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Case Report

Spontaneous rupture of kidney with peri-renal haematoma: a conservative approach

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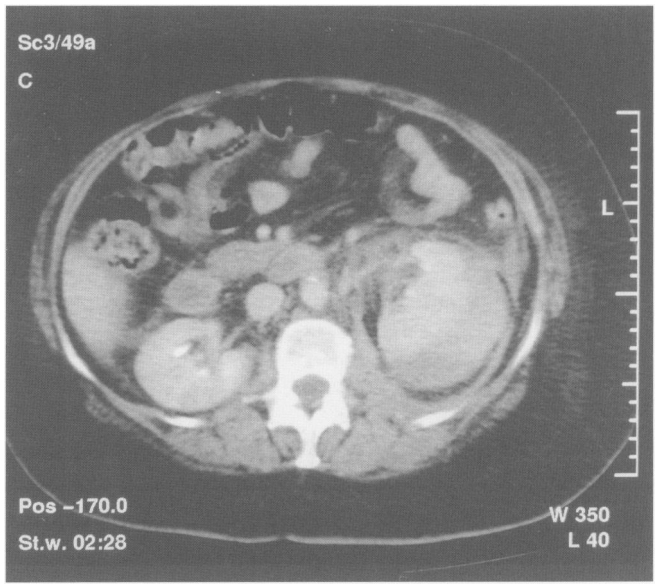
Spontaneous peri-renal haemorrhage (SPH) is an uncommon entity. Its diagnosis requires the absence of recent instrumentation, surgery or trauma.[1] It may present with 'Lenk's triad' consisting of acute flank pain, tenderness and symptoms of internal bleeding.[2] In many cases, the severe haemorrhage necessitates surgical exploration. We discuss conservative management of such a case.

CASE REPORT A healthy 65 year old lady was admitted to our department with 10 days history of left flank pain. She had no previous history of renal disease or recent trauma, and was not on anticoagulants. On examination, she was pyrexic 37.8°c, tachycardic with left flank tenderness. Blood investigations (i.e. full blood picture, electrolyte profile, liver function, coagulation screen) revealed haemoglobin (Hb) of 7.8g/L, haematocrit (HCT) of 0.232 and white cell count (WCC) of 23.0 g/L. She received blood transfusion and antibiotic therapy. Her MSSU and blood culture returned as negative. Computed tomography (CT) scan showed a left 6cm by 3cm peri-renal haematoma. (*figure*) Because an infected haematoma could not be ruled out completely, the collection was drained (50mls of altered blood) under CT-guidance with a pigtail catheter. The drainage stopped on day 3 and was removed, Hb remained stable, WCC normalised and she was discharged 1 week later.

Six weeks later, she was reviewed with a follow-up CT scan which showed a recurrent 5 by 4cm collection in the left kidney with retroperitoneal extension along psoas muscle. She also developed a new onset hypertension (200/120mmHg) and was treated with ACE inhibitor. This was thought to be secondary to the renal damage done by the haematoma (vasculitis profile, autoantibody



Figure

profile, ESR, thyroid function test, urinary catecholamines, cortisol level creatinine clearance were normal). She was re-admitted for a repeat pigtail drainage procedure. About 15mls of bloody material with clots was drained and was negative for culture and malignancy. An intravenous urography (IVU) did not show any obstruction in the left kidney. On day 3 the drainage stopped and was removed, and she was discharged. Two months later, a repeat CT scan showed that the

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haematoma had resolved completely. DTPA renogram did not demonstrate reno-vascular disease. She remains well and is presently being followed up by the Urology and Medical Team.

DISCUSSION

Originally reported by Bonet,[3] and later described by Wunderlich[4] in 1856, various terms have been used including spontaneous ptri-renal haematoma, spontaneous subcapsular renal haemorrhage, non traumatic peri-renal haematoma and spontaneous ptri-nephric haematoma. Causes of SPH includes benign (eg. angiomyolipomas, renal cyst, adenoma, lipoma, hamartoma) and malignant (eg. oncocytomas, clear cell carcinoma, Wilms, renal secondary), vasculitis, nephritis and blood dyscrasias (coumarin anticoagulation, polycythaemia). McDougal *et al*[5] reviewed the English literature in 1975 and found 78 cases; Cinman *et al*[6] reviewed from 1974 to 1985 and found 27 cases; Zhang *et al*[7] reviewed from 1985 to 1999 and found 165 cases of SPH as shown in Table 1. In Zhang' s meta-analysis, the male-to-female ratio was 6:5 and the average age was 46.8 years (range from 4 months to 89 years) with most cases (85%) occurring between ages 20 to 70 years. Table II illustrates the aetiology of these cases.

