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Spontaneous perirenal and subcapsular haematoma – report of 5 cases

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Background. *Spontaneous perirenal and subcapsular haemorrhage is a rare but important clinical condition and is diagnostically very challenging. Sometimes, the aetiology of bleeding remains unclear; when all available diagnostic possibilities are exhausted, therapeutic approach still remains controversial.*

Case reports. *We present a series of 5 patients with perirenal and subcapsular bleeding. In two of among our patients, the initial or control CT scan suggested angiomyolipoma and renal cyst as the cause of the bleeding that was confirmed by pathological analyzes. In other three patients, no pathology other than haematoma itself was visualized on CT scans, nor it was discovered on pathological analyzes in two of the patients. Our CT findings closely correlated with pathological findings – whether positive or negative for the pathological substrate. Interestingly, we found not one case of renal cell carcinoma.*

Conclusions. *In literature, in as many as 50 % of cases of perirenal and subcapsular bleeding, a malignant tumour is found. Therefore, by some authors, nephrectomies in all patients are recommended, but others take more expectative approach with long-term close surveillance. We believe, that with new imaging modalities, if using optimal examination technique and follow-up protocols, the patients with bleeding due to benign disease should be recognized and unnecessary nephrectomies avoided.*

Key words: kidney diseases; haematoma, tomography, X-ray computed

Introduction

Spontaneous perirenal and subcapsular haemorrhage is a rare but important clinical condition and is often diagnostically very challenging. The appropriate treatment of these patients is based on making a fast and correct diagnosis of subcapsular and perirenal haemorrhage. Clinical symptoms are often non-specific and misleading and the radiological methods, based on ultrasound (US) and CT imaging are crucial in making the correct diagnosis. Diagnosing the haematoma itself, its extent and location is rather simple with mentioned imaging modalities, but determining the source of bleeding and defining the underlying pathological condition that caused the bleeding is more complex task.

As sometimes the aetiology of the bleeding

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still remains unclear though all available diagnostic possibilities are exhausted, the therapeutic approach to these patients is still controversial.[1-4] In clinical approach, it is necessary first to exclude trauma, anticoagulation medication, bleeding diathesis, arteritis, tuberous sclerosis or whether the patient is undergoing a long-term haemodialysis, as all these conditions are known to be associated with perirenal bleeding. The most common underlying kidney conditions include renal cell carcinoma, angiomyolipoma, AV malformation, arterial aneurysm, renal cyst, infarction and abscess. [2,5-7]

We report our experience on a series of 5 patients with perirenal and subcapsular bleeding. In our diagnostic algorithm, after the US examination that was used as a first method, the key examination was CT scanning. All examinations were performed on conventional CT scanner (Shimadzu Intellect). CT was performed [(after an i.v. contrast medium bolus administration)] from diaphragm to symphisis with the slice thickness of 10 mm and pitch of 10 mm using native sequences and sequences.[7] When needed, a selective angiography was also performed.

Case reports

Patient No. 1 was male, aged 37 years. He presented with the acute right-sided flank pain. On US examination, a perirenal haematoma was suspected and CT finding confirmed the haematoma with angiomyolipoma as a probable bleeding source (Figure 1a). Angiography (DSA) was performed and revealed pathological vascular pattern characteristic for angiomyolipoma. Nephrectomy was performed and pathohistological diagnosis confirmed the clinically suspected angiomyolipoma (Figure 1b).

Patient No. 2 was female, aged 53 years. The initial CT scan showed subcapsular renal haematoma on the left side without any other pathology (Figure 2a). Two months later, the follow-up CT scan showed substantial regression of the bleeding and renal cyst that was suspected to be a bleeding source (Figure 2b). Three months later, the follow-up CT scan showed complete regression of the haematoma (Figure 2c). Surgical exploration and pathohistological analyses confirmed the diagnosis of the renal cyst and the kidney was preserved.

Patient No. 3 was male, aged 75 years. The patient presented with an acute lumbar pain. US examination showed a heterogenic mass in the kidney that was suspected to be a bleeding renal tumour. CT scan was performed and revealed only a huge left-sided perirenal haematoma (Figure 3). Laboratory

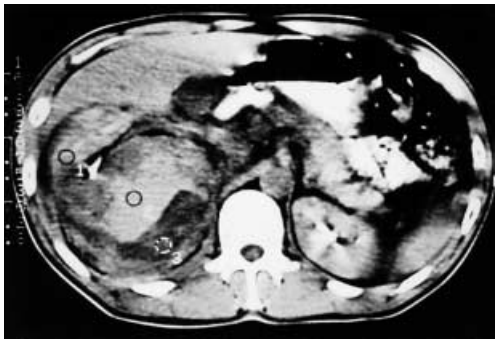

Figure 1a. The initial CT scan showed perirenal haematoma and angiomyolipoma was identified as a bleeding source.

