CASE REPORT

Oral contraceptive causing renal artery thrombosis

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SUMMARY

A young female presented with acute left lower quadrant pain followed by nausea and vomiting. She was found to have haematuria and elevated serum creatine. CT scan revealed a wedge-shaped hypodensity along with an intraluminal filling defect on the left kidney. Renal artery duplex showed no evidence for stenosis and MRI was negative for any atherosclerotic disease. Technetium scan confirmed the diagnosis of left renal infarct. Following day the patient became febrile and was noted to have leucocytosis and elevated serum lactate dehydrogenase. She was started on enoxaparin and low-dose aspirin. Blood cultures were negative. The oral contraceptive was stopped. Fever and leucocytosis resolved in the following 3 days. Extensive thrombophilic work-up was negative. No recurrence of thrombosis was found during a 6-month follow-up period. To the best of our knowledge, this is the first report of renal artery thrombosis leading to acute renal infarction associated with oral contraceptive use.

BACKGROUND

Renal artery infarction is a rare condition with a reported incidence of 0.0007%.¹ It can have multiple causes but oral contraceptives (OCPs) causing acute accessory renal artery occlusion have never been reported. Although OCPs have been strongly associated with venous thrombosis, we report left accessory renal artery thrombosis leading to acute renal infarction in association with OCP use in our patient.

CASE PRESENTATION

A 47-year-old woman was admitted for sudden onset of persistent left lower abdominal pain that started 5 h prior to admission. Her medical history was remarkable for regular use of Nortrel 1/35 (an OCP pill with 0.035 mg ethinyl estradiol and 1 mg norethindrone) for the last 10 years. She was overweight with a body mass index of 29.6. She denied any history of hypertension or diabetes. She also underwent an urgent laparoscopic appendectomy 10 days prior to her current admission. She was a non-smoker, and denied any prior use of tobacco, alcohol or illicit drug use. The patient noticed a sudden onset of abdominal pain at rest, followed by an episode of nausea and vomiting. She described her pain as a constant, aching in nature which began while she was resting and had no associated exacerbating or relieving factors. She denied any correlation of pain with food intake or breathing movements. The patient denied any haematuria, fever, chills, malena or hematochezia.

On presentation, her blood pressure was 136/84, pulse 86 beats/min and temperature was 36.4°C. Her

Figure 1 Abdominal CT scan showing an infarcted segment of the left kidney.

physical examination was remarkable for left lower abdominal tenderness and a palpable kidney. There was no costovertebral angle tenderness. A plain abdominal radiograph revealed no free air in the abdomen. Initial blood laboratory data revealed creatine level of 1.0 that was increased from her baseline of 0.6–0.7 and a white cell count of 11 k/mm³. Urine analysis was positive for mild haematuria. A contrast-enhanced CT scan of the abdomen revealed a wedge-shaped peripherally placed hypodensity involving the superior and the lateral aspect of the left kidney (red arrow in figure 1). Contrast-enhanced CT scan also revealed an intraluminal filling defect within the left accessory renal artery (blue arrow in figure 2). Of note the contrast-enhanced CT scan of the abdomen done at the time of appendectomy was only consistent with acute appendicitis and normal kidneys were

Figure 2 Abdominal CT scan showing an intraluminal defect in the left accessory renal artery.

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Figure 3 (A,B) Renal technetium scan with renal flow graph showing decreased flow in the left kidney.

visualised bilaterally. A more sensitive radioisotope technetium scan confirmed the diagnosis of left renal infarct (red arrow in figure 3A) also showing the decreased flow in the left kidney (figure 3B). Duplex imaging of the renal arteries showed no evidence of renal artery stenosis and MRI studies were negative for any atherosclerotic disease in either the aorta or the renal arteries. ECG showed normal sinus rhythm and transoesophageal echocardiogram was normal, with no patent foramen ovale. The following day the patient became febrile (38.4°C) and laboratory findings showed leucocytosis (26.8 k/mm³), elevated serum lactate dehydrogenase (LDH) levels (483 units/l) and elevated C reactive protein (178.65 mg/l). She was started on enoxaparin 1 mg/kg q.12 h for 6 months and aspirin 81 mg daily. The OCP was stopped. Multiple blood cultures were negative; fever and leucocytosis resolved in the following 3 days. An extensive thrombophilic work-up including: antinuclear antibodies; anticardiolipin antibodies; antidouble stranded DNA; fibrinogen; antithrombin III; protein C and S activity; factor VIII and vonWillebrand activity; factor V Leiden, prothrombin variant and PAI-1 polymorphisms and ADAMTS13 activity were done in the outpatient haematology clinic which were all unremarkable. No recurrence of thrombosis was found during a 6-month follow-up period.

