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Short Communication

Renal cell carcinoma in pregnancy: Still a management challenge

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Abstract

Background: Renal cell carcinoma during pregnancy is uncommon. We present a rare case, highlighting the dilemma faced by the patient and the challenge of deciding the appropriate management option.

Patient: A 28-year-old patient presented at 14 weeks of gestation with a 2-month history of left loin pain. Physical examination revealed a ballotable left flank mass. Abdominal ultrasound showed a heterogeneous lower-pole left renal mass measuring 9.2 cm × 7.0 cm and a viable intrauterine 14-week gestation. The patient declined magnetic resonance imaging (MRI) study for further evaluation, even after counseling on the acceptable safety of the modality.

Intervention: She also declined radical nephrectomy during pregnancy for fear of spontaneous abortion. She subsequently underwent left radicalnephrectomy after delivery. Histopathological examination of the resected specimen showed a Fuhrman grade-III clear renal cell carcinoma confined to the kidney, stage pT1b.

Conclusion: Renal malignancy though rare in pregnancy can however occur. The key treatment is radical nephrectomy. Offering this very invasive treatment and getting patient to accept the treatment at any stage of pregnancy is difficult.

Introduction

Renal cell carcinoma (RCC) in pregnancy is a very rare entity. It is emotionally devastating for a young woman and her family, overshadowing the joy of pregnancy. It also presents a daunting therapeutic dilemma for the urologist and the obstetrician.

To our knowledge, only 50 cases have been reported in the literature [1]. No case has been reported from our center. The apparent

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challenges in managing RCC in pregnant patients are the choice of appropriate investigation modalities as well as making appropriate and acceptable therapeutic decisions. We herein report a case of RCC in pregnancy and highlight the unique dilemma faced by the patient and the challenges in managing the disease.

Case report

A 28-year-old banker, para 1 gravida 2, presented at 14 weeks of gestation with a two-month history of left flank pain. She did not report any hematuria or weight loss. Physical examination revealed no pallor, however abdominal examination revealed a ballotable left flank mass.

Laboratory investigation showed no red blood cells in the urine. Abdominal ultrasound revealed a heterogeneous lower-pole left renal mass measuring 9.2 cm × 7.0 cm, an intrauterine gestational sac and viable fetus with a bi-parietal diameter (BPD) of 33.0 cm.

The surgical options were discussed with the patient, her husband and the other family members. The possibility of spontaneous abortion, if radical nephrectomy was done at 14 weeks of gestation, was explained to her. She declined the procedure and rather opted for a Cesarean section and simultaneous left radical nephrectomy in the third trimester of gestation. However, in the third trimester she expressed the desire for spontaneous vaginal delivery (SVD) and asked for the radical nephrectomy to be delayed. She had the SVD at 40 weeks of gestation.

Postpartum abdominal computed tomography (Fig. 1) established the lower-pole mass measuring 8.0 cm × 7.0 cm.

The patient underwent a left radical nephrectomy two weeks postpartum. The immediate postoperative course was uneventful. Repeat CT scan of the abdomen was routinely done during the follow-up visits, and the patient has remained disease-free 2 years after surgery.

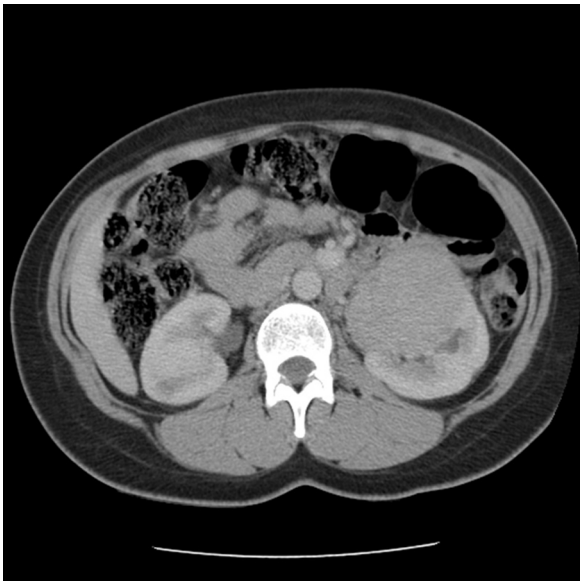

Figure 1 Abdominal CT showing a heterogeneous enhancing left renal mass.

