CASE REPORT

Selective arterial embolisation of bilateral angiomyolipomata in a symptomatic pregnant female

Niall F Davis,¹ Rory Kelly,² Michael J Lee,² Ponnusamy Mohan²

¹Department of Urology, Beaumont Hospital, Dublin, Ireland

²Department of Interventional Radiology, Beaumont, Dublin, Ireland

Correspondence to

Niall F Davis,
nialldavis2001@yahoo.com

SUMMARY

Renal angiomyolipoma (RA) is a rare benign tumour that can expand rapidly during pregnancy due to oestrogen and other hormonal factors. Complications associated with expanding renal angiomyolipomata are spontaneous retroperitoneal haemorrhage secondary to acute rupture and thrombosis of the renal vein or inferior vena cava. MRI is recommended for diagnostic purposes in pregnancy; however, this modality is not always readily available. In the present report, we describe the first case of bilateral selective arterial embolisation for renal angiomyolipomata presenting symptomatically in a previously healthy pregnant female.

event in pregnancy. In addition, the importance of multidisciplinary input for optimal fetal and maternal outcomes is particularly emphasised.

CASE PRESENTATION

A 35-year-old woman (para 4, gravida 2) presented to the emergency department (ED) of a secondary care centre at 16 weeks of gestation reporting of pain in her right flank and right iliac fossa for the preceding 12 h. Associated symptoms included nausea and one episode of non-bilious vomiting. She had no urinary symptoms or per vaginal bleeding and her pregnancy had been uncomplicated until her presentation. Her medical, surgical and gynaecological history included one spontaneous miscarriage and one ectopic pregnancy. On physical examination her vital signs were within normal limits and her abdomen was tender to palpation in

BACKGROUND

This case describes a minimally invasive therapeutic approach for the treatment of a life-threatening

Figure 1 Ultrasound (A and B) and CT (C and D) findings demonstrating bilateral hyperechoic (arrows) solid soft tissue mass lesions with widespread fat attenuation (particularly in D). Soft tissue layering within the right perinephric tissue (C, arrow) indicated recent haemorrhage.

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Figure 2 Renal arteriograms pretranscatheter (A and B) and post-transcatheter (C and D) embolisation. In the right kidney (A) the abnormal feeding vessels were embolised with 500–700 μm embospheres followed by oil embolisation of the feeding arteries (C). The left angiomyolipoma was also embolised in a similar manner (D).

the right flank and right iliac fossa. A urine dipstick was negative for markers of infection and blood.

INVESTIGATIONS

Routine blood investigations showed a haemoglobin (Hb) level of 8.8 g/dL, a white cell count (WCC) $15 \times 10^9/\text{L}$ and C reactive protein (CRP) level 27.3 mg/L. Her serum urea and creatinine levels were within normal limits. Transvaginal ultrasonography and pelvic ultrasonography were also normal. Her repeat Hb measured 7.7 g/dL and an urgent renal ultrasound was performed which demonstrated bilateral hyperechoic, non-homogenous, solid soft tissue mass lesions (figure 1). After obtaining consent she subsequently underwent a contrast-enhanced CT of her abdomen and pelvis which revealed bilateral large hypervascular renal masses at the periphery of both kidneys with widespread fat attenuation consistent with bilateral renal angiomyolipomata. The right renal angiomyolipoma ($13 \times 11 \times 11$ cm) showed signs of recent haemorrhage and the left angiomyolipoma measured $8.5 \times 8.5 \times 8$ cm (figure 1).

DIFFERENTIAL DIAGNOSIS

The initial differential diagnosis for acute abdominal pain in pregnancy included abruptio placentae, placenta praevia, uterine

rupture and ruptured ectopic pregnancy. However, these obstetric causes were ruled out with normal serum β -hCG, transvaginal ultrasonography and abdominal ultrasonography. In addition, bilateral renal cell carcinomas, oncocytomas and adrenal myelolipomas were also included in the differential diagnosis based on the renal ultrasonography findings.

TREATMENT

After multidisciplinary input involving urological, radiological and obstetric teams; the patient was transferred to our institution and a selective transcatheter embolisation of the haemorrhagic right-sided angiomyolipoma was performed due to the large size of the lesion and the recent haemorrhage (figure 2). Reduced X-ray exposure to the fetus was ensured with minimal fluoroscopy, lead shielding of the lower abdomen and careful collimation of the X-ray beam. Embolisation was performed using a 5 Fr Cobra catheter to access the right renal artery followed by a 3 Fr microcatheter for superselective embolisation of branches supplying the angiomyolipoma. The angiomyolipoma was embolised with 500–700 μm embospheres followed by oil embolisation of the feeding arteries. A postoperative fetal ultrasound confirmed a single viable fetus with a heartbeat that exhibited spontaneous movement. On the pre-procedure CT

and on angiography during embolisation of the right angiomyolipoma (AML), a 10 mm pseudoaneurysm was identified within the left renal angiomyolipoma and selective embolisation of the left angiomyolipoma was also performed the following day through a similar fashion (figure 2).

OUTCOME AND FOLLOW-UP

The patient was discharged well 2 days later and follow-up duplex renal ultrasonography at 6 weeks and 6 months demonstrated normal structure, perfusion and size for both kidneys with a significant reduction in size of the right renal angiomyolipoma. At 38 weeks the patient underwent an uncomplicated elective Caesarian section and she will be evaluated by MRI in 6 months to determine the success of embolisation.

DISCUSSION

The initial presentation of bleeding from a renal AML during pregnancy is a relatively rare event with only 16 cases described

in the literature.^{1–4} Our case presentation is particularly unique as the patient presented with bilateral renal angiomyolipomata and was symptomatic on the right side. Ultrasound findings are strongly suggestive as the mass is usually hyperechoic; however, MRI is recommended for diagnostic purposes as the presence of fat within a solid lesion is indicative of a renal AML.⁵ Importantly, MRI is also recommended in pregnancy; however, this modality is not always readily available in secondary referral centres as demonstrated in the present report. Minimally invasive treatment was selected in this situation due to the long term efficacy associated with selective arterial embolisation for treating AMLs that are actively bleeding.⁶ Other important advantages associated with transcatheter embolisation of AMLs in pregnancy are avoidance of general anaesthesia and avoidance of open surgery.^{6–8}

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Competing interests None.

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Learning points

- ▶ An angiomyolipoma is typically slow growing. However, they are positive for oestrogen and/or progesterone hormonal receptors in more than 25% and pregnancy is considered a risk factor for an increase in size.
- ▶ During the initial evaluation of pregnant patients with abdominal pain and bleeding it is important to exclude obstetric causes such as abruption placentae, placenta praevia, uterine rupture and ruptured ectopic pregnancy.
- ▶ The main advantages of transcatheter embolisation of angiomyolipomata in pregnancy are avoidance of general anaesthesia and avoidance of open surgery.
- ▶ Protecting the fetus from direct exposure can significantly decrease the risks associated with ionising radiation.

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