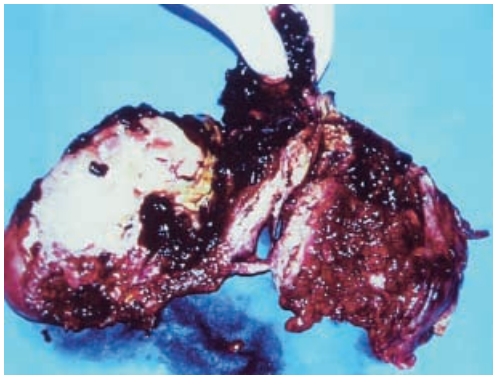

Figure 1b. Angiomyolipoma was confirmed intraoperatively.

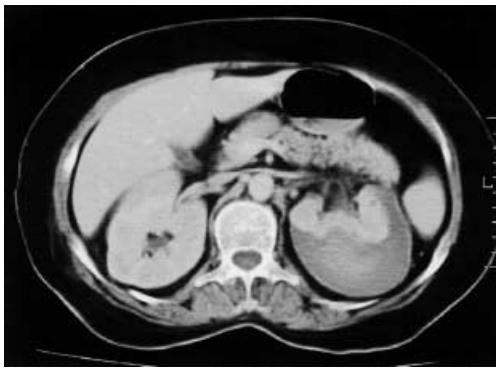

Figure 2a. The initial CT scan showed subcapsular haematoma without identifying the bleeding source.

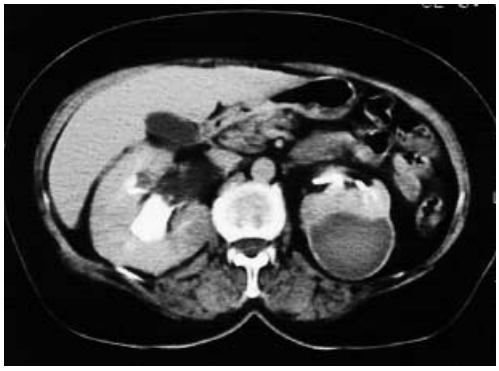

Figure 2b. The follow-up CT scan two months later showed a substantial regression of bleeding and a renal cyst that was suspected to be the source of bleeding.

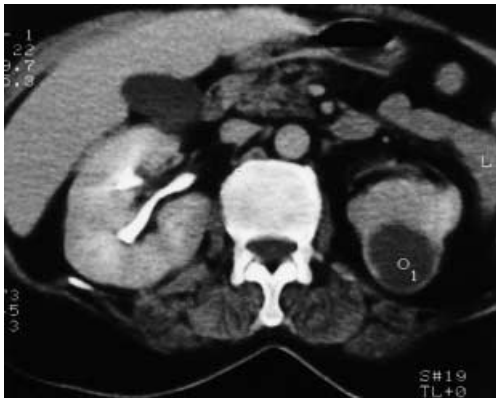

Figure 2c. The follow-up CT scan three months later showed a complete regression of the bleeding and renal cyst was confirmed.

findings indicated liver cirrhosis (elevated liver enzymes, coagulation disorder). As the patient became haemodynamically unstable urgent nephrectomy was performed. Pathohistological analyses revealed no pathological findings apart from the haematoma. We believe that coagulation disorder due to liver disease caused the bleeding in this patient.

Patient No. 4 was male, aged 63 years. He presented with a flank pain in the right lumbar region lasting for 15 days. He had similar symptoms 2 months before and was diagnosed with renal colic. US and CT examinations showed subcapsular haematoma and calculus in the right kidney with no other pathological findings (Figure 4a). Surgical exploration was performed and as the bleeding source could not be identified, the kidney was preserved. Three months later, CT scan and US was normal, as well as CT scan one year later (Figure 4b). We believe that the renal colic caused the bleeding in this patient.

