spontaneous bilateral subcapsular hematomas are very uncommon findings, though in some cases life-threatening. The literature on this topic is limited to few case reports[6–8]. Spontaneous renal hematoma was initially reported by Bonet in 1679 and was later described by Wunderlich in 1856[7]. Usually, it presents with "Lenk's triad" consisting of acute flank pain, tenderness, and symptoms of internal bleeding.

US is considered the first-line investigation for the high sensitivity and the rapid identification of the condition, but US findings must be confirmed with CT for an accurate diagnosis[9].

CT with contrast agent usage is 100% sensitive for diagnosis. It is helpful to identify the cause of hematoma and it has higher sensitivity and specificity than US for identification of an eventual underlying mass[7]. MRI is a useful alternative to CT, in particular in the case of acute pyelonephritis as a cause of bleeding[10].

In fact, in our specific case, MRI was performed before CT in the clinical suspicion of pyelonephritis.

Angiography is useful for researching vascular pathologies and, in the case of acute bleeding, to implement selective arterial embolization[11, 12]. However, in our case, since the blood loss occurred from multiple sources, endovascular treatment would not have been possible and angiography would not have provided additional information compared to CT. Regarding etiologies, renal tumors are the most common cause of hematoma that account for up to 60% of all cases. Among the neoplastic causes, the most frequent benign mass is angiomyolipoma [13], while the most common malignant one is renal cell carcinoma[5]. Other causes include trauma, vascular abnormalities, renal cystic diseases, inflammatory and infectious processes and, in some cases, no predisposing conditions can be found.

In our patient, we first excluded traumatic origin because of her young age. Subsequently, after detecting fever and abdominal pain at deep palpation on objective examination, we proceeded to exclude neoplastic masses, renal cystic diseases and infectious causes, as US, CT and MRI did not show any renal parenchymal abnormalities nor vascular anomalies.

Our patient was not on chronic medical therapy nor in particular anticoagulant therapy, therefore we were able to exclude them as possible causes. Among the vascular pathologies, polyarteritis nodosa was excluded as the diagnostic criteria were not met and the autoantibodies profile blood test was negative. Therefore, after the exclusion of all the possible causes, we considered our case as idiopathic spontaneous renal hematoma.

In case of renal masses, therapy approach is usually surgical[14]; in all other cases, medical conservative approach is preferred. Conservative treatment is based on antibiotics and tranexamic acid administration, associated to vital signs, CBC and blood-chemical tests follow-up

4. Conclusions

In conclusion, in this report we presented a rare case of a young patient with bilateral spontaneous subcapsular renal hematoma. As it is a potentially life-threatening event, a rapid and precise diagnosis to assess treatment is important.

It is therefore critical to recognize the correct etiology in order to undertake the correct treatment.

Once all possible causes have been excluded, renal subcapsular hematoma may be considered idiopathic and could be treated with medical therapy and conservative follow-up.

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