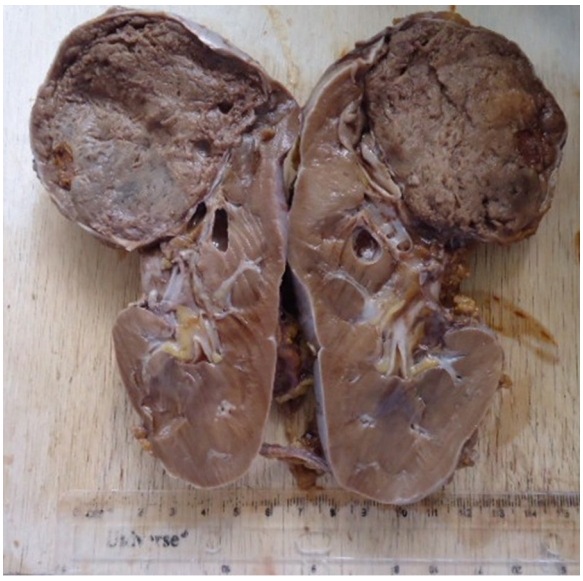

Figure 2 Gross appearance of the surgical specimen.

Gross pathologic examination (Fig. 2) showed a 7 cm encapsulated solid mass in the inferior pole of the left kidney (pT1b, 2004 TNM classification). The histological examination of the resected specimen showed a Fuhrman grade-III clear RCC (Figs. 2 and 3).

Discussion

Renal cell carcinoma (RCC) in general represents 3% of adult malignancies [2,3]. It is, however, the commonest urological malignancy reported in pregnancy [4].

The apparent rare occurrence of RCC in pregnancy is due to the fact that the malignancy is commoner in older patients between 50 and 70 years of age. The peak incidence occurs after the 5th decade of life [2].

RCC in pregnancy commonly presents with a flank mass and flank pain, sometimes it also presents with the classical triad (hematuria, flank pain, abdominal mass). However, the most common symptom of RCC detected during pregnancy is flank mass. This may be attributed to the increased frequency of abdominal examinations during pregnancy. On the other hand, the gravid uterus may sometimes obscure the mass, especially during the second and the third trimester, thus making the diagnosis difficult [4].

Flank pain is the second most frequent presentation and may sometimes be the only presenting symptom, especially when the mass is obscured by the gravid uterus. The attribution of flank pain to commoner causes of gestational flank pain like pyelonephritis, hydronephrosis and urolithiasis may also delay the diagnosis in some cases of renal malignancy in pregnancy.

Hematuria is reported less commonly, as expected with RCC in pregnancy considering the increased renal blood flow during pregnancy [2].

Like in the non-pregnant population, the classical triad of hematuria, palpable mass and pain is a feature of late disease [5].