Flank pains with disproportionate low Hb, low haematocrit level and elevated serum lactate dehydrogenase (LDH) level[8] raises the suspicion of SPH. Intravenous urography[10] with nephrotomography may demonstrate the presence of non-opacified haematoma compressing the opacified renal parenchyma and provide information on renal function of the opposite kidney. Ultrasonography (US) is effective in the identification of renal/peri-renal fluid collection, although it may be difficult to differentiate between tumour and abscess[9] Here, CT scan may provide the aetiologic diagnosis and well as providing details of the contralateral kidney. There is little data on the use of magnetic resonance imaging (MRI), but it would be useful in situations where contrast enhance CT is contraindicated (eg. contrast allergy, pregnancy). Selective angiography may demonstrate pathological

TABLE I

Spontaneous repture of renal parenchyma: underlying causes and its incidence

References	*No. of cases*	*Tumour* %	*Vascular* %	*Infection* %	*Idiopathic* %
McDougal *et al* [5]	78	58	18	10	2.6
Cinman *et al* [6]	27	63	26	7	–
Zhang *et al* [7]	165	61	17	4	6.7

TABLE II

Etiology of spontaneous renal haemorrhage and its incidence in 165 cases (adapted from Zhang et al [7])

Etiology	*Percentage of patients %*
Tumour:	61.5
(Benign – 31.5% and Malignant – 29.7%)	
Vascular	17
Infection	2.4
Miscellaneous	12.7
Idiopathic	6.7

vascularisation and active bleeding from a renal tumour, but is generally thought to be unhelpful.[2] Diagnostic accuracy of retroperitoneal haemorrhage was 100% sensitive in CT and MRI and 56% in US; and diagnosis of an underlying renal mass in CT yielded a sensitivity of 57% and specificity of 82% compared to 11% and 33% respectively in US.[7]

In some cases,[10, 11] US, CT and angiography may not be able to discern the underlying cause and this constitutes a therapeutic dilemma. The rationale for management of these cases must take account that the commonest cause of SPH is tumour, of which benign and malignant nature have almost equal incidence and can occur in young and elderly population. Bagley,[12] Kendall *et al* [13] and Novicki *et al* [14] advocate radical nephrectomy due to the possibility of a small clinically unapparent renal cell carcinoma. In Kendall's series, six cases of SPH were due to rupture of small renal cell carcinoma that CT had failed to reveal at the time of acute haemorrhage. While Morgentaler *et al* [8] proposed nephrectomy for patients with non-fatty lesions (other than haematoma) on CT, which are suspicious for carcinoma. They recommended that all other cases should be followed up with serial CT.

In contrast, Howalt & Squirs[15] have advised a conservative approach when diagnostic studies fail to demonstrate a significant pathology. Uson *et al* [16] and Bosniak[17] advocated serial CT at 2-3 months interval until the haematoma resolves and a definite diagnosis may be possible. Bosniak claims that surgical exploration is not necessary in most unexplained cases because of the diagnostic accuracy of CT using 5mm sections. In the context of conservative management, Gupta *et al* [18] recommended that drainage of haematoma should be individualised: a large infected haematoma needs drainage, while smaller uninfected haematoma should be left alone.

In Zhang' s review,[7] malignancy was present in 49 of 113 (43%) patients undergoing total nephrectomy; and in 64 of 113 (57%) patients one with normal kidney or benign disease underwent total nephrectomy. They have recommended that repeat imaging following resolution or evacuation of haematoma seems prudent to avoid unnecessary nephrectomy. In our case, three separate CT scans did not demonstrate any renal parenchymal disease. Although the cause for this patient's haematoma remains unknown, we have shown that conservative management can be appropriate where clinical signs stabilise.

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