Patient No. 5 was female, aged 46 years. The patient was diagnosed with rheumatoid arthritis 6 years prior to the current illness. She was admitted due to right-sided lumbar pain lasting for several months. US examination showed hyperechogenic renal mass and renal tumour was suspected. CT scan showed subcapsular haematoma and also retroperitoneal lymphadenopathy (Figure 5). Occult

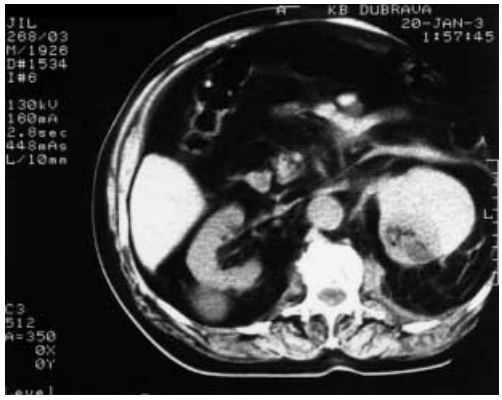

Figure 3. CT scan showed subcapsular haematoma without identifying the bleeding source.

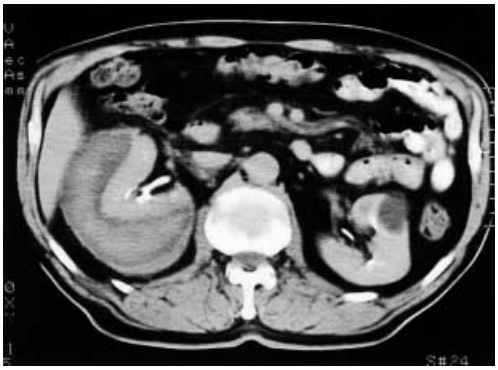

Figure 4a. The initial CT scan showed subcapsular haematoma without identifying the bleeding source.

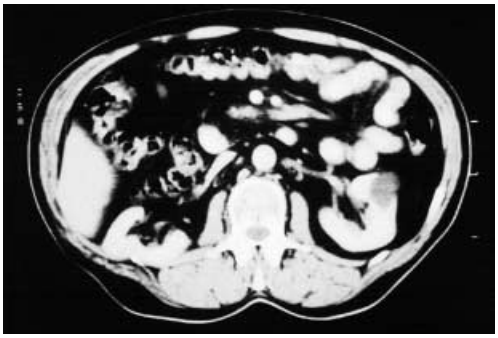

Figure 4b. The follow-up CT scan 3 months later was normal as well as the follow-up CT scan 1 year later.

renal cell tumour was suspected and nephrectomy was performed. Pathohistological diagnosis showed reactive hyperplasia of the lymph nodes and mononuclear infiltration with no malignant disease.

Discussion

In our patients, the initial or control CT scan suggested the cause of the bleeding in two patients (patients No. 1 and No. 2), angiomyiolipoma and bleeding renal cyst, respectively. These diagnoses were confirmed by postoperative pathohistological analyses. In other three patients no substrate other than haematoma itself could be visualized on CT scans. In two among them (patients No. 3 and No. 5) nephrectomy was performed and no malignancies were found on pathological analyses. In the last patient (patient No. 4), neither the initial CT nor the intraoperative examination showed bleeding source and it was decided to preserve the kidney. Even repeated CT scans, done over the period of one year, did not identify any pathological substrate; we therefore believe that the renal colic caused the bleeding in this patient.

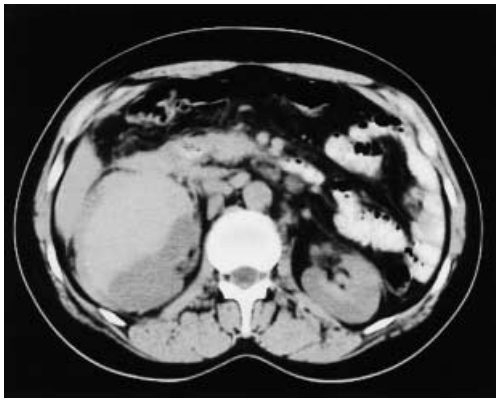

Figure 5. The initial CT scan showed subcapsular haematoma and retroperitoneal lymphadenopathy.