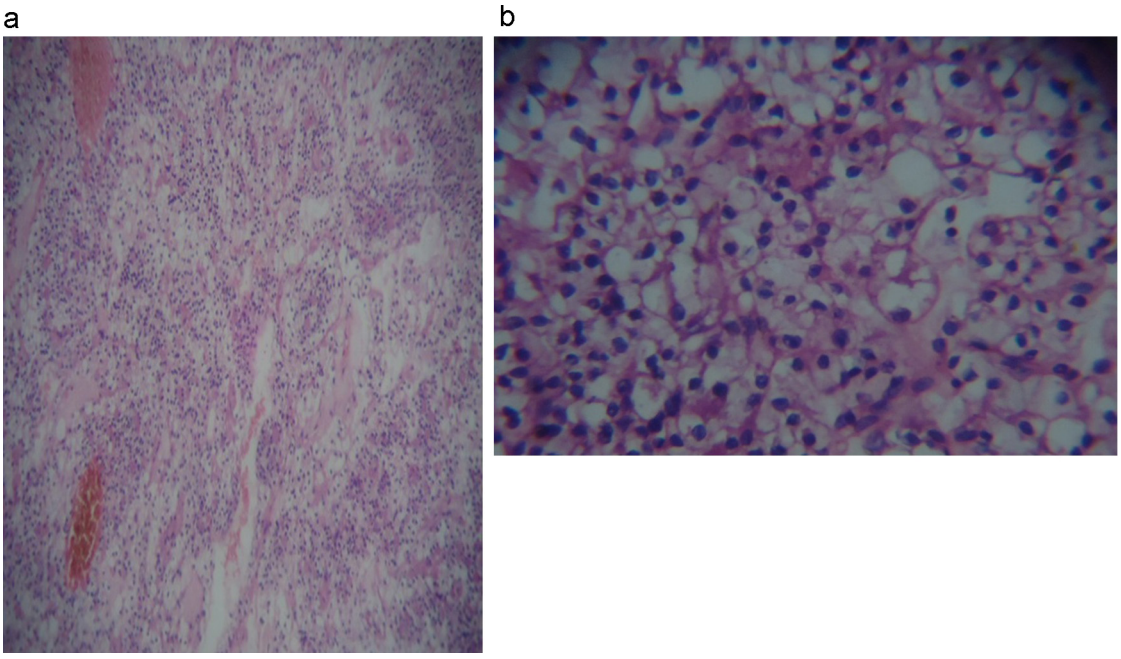

Figure 3 Microscopy of the specimen showing neoplastic cells exhibiting hyperchromasia, highly vacuolated cytoplasm with numerous congested blood vessels. There is also loss of normal renal architecture (the slide to the left is of low power magnification (10×), while that to the right is high power magnification (40×); both slides prepared with hematoxylin–eosin stain).

Establishing the diagnosis of renal malignancy requires imaging modalities. Ultrasonography is the preferred diagnostic modality in pregnancy because it does not carry the risk of radiation to the developing fetus. However, its drawback lies in the fact that ultrasonography is operator-dependent. Therefore, the diagnosis and full characterization of the renal mass may be suboptimal.

Computed tomography (CT) scan is the imaging modality of choice for the diagnosis of renal masses [6]. However, there is usually some reluctance to undertake CT scan during pregnancy because of the risk of exposing the fetus to radiation. This makes full evaluation of the tumor difficult. Also, the radiation dose to the fetus is not known.

Magnetic resonance imaging (MRI) is reproducible and a good, even though expensive, alternative to CT scan for the evaluation of renal masses in pregnant patients [7]. It accurately evaluates the local tumor size and location, the involvement of the adjacent structures and tumor thrombi in the renal vein and inferior vena cava. Gadolinium, the contrast agent used in MRI contrast study, crosses the placenta barrier, but no adverse effect on the fetus has been recorded. The European Society of Radiology guideline has approved it for use in all stages of pregnancy. However, gadolinium has been labeled a category C compound by the Food and Drug Administration because of the lack of epidemiologic studies concerning exposure in the first trimester of pregnancy [8,9].

Radical nephrectomy, either open or via the laparoscopic approach, is the gold standard treatment for RCC [10]. Laparoscopic radical nephrectomy during pregnancy is becoming increasingly accepted where feasible. O'Connor and colleagues [11] were the first to report successful laparoscopic radical nephrectomy during pregnancy. Since then many other cases have been reported [12,13].

The optimal time for surgery during pregnancy and the consequences of surgery on the maternal and fetal well-being are major considerations. The second trimester is generally identified as the ideal time for performing non-obstetric surgery during pregnancy. The first trimester carries a higher risk of abortion and exposure to teratogens, whereas in the third trimester there is a higher risk of premature labor due to uterine irritation [12].

The treatment of RCC in pregnancy has been reviewed, but the guidelines are not perfect yet. Louglin [4] recommends radical nephrectomy for all women with RCC discovered during the first trimester. For RCC discovered during the second trimester he advocates observation until a gestational age of 28 weeks to make sure that fetal lung maturity has been attained before radical nephrectomy is carried out. And for RCC discovered in the third trimester he recommends that radical nephrectomy with simultaneous Cesarean section be carried out.

Other investigators recommend radical nephrectomy irrespective of the stage of pregnancy [14,15].

In our case, the relevant management challenges became a prominent issue. The patient declined MRI for an adequate characterization of the tumor. She also declined radical nephrectomy in the third trimester of pregnancy. Instead, she decided to have a spontaneous vaginal delivery before accepting to undergo surgery. She underwent surgery during the puerperium and has been disease-free now for two years.

Conclusion

Renal cell carcinoma, though rare in pregnancy, may occur. The key treatment is radical nephrectomy. Offering this considerably invasive treatment and getting the patient to accept the treatment at

any stage of her pregnancy may be difficult. While it is necessary to consider the patient's opinion, the standard recommendation for the management of RCC in pregnancy must be clearly explained to the patient. In our patient the prognosis has remained favorable, principally because the malignancy was still confined to the kidney.

Conflict of interest

None declared.

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