DISCUSSION

Approximately 15–30% of all adult patients have accessory renal arteries. The blood supply to the kidney is segmental with functional end arteries, without adequate intraparenchymal collateral arteries. Thus, thrombosis could lead to segmental infarction and worsening of renal function. Renal infarction is a rare condition with a non-specific presentation.² Medical literature is scarce with regard to the complications of segmental renal infarction.³ Our patient is the first described case of acute occlusion of her left accessory renal artery from OCP use leading to acute abdomen.

The major causes of renal infarction include emboli secondary to cardiac disease, for example, atherosclerosis, valvular heart disease, myocardial infarction (MI), ventricular aneurysm and dilated cardiomyopathy. In particular, atrial fibrillation attributable to either rheumatic or non-rheumatic heart diseases increases the risk of embolic phenomena.^{4,5}

Typically leucocytosis, haematuria and elevated levels of LDH, aspartate aminotransferase, alanine aminotransferase and alkaline phosphatase are associated findings.⁵ Elevation of serum LDH is considered the most sensitive enzyme marker for renal infarction.⁵ Huang *et al*² had reported a triad of

abdominal pain, elevated LDH and proteinuria present in 80% of their patients with renal infarction in the emergency department. Likewise, our patient presented with leucocytosis, haematuria and elevated LDH.

The most extensive study on the Risk of Arterial Thrombosis in Relation to Oral Contraceptives confirmed that the use of any type of OCPs (first, second or third generation) increases the risk of ischaemic stroke, and found a twofold increased stroke risk compared with no use. The risk described for the users of first-generation OCPs (containing norethindrone as in our patient) was small; OR of 1.7 (95% CI 0.7 to 4.4), but data pertaining to OCP use and arterial thrombosis are very scant,^{6–8} and most studies describe their experience with MI, ischaemic stroke and peripheral artery disease only. The aforementioned studies do not highlight OCPs as a potential cause of acute renal infarction as seen in our patient. Whereas the association between OCPs and venous thromboembolism has been quite extensively studied, the relationship with arterial thrombosis has been evaluated less often.

More studies are needed describing their experience with use of OCP and arterial thrombosis in various arterial beds including renal to help clinicians be more aware of the potential risks while prescribing OCPs.

Learning points

- ▶ This case illustrates the potential risk of arterial thrombosis in patients using oral contraceptives (OCP) in which minor surgery with attendant inflammation may trigger thrombosis. Recognition that OCPs increase the risk of thrombosis in any arterial bed is essential in making the correct diagnosis and preventing serious complications.
- ▶ Oral contraceptives can be associated with arterial thrombosis in addition to venous thrombosis.
- ▶ Rapid recognition of renal infarction can prevent serious complications.
- ▶ Triad of abdominal pain, elevated lactate dehydrogenase and proteinuria can be helpful in identifying patients with renal infarction.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Korzets Z, Plotkin E, Bernheim J, *et al.* The clinical spectrum of acute renal infarction. *IMAJ* 2002;4:781–4.
- 2 Huang CC, Lo HC, Huang HH, *et al.* ED presentations of acute renal infarction. *Am J Emerg Med* 2007;25:164–9.
- 3 Karmacharya J, Parmer SS, Antezana JN, *et al.* Outcomes of accessory renal artery occlusion during endovascular aneurysm repair. *J Vasc Surg* 2006;43:8–13.
- 4 Hazanov N, Somin M, Attali M, *et al.* Acute renal embolism. Forty-four cases of renal infarction in patients with atrial fibrillation. *Medicine* 2004;83:292–9.
- 5 Oray NC, Bayram B, Yanturali S, *et al.* A potential pitfall in the diagnosis of renal colic: renal infarction. *Am J Emerg Med* 2009;27:750e7–9.
- 6 Blickstein D, Blickstein I. Oral contraception and thrombophilia. *Curr Opin Obstet Gynecol* 2007;19:370–6.
- 7 Kemmeren JM, Tanis BC, van den Bosch MA, *et al.* Risk of Arterial Thrombosis in Relation to Oral Contraceptives (RATIO) study: oral contraceptives and the risk of ischemic stroke. *Stroke* 2002;33:1202–8.
- 8 Saint F, Quintela R, Salomon L, *et al.* Acute renal artery occlusion in a 15-year-old girl taking oral contraceptives. *BJU Int* 2002;89:787–8.

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