Laparoscopic Excision of a Renal Subcapsular Abscess Presenting as a Subcapsular Haematoma

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ABSTRACT

Renal subcapsular abscess is a very rare entity that is defined by a suppurative process localized to a space between the renal capsule and the renal parenchyma. The pathogenesis and aetiology of this entity remain speculative. To our knowledge, only five cases have been reported in the English literature. We describe a 74-year old woman with renal subcapsular abscess treated with laparoscopic removal and do a review of the literature.

Keywords: Abscess, kidney, laparoscopy

Extirpación Laparoscópica de un Absceso Renal Subcapsular que se Presenta como un Hematoma Subcapsular

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RESUMEN

El absceso renal subcapsular es una entidad muy rara que se define por un proceso supurativo localizado en un espacio entre la cápsula renal y el parénquima renal. La patogénesis y la etiología de esta entidad siguen siendo asunto de especulación. Hasta donde sabemos, solamente cinco casos han sido reportados en la literatura inglesa. Describimos aquí a una mujer de 74 años de edad con un absceso renal subcapsular tratado con extirpación laparoscópica y hacemos a la par una revisión de la literatura.

Palabras claves: Absceso, riñón, laparoscopia

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INTRODUCTION

Perirenal abscesses differ anatomically from subcapsular abscesses, comprising larger pus collections located between the renal capsule and the renal fascia (1). The clinical diagnosis of subcapsular or perirenal abscess is rarely made. Signs and symptoms are often subtle, nonspecific or misleading. Moreover, the renal subcapsular fluid collection is more commonly due to a haematoma than abscess (1, 2). Herein, we report a case of renal subcapsular abscess in a patient who was managed successfully with laparoscopic surgical abscess removal and antibiotic therapy. We also review the literature on renal subcapsular abscess.

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CASE REPORT

A 74-year old female presented to the emergency unit due to a history of mild fever and left flank pain which had lasted for two months. She had a history of total abdominal hysterectomy, Parkinson's disease and rheumatoid arthritis. On physical examination, the patient developed intermittent fever ≤ 37.8 °C, with pulse rate of 64/minute and blood pressure of 110/70 mmHg. No pallor, icterus or lymphadenopathy was observed. There was tenderness at the left costovertebral angle. The laboratory findings revealed haemoglobin of 10.6 g/dL (normal level: 11.2~14.7), platelet count of 556 000/mm^3 (normal level: 150 000~400 000), total leukocyte count of 11800/mm^3 (normal level: 3640~9750). C-reactive protein and erythrocyte sedimentation rate were elevated to 11.2 mg/dL and 116 mm/hour (Westergren), respectively. Her fasting blood glucose was 95 mg/dL and postprandial levels were 135 mg/dL. Serum creatinine and blood uric acid were within the normal range. The routine urine examination revealed no pyuria and no casts or crystals were observed. The urine culture showed no growth of organisms. Computed tomography

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(CT) scan revealed a well defined, non-enhancing hypodense collection (7.6 × 4.0 × 8.5 cm) in the subcapsular region of the left kidney, compressing and displacing the kidney anteromedially. The capsule showed enhancement on intravenous contrast study (Fig. 1). The right kidney, bilateral ureters, urinary bladder and both the adrenals were normal except for a prominent right renal pelvis. There were no calculi or any obstruction observed. She received pain control treatment *via* out--patient clinic follow-up under impression of subcapsular haematoma rather than that of subcapsular abscess, which revealed a high attenuation region (50 HU) on the unenhanced phase abdomino-pelvic CT. The fluid collection was not enhanced following intravenous contrast administration. On CT images, active bleeding typically appears as an area of considerably high attenuation, similar to the attenuation of contrast material within the arteries. After two months of conservative treatment, the patient complained of persistent left flank pain and weight loss without fever. Follow-up CT revealed no size reduction and thickened capsular wall with delayed enhanced pattern (Fig. 2). Under general anaesthesia, transperitoneal laparoscopy was performed and the capsular wall was removed. At the time the capsular wall was opened,

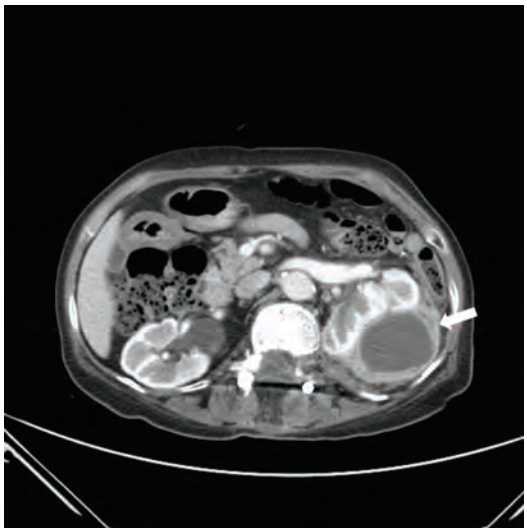

Fig. 1: Abdomino-pelvic computed tomography (CT) reveals a renal subcapsular abscess with capsular enhancement (arrow).