In our series of patients, CT findings closely correlated with pathohistologic findings – whether positive or negative for the pathological substrate. Interestingly, we did not find any case of renal cell carcinoma among our patients. In our opinion a correct CT examination technique is crucial for making a correct diagnosis. A careful search for small tumours after i.v. contrast administration is mandatory. Areas of fat within the kidney and diagnostic for angiomyolipoma should be noticed as angiomyolipomas are common causes of spontaneous haematoma.[8] If CT scan is negative for the tumour in order to exclude vascular abnormality, a selective angiography should be performed.[9] If the diagnosis of the cause of haematoma is still unclear the repeated CT scanning is advised, preferably every 6-8 weeks. It will allow enough time for the haematoma to resorb and, possibly, also for finding a small tumour that might have been present, but hidden by

the blood in the initial study. The follow-up is needed until the haematoma completely resolves or until the diagnosis is made.[2,10]

Even today, with all our sophisticated technology, the therapeutic approach to spontaneous perirenal and subcapsular haematomas is controversial. The malignant tumour, often small in size, is reported in 30% to over 50% of the patients and, according to several authors, radical nephrectomy in the absence of apparent cause of bleeding is recommended in all patients.[11-13] On the other hand, as the haemorrhage can be idiopathic or due to benign lesions, other authors[2,3,9] propose more expectative approach with long-term close surveillance in order to avoid unnecessary surgery and nephrectomias.

We believe that, with new imaging modalities, especially spiral and multidetector CT and using optimal examination technique as well as follow-up protocols, we should recognize the patients with perirenal bleeding due to benign disease and avoid unnecessary nephrectomias.

References

1. Mantel A, Sibert L, Thoumas D, Pfister C, Guerin JG, Grise P. Spontaneous perirenal hematoma: diagnostic and therapeutic approach. *Prog Urol* 1996; **6:** 409-14.

2. Bosniak MA. Spontaneous subcapsular and perirenal hematomas. *Radiology* 1989; **172:** 601-2.

3. Moudouni SM, Ennia I, Patard JJ, Guille F, Lobel B. Spontaneous subcapsular renal hematoma: diagnosis and treatment. Two case reports. *Ann Urol* 2002; **36:** 29-32.

4. Štimac G, Dimanovski J, Reljić A, Spajić B, Čustović Z, Klarić-Čustović R, et al. Extensive spontaneous perirenal hematoma secondary to ruptured angiomyolipoma: case report. *Acta Clin Croat* 2003; **42:** 55-8.

5. Meyers MA. *Dynamic radiology of the abdomen: normal and pathologic anatomy.* New York: Springer-Verlag; 1994.

6. Brkovic D, Moehring K, Doersam J, Pomer S, Kaeble T, Riedasch G, et al. Aetiology, diagnosis and management of spontaneous perirenal hematomas. *Eur Urol* 1996; **29:** 302-7.

7. Sebastia MC, Perez-Molina MO, Alvarez-Castells A, Quiroga S, Pallisa E. CT evaluation of underlying cause in spontaneous subcapsular and perirenal hemorrhage. *Eur Radiol* 1997; **7:** 686-90.

8. Bulto Monteverde JA, Talens A, Navalon P, Garcia Novales JR, Cubells ML, Mendez M. Renal angiomyolipoma. Ultrasonography and computerized tomography findings. *Arch Esp Urol* 1999; **52:** 1043-50.

9. Beville JS, Morgentaler A, Loughlin KR, Tumeh SS. Spontaneous perinephric and subcapsular renal hemorrhage: Evaluation with CT, US and angiography. *Radiology* 1989; **172:** 733-8.

10. Shih WJ, Pulmano C, Han JK, Lee C. Spontaneous subcapsular and intrarenal hematoma demonstrated by various diagnostic modalities and monitored by ultrasonography until complete resolution. *J Natl Med Assoc* 2000; **92:** 200-5.

11. Kendall AR, Seney BA, Coll ME. Spontaneous subcapsular renal hematoma: diagnosis and management. *J Urol* 1988; **139:** 246-50.

12. Boumdin H, Ameur A, Lezrek M, Atioui D, Beddouch A, Idrissi Oudghiri A. Spontaneous subcapsular hematoma of the kidney. Report of 6 cases. *Ann Urol* 2002; **36:** 357-60.

13. Touiti D, Zrara I, Ameur A, al Bouzidi A, Beddouch A, Oukheira H, et al. Sponatenous perirenal hematomas: report of 3 cases. *Ann Urol* 2001; **36:** 319-22.