CASE REPORT

Renal infarction due to spontaneous dissection of the renal artery: an unusual cause of non-visceral type abdominal pain

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jykang@sgul.ac.uk**SUMMARY**

A 44-year-old man presented with very severe right upper quadrant pain of sudden onset. This was exacerbated by movement but unaffected by food or defaecation. It was continuous—day and night—but resolved over a 1-week period. The physical examination was normal at presentation, by which time the pain had resolved. His white cell count, alanine transaminase and C reactive protein were elevated but normalised after 10 days. An abdominal CT showed low density lesions in the right kidney consistent with segmental infarcts. CT angiogram showed a dissection of the right renal artery. The patient remained asymptomatic and normotensive when reviewed 1 month later.

BACKGROUND

Most instances of abdominal pain arise from visceral organs, for example, the stomach and the gall bladder. These pains tend to be poorly localised, last for minutes or hours and are often related to bodily functions such as eating and defaecation. Somatic or non-visceral pains, in contrast, can be continuous, day and night and/or be momentary, for example, with movement. There may be localised tenderness over the origin of the pain. Non-visceral pain is often musculoskeletal, for example, painful rib syndrome, arising from the rib cage or xiphisternum and not due to serious disease.

Our patient presented with right upper quadrant pain with non-visceral features. Yet the pain arose from a visceral organ, namely the kidney. Segmental renal infarction presumably caused inflammatory changes which involved the renal capsule leading to pain over the right upper quadrant. In this case the renal infarction arose from a rare cause: spontaneous dissection of the renal artery.

It is unusual for somatic type pain to actually arise from a visceral organ. The clue that the pain is not simply musculoskeletal is the raised white count, alanine transaminase (ALT) and C reactive protein (CRP). Imaging was required to arrive at the diagnosis.

CASE PRESENTATION

A 44-year-old previously healthy man presented with sudden onset non-burning, right upper quadrant pain with non-visceral features. It was severe enough for him to attend a walk-in clinic and was continuous day and night for 1 week before

resolving gradually. The pain was exacerbated by movement but unaffected by food or defaecation. At the time he was tender over the site of the pain but subsequent abdominal examination was normal. Blood pressure was 135/100: he is known to have a labile blood pressure.

INVESTIGATIONS

Because of the severity of the pain, blood tests and axial imaging were performed. His white cell count, ALT and CRP were elevated at $14.9 \times 10^9/L$ (4–11), 76 $\mu g/L$ (<52) and 131.4 mg/L (<10) respectively but all these abnormalities resolved after 10 days. Urea and electrolytes and urine microscopy were normal.

His upper endoscopy and abdominal ultrasound examination were normal but the abdominal CT scan showed low density lesions in the right kidney consistent with segmental infarcts (figure 1). There were filling defects in the segmental arteries of the right kidney consistent with emboli or thrombi. CT angiogram of the aorta and visceral arteries showed a normal heart, aorta and common femoral arteries. There was a longitudinal linear filling defect in the right renal artery associated with two lumens in

Figure 1 CT angiogram showing segmental low density consistent with an infarct (arrow).

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Figure 2 CT angiogram showing a longitudinal linear filling defect in the artery associated with two lumens in the renal artery itself, indicative of a dissection in the right renal artery (arrow).

the renal artery itself, consistent with a dissection, with a small amount of thrombus present in the proximal false lumen of the dissection with occlusive thrombus in two segmental branches (figure 2).

DIFFERENTIAL DIAGNOSIS

Somatic type pain over the right upper quadrant is usually musculoskeletal, often from the ribs or myofascial trigger points, termed the 'painful rib' syndrome. Sudden onset renal pain without a history of injury is likely to be due to renal infarction.

OUTCOME AND FOLLOW-UP

The patient was treated expectantly and remained asymptomatic and normotensive when reviewed 1 month later.

DISCUSSION

Renal artery dissection is a rare condition that typically presents in young or middle-aged men with hypertension, often of recent onset. Edwards *et al*¹ described 35 patients, 11 of whom were diagnosed at necropsy. Common symptoms include flank pain, gross haematuria or headache.^{1 2}

CT with contrast enhancement reveals renal perfusion defects and areas of infarction. Renal angiography helps to confirm the diagnosis, delineates the extent of dissection and serves as a baseline test for follow-up studies, but technological advances may result in CT angiography becoming the first-line diagnostic modality with formal angiography performed when intervention is being considered³

Although renal artery dissection may resolve spontaneously,⁴ hypertension should be controlled medically in the first instance.¹ In cases of drug-resistant hypertension or progressive renal dysfunction,^{5 6} percutaneous intervention^{7 8} has recently emerged as an alternative to surgical repair.

Most patients presenting with abdominal pain have visceral pain, often related to food or defaecation. By contrast, non-

visceral abdominal pain may be affected by position, movement or straining.⁹ Non-visceral abdominal pain is most commonly musculoskeletal in origin, generally not serious and do not usually require specific treatment. Imaging may or may not be required to confirm the diagnosis. Our patient demonstrates an unusual cause of non-visceral abdominal pain due to renal infarction caused by spontaneous renal artery dissection. The sudden onset of symptoms, their severity and elevated inflammatory markers indicated the need for imaging to make the diagnosis.

Learning points

- ▶ In most instances abdominal pain arise from visceral organs.
- ▶ A minority of cases of abdominal pain is non-visceral in origin, typically musculoskeletal in origin, generally not serious and do not usually require specific treatment.
- ▶ Rarely non-visceral type pain can arise from visceral organs such as the kidney. Imaging is required to confirm the diagnosis in such cases.

Contributors J-YK examined the patient and conceived the idea for the case report. JH-EK did the literature research and wrote the first draft of the manuscript. MR performed the radiology. All three authors reviewed the manuscript. J-YK is the guarantor of the case report.

Competing interests None.

Patient consent Obtained.

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