

Metastatic renal cell carcinoma: a rare presentation of back pain in pregnancy

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Case Summary

A 43 year old female, gravida 6, para 2+3, booked her pregnancy at 14+4 weeks gestation. She had recurrent episodes of pelvic and lower back pain from 12 weeks gestation, which were attributed to her pregnancy. At 26 weeks gestation, she was diagnosed with symphysis pubis dysfunction (SPD) and managed conservatively with analgesia and physiotherapy. At 34+3 weeks gestation, she re-presented to Maternity Triage with worsening abdominal and back pain, as well as frank haematuria. She was admitted to the antenatal ward with threatened pre-term labour and renal/ureteric calculi amongst the differential diagnoses. To exclude the latter, an ultrasound of the kidneys, ureters, and bladder was performed, and this identified a 12x7.5cm left renal mass suspicious for malignancy. An urgent multidisciplinary discussion was held between Obstetric, Maternal Medicine and Urology teams following this finding. The resulting recommendation was for induction of labour (IOL) at 36 weeks gestation to expedite investigations and tissue biopsy of the mass. However, due to the intractable nature of the patient’s back pain, she was offered earlier intervention with IOL at 35 weeks, and spontaneous vaginal delivery was achieved at 35+2 weeks gestation. Following delivery, CT imaging coupled with renal and breast tissue biopsies confirmed metastatic medullary renal cell carcinoma (stage IV disease). The patient was started on first line chemotherapy with gemcitabine and cisplatin shortly after delivery and completed 6 cycles of this, followed by second line chemotherapy with sunitinib. Unfortunately, after close to 6 months of extensive chemotherapy, there was further disease progression and the patient passed away.

Renal Cell Cancer In Pregnancy – Epidemiology and Pathophysiology

Cancer in pregnancy is rare, with approximately 1 in 1000 pregnancies affected within the antenatal, intrapartum, or postnatal periods. The most common malignancies in pregnancy are breast, melanoma, cervical and lymphomas. Urological cancers are extremely rare with an incidence of 13 in 1,000,000. However, amongst women diagnosed with a urological malignancy in pregnancy, renal cell carcinoma (RCC) is the most common. RCC is generally more common in males, with a 2:1 male to female ratio, and accounts for 3% of adult cancer diagnoses.

The classical triad of signs and symptoms of RCC is back pain, haematuria, and the presence of a renal mass. However, this triad is only seen in 21% of pregnant women presenting with RCC. More often, pregnant patients present with symptoms such as back pain, abdominal pain, and lower urinary tract symptoms, which can mimic the common benign complaints of pregnancy, making this a diagnostic challenge.

In the case discussed here, the patient had recurrent presentations with abdominal pain and back pain, which were attributed to pregnancy associated musculoskeletal problems. The new symptom of haematuria on her last attendance prompted urgent renal tract imaging, which then identified a renal mass. This case highlights the role that confirmation bias can play in the management of pregnant women. Pain is often attributed to musculoskeletal causes because pregnancy associated back and pelvic pain are common. However, atypical presentations or intractable symptoms should warrant further investigations and expansion of the differential diagnoses.

The main risk factors for RCC are obesity, smoking, analgesics, environmental factors, hypertension, diabetes, and chronic kidney disease. It has been proposed that increased parity and the hormonal profile related to pregnancy may be associated with an increased risk of RCC. For instance, oestrogen levels are raised in pregnancy and this can stimulate renal cell proliferation, thereby promoting malignant changes. However, the underlying mechanisms are poorly understood and, in most cases, the biological behaviour of the malignancy is not influenced by pregnancy.

Renal Cell Cancer In Pregnancy – Investigations

An early diagnosis has prognostic benefits because intervention is easier before the tumour progresses, and when the uterus is smaller in size. During the evaluation of a renal tumour, the acuity of staging and the radiation exposure to the fetus should always be considered. Computed tomography (CT) scan, a commonly used technique to evaluate tumours in non-pregnant patients, is not the first choice in pregnancy due to radiation risks. As a routine examination during pregnancy, renal ultrasound has a sensitivity comparable to that of CT for masses larger than 3 cm, which makes it a good screening tool. Furthermore, non-contrast magnetic resonance imaging (MRI), can accurately identify the location, size and progression of the tumour and its diagnostic accuracy is comparable to CT; whilst being safe in pregnancy. Regarding obtaining a renal biopsy, majority of studies have suggested avoiding this during pregnancy due to increased renal vascularity and therefore a higher bleeding risk.

