Acute cholecystitis or metastatic renal cell carcinoma? A diagnostic dilemma

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Renal cell carcinoma is known to metastasize to many different organ systems. Lung and bone are clearly the most common sites of metastasis, but the symptoms at presentation may simulate those of other diseases of the organ system involved. The patient with metastatic renal cell carcinoma described here had symptoms of acute cholecystitis.

(Key words: Renal cell carcinoma, acute cholecystitis, metastasis)

The most common metastatic sites for renal cell carcinoma are lung, bone, and regional lymph nodes, in that order. Metastases to adjacent organs, that is, the colon, pancreas, and—as in the case we describe—gallbladder, constitute approximately 10% of cases. In our patient, the primary tumor had been resected 5 years before presentation. The need for accurate history taking is apparent, because metastatic renal cell carcinoma can develop as many as 20 years after primary resection.

Report of case

A 75-year-old man complained of midepigastric pain with right upper quadrant radiation, low-grade fever, and mild nausea. He denied diaphoresis, shortness of breath, chest pain, or palpitations. Serial electrocardiography and evaluation of cardiac enzymes excluded cardiac ischemia or infarction. Antacids were administered but brought no relief. Blood chemistry revealed mild elevation of lactate dehydrogenase and alkaline phosphatase. Alanine and aspartate transaminase levels and white blood cell counts were normal.

Past medical history revealed that 5 years before this evaluation, a right radical nephrectomy had been done transabdominally because of a stage I renal cell carcinoma. Two years later, the patient was seen with an incarcerated incisional hernia. At the time of surgery, the hernia was found to be a metastatic papillary adenocarcinoma. Wide excision of the cicatrix along with the omentum and underlying abdominal wall followed. Pathologically, all specimens but those of the hernia sac were free of tumor.

Physical examination revealed right upper quadrant tenderness. No abdominal masses or organomegaly was appreciated. The diagnosis of acute cholecystitis was considered. Ultrasonography demonstrated a thickened gallbladder wall with dependent echogenic sediment with acoustic shadowing. There was no evidence of common bile duct dilation.

The patient continued to have pain and was taken to the operating room, where an open cholecystectomy was done. Microscopic examination of the specimen revealed metastatic vascular tumor embolus of renal cell carcinoma.

Discussion

Renal cell carcinoma accounts for approximately 86% of all primary tumor of the kidney and 2% to 3% of all neoplasms. Men are affected about 1.8 times more commonly than women.[1,2] The tumor has been reported in adolescents and, rarely, in children.[3,4] The highest incidence of tumor occurrence is during the sixth and seventh decades of life.[5] The overall 5-year mortality is approximately 50% of patients in whom renal cell carcinoma is diagnosed, which represents the survival trends of the past decade.[6]

Hematuria, pain, and an abdominal mass have been described as the classic clinical triad of renal cell carcinoma. Of this triad, gross microscopic hematuria is the feature at presentation in about 70% of patients.[7] Metastatic sites are diverse (*Table 1*), and because of this, patients may present with generalized systemic rather than urologic manifestations. Uncommon sites of metastasis have been reported to involve the genitalia, umbilicus, thyroid gland, breast, diaphragm, atrioventricular node of the heart, ear, nose, tongue, and gallbladder.[8] Robson and associates' modification of the original staging system as proposed by Flocks and Kadesky[9,10] is shown in *Table 2*. An alternative staging system, the TNM classification, has been defined by the American Joint Committee of Cancer Staging. Although more specific than Robson's classification, it has not gained widespread acceptance to date, perhaps because of the volume of statistics reported in only four stages. Robson's system is simple and considers all the basic features of renal cell tumor extension; namely, through lymphatics, direct extension, and hematologic spread. Solitary metastases are present in 1% to

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Table 1
Common Sites of Metastases in Renal Cancer*

Site	% of Cases
Lung	50 to 60
Bone	30 to 40
Regional nodes	15 to 30
Main renal vein	15 to 20
Perirenal fat	10 to 20
Adrenal (ipsilateral)	10 to 15
Vena cava	8 to 15
Brain	10 to 13
Adjacent organs (colon, pancreas)	10
Kidney (contralateral)	2

Sources: Fallon B: Renal parenchymal tumors. B. Clinical and diagnostic features, in Culp DA, Loening SA (eds): *Genitourinary Oncology.* Philadelphia, Pa, Lea & Febiger, 1985, p 202; Richie JP, Garnick MD: Primary renal and ureteral cancer, in Rieselback RE, Garnick MD (eds): *Cancer and the Kidney.* Philadelphia, Pa, Lea & Febiger, 1982, pp 683-685; Johnson DE, Swanson DA, VonEschenbach AC: Tumors of the genitourinary tract, in Smith DR (ed): *General Urology.* Los Altos, Calif, Lange Medical Publications, 1984.

Table 2
Robson's Staging for Renal Cell Carcinoma

Stage I	Confined to the kidney
Stage II	Invasion of perinephric fat but confined to Gerota's fascia; adrenal gland involvement considered to be stage II
Stage III	A. Invasion of renal vein or vena cava B. Metastasis to regional lymph nodes C. Invasion to renal vein or vena cava and metastasis to regional lymph nodes
Stage IV	A. Invasion to adjacent organs other than adrenal gland B. Distant metastasis

Source: Reference 10.

3% of renal cell carcinomas. With the diversity of metastatic sites, patients may present with symptoms particular to the organ system involved. Such was the case in our patient with symptoms of cholecystitis.

In 1963, Botting and associates[11] at the Mayo Clinic described their experience with 21 metastatic tumors to the gallbladder found incidentally at the time of laparotomy. They also reviewed, in general, metastatic tumors to the gallbladder. In one of their 21 cases, the presentation was metastatic hypernephroma to the gallbladder simulating cholecystitis. Before this case, there were only two other similar reported cases, but in each case, the gallbladder was only one of many metastatic sites.[11] In 1991, two more cases were published in the world literature.[12,13] In each case, the patient was male and in his seventh to eighth decade of life, as was the case in the Mayo Clinic review.

Clearly, the paucity of reported cases highlights the uncommon nature of this entity. The natural history of renal cell carcinoma as the primary tumor and the metastasis is variable. In fact, the incidence of metastasis in patients at presentation is 24% to 28%,[14] with 24% of patients presenting with clinically unrecognized renal cell carcinoma.[15]

This case report adds to the previous literature emphasizing the often subtle symptoms and misleading physical and laboratory findings associated with renal cell carcinoma.

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