A Case of Metastatic Chromophobe Renal Cell Carcinoma Masked as Suspected Hepatic Absceses

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Background: Characterizing multiple hepatic lesions on cross-sectional imaging, particularly differentiating abscesses from metastatic lesions, can be challenging.

Case Presentation: A male aged 53 years with a history of chromophobe renal cell carcinoma presented with fevers and abdominal pain and was found to have multiple hepatic lesions concerning for hepatic abscesses. The lesions initially evaded diagnosis on imaging, laboratory tests, and biopsy, but ultimately were determined to be a rare case of metastatic chromophobe renal cell carcinoma of the liver.

Conclusions: The finding of multiple new liver lesions on imaging during a febrile illness is concerning for hepatic abscess or malignancy, which can be difficult to diagnose with imaging alone. Differentiation between infectious and neoplastic etiologies may require additional imaging and/or tissue sampling.

CASE PRESENTATION

A 53 year-old male with a history of stage 2 chRCC and right radical nephrectomy 2 years prior presented to the emergency department following 1 week of drenching night sweats, fatigue, and subjective fevers. In addition, the patient reported gradually progressive, dull, right upper-quadrant abdominal pain. He noted no other acute medical complaints at the time of presentation. His history was notable for hyperlipidemia. His only surgery was the nephrectomy 2 years earlier. The patient reported no alcohol, tobacco, or drug use, any recent travel, or pet or animal exposure. On admission, he was afebrile with normal heart rate and was normotensive. His physical examination was remarkable for hepatomegaly with right upper-quadrant abdominal tenderness to palpation with a negative Murphy sign. There were otherwise no abnormal cardiovascular, respiratory, or skin findings.

Laboratory tests during initial evaluation were notable for hemoglobin of 10.0 g/dL, white blood cell count of 16.7×10^3 μL, alkaline phosphatase of 213 U/L, aspartate aminotransferase of 185 U/L, and alanine aminotransferase of 36 U/L. Screening tests for viral hepatitis A, B, and C were negative. Additional tests for HIV, rapid plasma reagin, Epstein-Barr virus, cytomegalovirus, and toxoplasma were negative. Tests for antimitochondrial, antismooth muscle, and serum antinuclear antibodies were negative.

Chest X-ray did not reveal any acute cardiopulmonary process. Computed tomography with contrast of the abdomen and pelvis demonstrated numerous hypodensities within the right hepatic lobe. Right upper-quadrant ultrasound demonstrated multiple hyperechoic foci throughout the liver. Confluent decreased T1 signal lesions with peripheral gadolinium hyperenhancement were evident on Gadolinium-enhanced T1-weighted magnetic resonance imaging (MRI) with fat saturation demonstrated numerous (Figure 1).

Liver biopsy and tissue cultures demonstrated normal hepatic tissue and no organism growth. Blood cultures demonstrated no growth. The patient was empirically treated with IV ceftriaxone 1 g daily and metronidazole 500 mg every
8 hours for suspected hepatic abscesses after he was admitted to the hospital.

The patient’s symptoms initially improved following antibiotic treatment; however, he reported recurrence of the initial symptoms 2 months later at a follow-up appointment with gastroenterology. Liver-associated enzymes also remained elevated despite 4 weeks of antibiotic treatment. Repeat gadolinium-enhanced T1 fat-saturated MRI demonstrated an interval increase in size and number of confluent hepatic lesions throughout the liver (Figure 2).

A repeat liver biopsy revealed metastatic chRCC (Figures 3 and 4) that was both morphologically and immunohistochemically similar to the first pathologic diagnosis made following nephrectomy. The first liver biopsy likely did not sample the metastatic lesions that were present but instead sampled the surrounding normal liver. The patient was initiated on lenvatinib and everolimus therapy with oncology, a recommended regimen per the National Comprehensive Cancer Network for patients with nonclear cell RCC.\(^1\)

**DISCUSSION**

Chromophobe RCC is a rare form of RCC that has a recurrence-free survival of > 80% when treated in early stages.\(^2\) These neoplasms represent only 3000 to 6000 new cases of RCC annually, with an even lower incidence (6% to 7%) resulting in metastatic disease. The liver is the most common site of metastases (39%).\(^2\) Previously reported metastatic chRCC hepatic lesions have been incidentally noted on imaging with asymptomatic clinical presentations. In contrast to our patient, most documented cases report metastatic chRCC as a solitary hepatic lesion.\(^3-7\)

A noteworthy genetic association with ChRCC is the Birt-Hogg-Dubé syndrome, which is an autosomal-dominant genetic disorder that results from germline mutations in the tumor suppressor folliculin gene located on chromosome 17.\(^8\) This syndrome is characterized by the development of various benign and malignant tumors, particularly chRCC. Our patient appeared to have a sporadic chRCC with the absence of other tumors and negative family history for malignancies. On his initial staging imaging, in accordance with National Comprehensive Cancer Network guidelines, our patient was identified only as having a 10-cm right renal mass and 1 benign regional lymph node with an otherwise unremarkable computed tomography of the chest, abdomen and pelvis, corresponding to stage 2 cancer.

Common causes of hepatic abscesses, the other potential diagnosis of concern for the patient, were biliary infections, portal vein ascension from abdominal sources, arterial translocation due to bacteremia, and local invasion due to suppuration of adjacent tissue.\(^9\) Incidence for hepatic abscesses increases with comorbidities such as diabetes, cirrhosis, malignancy, immunosuppression, and malnutrition.\(^10\) *Candida* is also a common culprit when there are multiple, small abscesses, often in immunocompromised patients.\(^11\)
Given the high mortality rates associated with hepatic abscesses, prompt treatment is imperative.\textsuperscript{10,12} Since the clinical signs and symptoms for hepatic abscesses are nonspecific (abdominal pain, fever, and malaise) and liver function tests can vary, the diagnosis primarily relies on imaging or tissue sampling.\textsuperscript{9}

It can be difficult to distinguish abscesses from metastatic lesions based on imaging alone without microbiologic and pathologic confirmation.\textsuperscript{11,13,14} There are certain radiologic characteristics that have been found to favor abscesses over metastasis, including parenchymal enhancement, arterial rim enhancement, and perilesional hyperemia.\textsuperscript{15} However, previously described hallmark characteristics of hepatic abscesses, such as the “cluster sign” demonstrating early stages of abscess coalescence, have also been seen in some hepatic metastases.\textsuperscript{16}

CONCLUSIONS
This patient highlights the presentation of a rare case of metastatic chRCC with multiple hepatic lesions. While often differentiated clinically, radiographically, or histologically, malignancy and abscess can be difficult to differentiate in a patient with fevers and leukocytosis with hepatic lesions.\textsuperscript{17} Early diagnosis of hepatic abscesses and initiation of antibiotic therapy are essential. In cases when it is challenging to characterize the hepatic lesions, repeated tissue sampling and imaging can help direct therapy. Attention should be paid to a previous history of malignancy and should raise suspicion for metastatic disease, particularly with misleading imaging studies and tissue samples.

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Ethics and consent
Written informed consent for publication was obtained by the patient who was involved in this case.

References