Renal Cell Cancer In Pregnancy – Management

Due to the rarity of renal cancer in pregnancy there is no national treatment standard or guideline. As with other cancers diagnosed in pregnancy, treatment should involve a multidisciplinary approach. Importantly, the patient and her family should also be provided with psychological and social support. Decisions regarding treatment options are influenced by the stage of the cancer, the gestation of the pregnancy, and the potential impact of the treatment on the patient, the pregnancy, and the fetus.

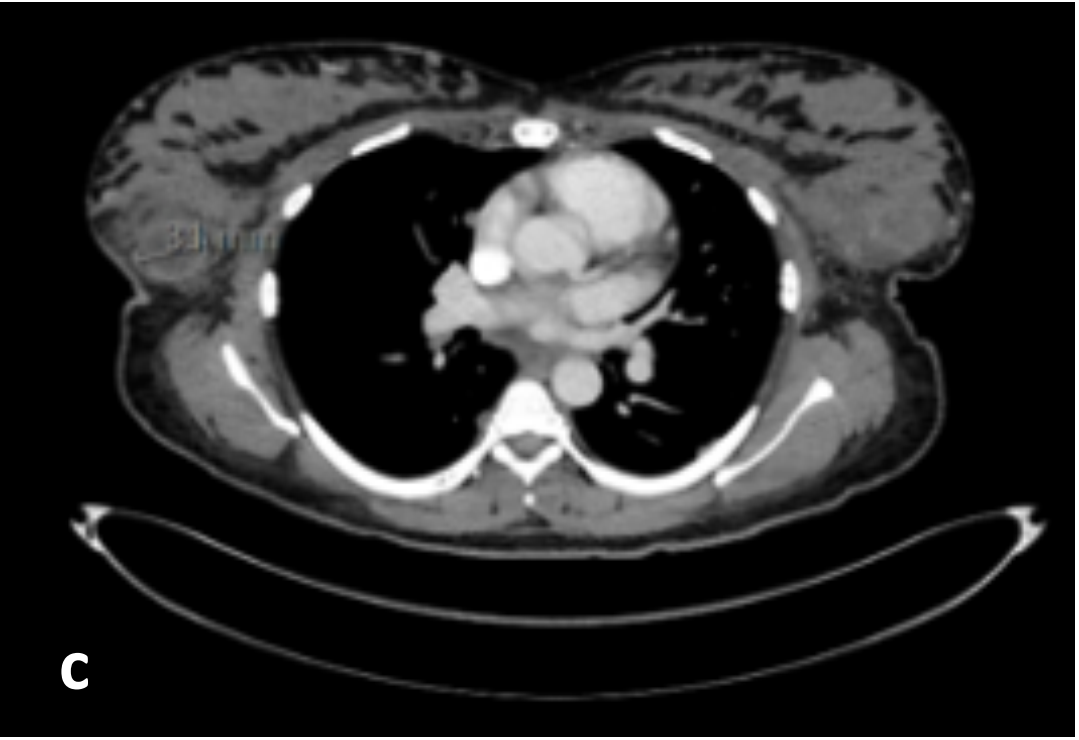
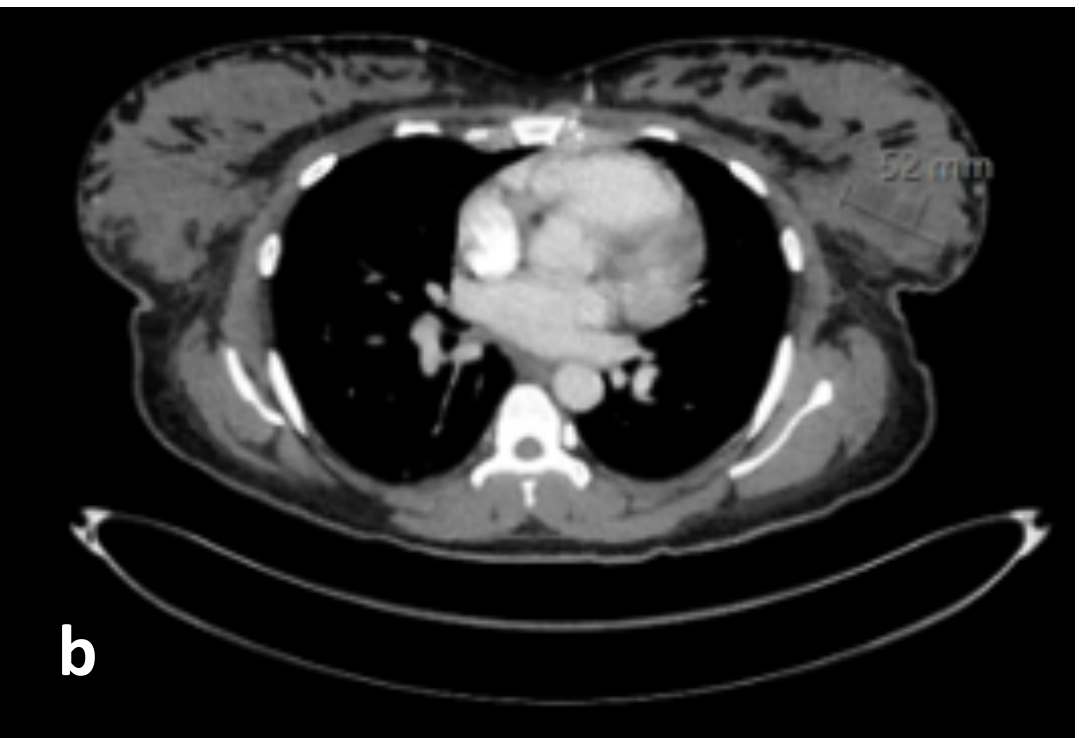
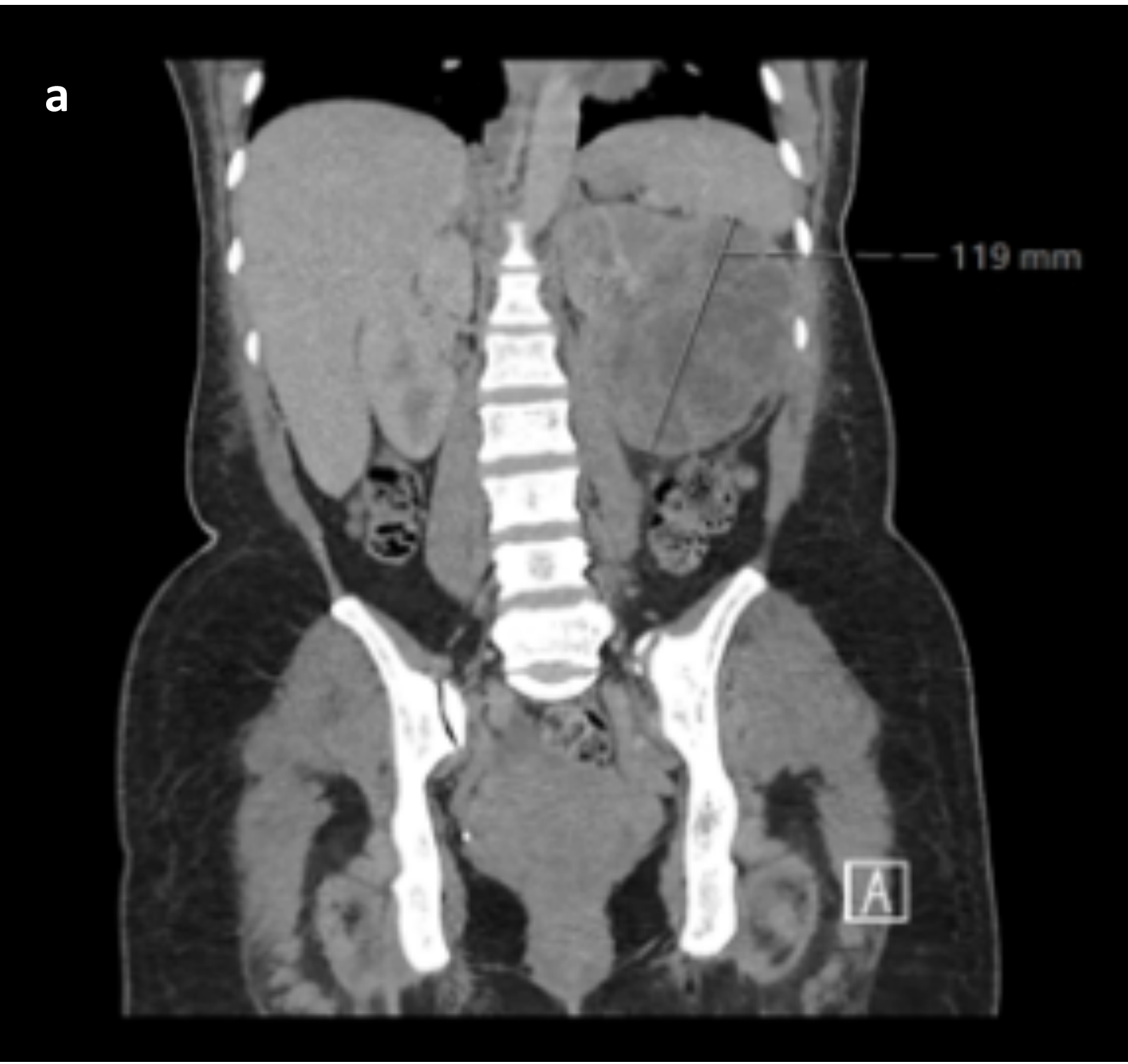
Surgery remains the primary treatment modality for non-metastatic RCC in both pregnant and non-pregnant patients. Surgical resection involves either radical nephrectomy or nephron-sparing surgery (partial nephrectomy), with the aim of curing localised disease. These procedures can be performed laparoscopically even during pregnancy. Timing of the surgery should be considered within the MDT and is dependent on the stage of the tumour and gestation at diagnosis. The benefit of operating in the first trimester is that the uterus is smaller and therefore surgical access and visualization are both improved. Operating in the second trimester can precipitate uterine contractions, and there is a potential risk of fetal hypoxia secondary to intraoperative blood loss. Surgery may therefore be delayed until 32 weeks, where risk of fetal morbidity and mortality from preterm labour is reduced and fetal lung maturity can be improved with corticosteroids. In cases diagnosed in the third trimester, surgery may be delayed until after delivery with careful monitoring of disease or performed at time of delivery, such as a radical nephrectomy at the time of caesarean section.