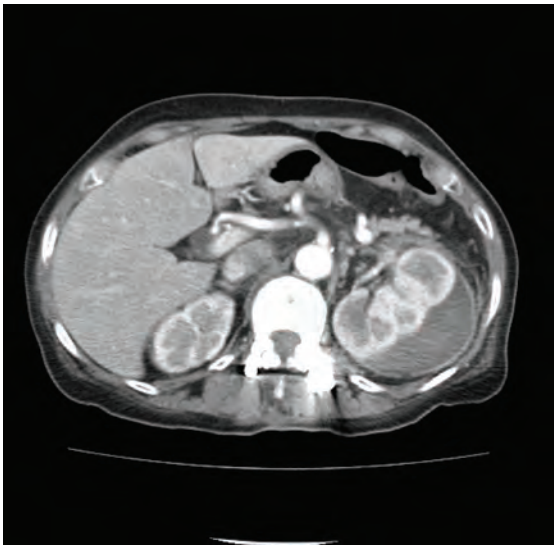

Fig. 2: Follow-up abdomino-pelvic CT scan shows no reduction in size of left renal subcapsular mass.

Table: Summary of reported subcapsular renal abscess

Case no.	Author	Year	Age (year)	Gender	Fever	Flank pain	Culture results	Size (CT)	Underlying disease	White blood cell count	Platelet count	Intervention method
1	Present case (Shim *et al*)	2011	74	F	Yes	Yes	*E coli*	7.6 × 4.0 × 8.5 cm	Myoma RA GERD	11 800	556 000	Laparoscopic removal of abscess
2	Zatuchni *et al* (4)	1986	38	F	Yes	Yes	Klebsiella	NA	DM	10 900	NA	Needle aspiration
3	Bhat (9)	2007	Neonate	F	Yes	Excessive crying	*Staphylococcus aureus*	6.0 × 3.9 × 3.6 cm	None	17 800	NA	Percutaneous drainage
4	Dewan *et al* (10)	2008	Neonate	F	NA	NA	NA	2.7 × 1.9 × 1.5 cm	None	24 500	180 000	No drainage
5	Yu *et al* (3)	1998	63	F	Yes	Yes	*Klebsiella pneumonia, Enterobacter cloacae*	NA	DM	17 340	NA	Percutaneous drainage
6	Meyers *et al* (1)	1974	3	F	Yes	NA	NA	NA	None	NA	NA	Surgical drainage

CT = computed tomography, RA = rheumatoid arthritis, GERD = gastroesophageal reflux disease, DM = diabetes mellitus, NA = not applicable

creamy white pus and some old blood clots were obtained (about 400 mL). A drain was left in place for five days; a total of approximately 1330 mL of pus was drained. Culture of pus grew *Escherichia coli*. A one-week course of cefotaxime was administered (1 g every eight hours) on the basis of the results of *in vitro* antibiotic susceptibility testing. The patient responded well to the treatment with subsidence of fever and pain. The intravenous cefotaxime was discontinued after seven days, after which the patient was shifted to oral ciprofloxacin for ten days. The patient has been well with no fever and pain at three months follow-up.

DISCUSSION

Renal subcapsular abscess is extremely uncommon and the diagnosis is difficult and delayed because symptoms are often nonspecific (3). Generally, in subcapsular abscess the renal axis is unchanged on the intravenous urogram, and the collecting system is medially displaced and compressed (4). The flattening of the underlying renal parenchyma is more commonly found in subcapsular collections. Because of the tight fibrous capsule covering the kidney, subcapsular collections compress and flatten the adjacent parenchyma without affecting the perirenal fat. On the other hand, if the abscess were perirenal or perinephric, the renal margin would be blurred, the axis changed and the collecting system anteromedially displaced (4).

A literature review revealed that all patients were female and there was fever and abdominal pain in all six patients (Table). Diabetes mellitus has been said to be an important predisposing factor for perirenal abscess (5). The patient reported by Zatuchni *et al* (4) and Yu *et al* (3) were both diabetic, so diabetes mellitus may also be an important underlying disease in renal subcapsular abscess. In our case, without diabetes mellitus, platelet count was above the normal range postoperatively with subsequent decline after one month of conservative treatment. However, we could not find a correlation with other cases. All reported subcapsular renal abscesses are retrospectively evaluated in the Table. After surgery, we kept draining with the catheter, and culture of the abscess revealed *Escherichia coli*. It is the most frequent pathogen causing renal and perirenal abscess although that is the first reported strain in subcapsular abscesses (6). Other strains were *Klebsiella*, *Staphylococcus aureus* and mixed organisms of *Klebsiella pneumonia* and *Enterobacter cloacae*.

The diagnosis of a renal subcapsular haematoma was suspected initially, considering CT findings, but there were reservations. Firstly, her chief complaint was continuous and severe flank pain. In general, patients do not complain of continuous flank pain when they have subcapsular haemorrhage. Secondly, she had not only fever but also chills and sweating which implied infection. Thirdly, she had no known underlying cause such as history of trauma, renal biopsy, anticoagulant therapy or known renal cell carcinoma, angiomyolipoma, renal infarction, arteriovenous malformation, or a haemorrhagic cyst (7).

The mainstay of treatment for renal abscess is parenteral broad spectrum antibiotics; however, abscesses larger than 3 cm or those unresponsive to antibiotics may require percutaneous or surgical drainage (8). We recommend surgical exploration for appropriate diagnosis and treatment when patients complain about continuous abdominal or flank pain even if CT findings suggest that it might be a subcapsular haemorrhage.

In conclusion, there is a possibility that this entity could be confused with subcapsular haemorrhage, so great care needs to be taken to differentiate it from haemorrhage which may closely mimic subcapsular abscess.

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