Treatment of metastatic RCC involves chemotherapy with immune checkpoint inhibitors such as sunitinib or pazopanib, both of which are not recommended in pregnancy. Cytoreductive surgery and radiotherapy are also possible treatment modalities, but neither would be routinely considered in pregnancy either. Termination of pregnancy is not generally recommended but can be considered if continuing the pregnancy would be unacceptable for the patient in terms of symptom control and disease progression, or the patient cannot tolerate pregnancy because of the complications of metastatic disease, such as renal or cardiac failure.

Metastatic RCC in pregnancy is extremely rare and patients tend to be diagnosed with early-stage disease, which is amenable to operative treatment. Consequently, both the mother and baby usually have a good prognosis. Sadly, the survival of stage IV RCC is only 10% at 5 years, and our patient’s condition was very advanced at the time of diagnosis.

Learning Points

- Patients presenting with the triad of pain, haematuria and a renal mass should be suspected to have RCC until proven otherwise
- Renal cancer in pregnancy is rare and patients may present atypically
- Clinicians are advised to broaden their differential diagnoses when investigating pregnant patients presenting with recurrent, intractable or atypical symptoms
- RCC in pregnancy tends to be diagnosed at an early-stage and is therefore amenable to surgery antenatally, postnatally, or at the time of delivery
- Surgery can be minimally invasive, and timing is dependent on pregnancy gestation and stage of disease
- If diagnosed at an early stage, RCC has a good prognosis for both the baby and the mother



CT Imaging revealing (a) a large heterogeneously hypoenhancing mass arising from the lower 2/3rd of the left kidney, measuring 11.2X10X12 cm; (b) and (c) lobulated peripherally enhancing lesions in left and right axillary tails respectively.

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