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Colonic metastasis of a Renal Cell Carcinoma: Case report and brief review of the literature

Case Report

Dimitrios Tsamis*, Andreas Larentzakis, Dimitra Skiada, Sotirios-Georgios Panousopoulos, Konstantinos Toutouzas, Dimitrios Theodorou, Stylianos Katsaragakis

Department of Propaedeutic Surgery, Hippokrateion General Hospital, Athens Medical School, University of Athens, 11473 Athens, Greece

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Abstract: Introduction. Colonic metastasis following curative surgery for renal cell carcinoma has rarely been described in the literature. Case Presentation. We present a case of a 64-year-old man who previously had a left nephrectomy for renal cell carcinoma. Five months post-operatively the patient presented with microscopic intestinal bleeding and anemia. Colonoscopic surveillance revealed a metastatic lesion in the ascending colon, and a right hemicolectomy was subsequently performed. Discussion. Colonic metastasis following resection for renal cell carcinoma is a rare entity, as evidenced by its lack of description in the literature. Imaging scans, such as computed tomography, have little diagnostic value and an increased medical suspicion is warranted for prompt diagnosis.

Keywords: *Renal cell carcinoma • Large bowel metastasis • Right colectomy*

1. Introduction

Renal cell carcinoma (RCC) has an annual incidence of approximately 209,000 worldwide. This accounts for 3.8% of all adult malignancies and 102,000 deaths are attributed to this malignancy annually [1]. The most common age range at presentation is 50-70 years. Metastatic disease can be present in up to 25% of patients at the time of diagnosis, and approximately 40% of those who undergo curative surgical resection develop a recurrence during subsequent follow-up [2].

The most common sites of metastasis in RCC are the lung (75%) and lymph nodes (36%), followed by the bones (20%) and liver (18%) [3]. Metastasis to the thyroid gland, spleen, eye, nose, skin, genitourinary tract, muscles and heart have also been reported but are uncommon. An intestinal metastasis from RCC is infrequent, with the pancreas and duodenum being the most common sites. Specifically, the large intestine is a rare site for metastasis and only a few reports of this exist in medical literature.

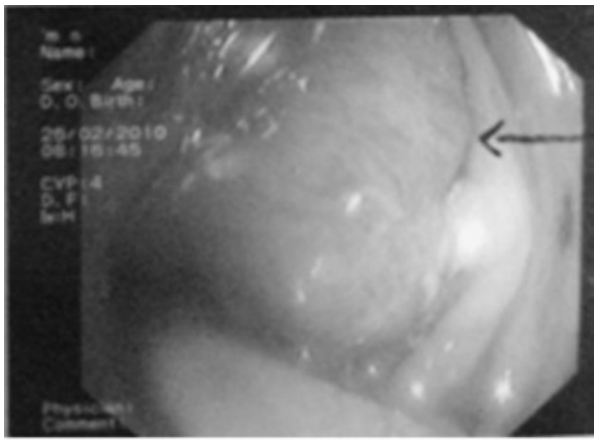
A case of large colon metastasis from a renal cell carcinoma found five months post-nephrectomy is presented in a 64-year-old patient who was hospitalized and treated at our institution.

2. Case presentation

A 64-year-old Caucasian male, with no known comorbidities, presented with intermittent gross hematuria and weight loss. Physical examination was unremarkable. A computed tomography (CT) scan confirmed ultrasonographic findings of a 6 x 8 cm mass in the upper pole of the left kidney. Moreover, no evidence of metastasis was present. Subsequently, an open radical left nephrectomy was performed and the patient discharged with regular follow-up. The histology report revealed a renal cell carcinoma, staged T_2N_0, which infiltrated neither the perinephric fat nor the perinephric membrane that had been included with the specimen. Immunochemistry

* *E-mail: tsamisdim@hotmail.com*

Figure 1. Colonoscopic image showing the metastasis in ascending colon



showed that the tumor was positive for vimentin and Ker 7, but negative for AE1/AE3.

Five months after surgery the patient presented with anemia secondary to intestinal microscopic bleeding. Physical examination did not reveal an abdominal mass and blood tests demonstrated hemoglobin 10.2 g/dl and hematocrit 31.9%. Subsequent colonoscopy revealed a mass in the ascending colon (Figure 1). A CT of the abdomen and thorax showed neither enlarged lymph nodes nor metastases to the liver or lungs. No other pathology was apparent.

The patient underwent a right hemicolectomy, revealing a 7×5 cm soft brown tumor with central necrosis. Histology of the lesion demonstrated a cancerous tumor of low differentiation with the characteristics of a metastatic neoplasm. Indeed, similar morphologic characteristics to the original tumour were found (eosinophilic type, mitoses, necrosis), with the only difference being poorer differentiation in the colonic tumour. Those findings, along with the immunochemistry results [AE1/AE3: (+), CK7: (+), CK20: (-), S100: (-), LCA: (-), Chromogranin: (-), Synaptophysin: (-), HMB45: (-)] were consistent with metastasis from the original renal cell carcinoma. The margins of the resection were tumor-free, as were all the resected lymph nodes.

Unfortunately the patient was lost to follow-up and no details are known as to whether he underwent further therapy, or of the results of subsequent imaging.

3. Discussion

It is estimated that 58,240 cases of, and 13,040 deaths from, renal cell cancer occurred in 2010 in the United States [4]. RCC accounts for 85% of all kidney cancers [5]. Most tumors present in the sixth and seventh decades of life, with a median age of 66 years at diagnosis and 70 years at death. There is a strong male predominance nearing 2:1. In general the tumors are solitary, but may be multifocal in up to 25% of patients. Moreover, bilateral disease is diagnosed in 4% of cases of RCC [6].

Environmental factors and certain genetic conditions are associated with an increased incidence of RCC, including von Hippel-Lindau disease, hereditary papillary renal cancer, and possibly tuberous sclerosis. In these cases, the disease has a 5:1 male predominance. The presented patient is a smoker, with no additional risk factors in his medical history for RCC.

Renal cell carcinoma usually remains occult for the majority of its course. The classic clinical presentation of flank pain, hematuria and a palpable mass is relatively uncommon (5-10% of cases). In addition, clinical symptomatology, if present, is often nonspecific, including anorexia, fatigue, weight loss or fever of unknown origin [2]. Our patient presented with hematuria, weight loss and back pain. RCC may also present with a variety of paraneoplastic syndromes, such as polycythemia, secondary to an excessive secretion of erythropoietin; hypercalcemia, secondary to the derangement of serum factors regulating calcium; and hepatic dysfunction (Stauffer syndrome).

Renal cell carcinomas often appear encapsulated; they may be solid, cystic or mixed and may include calcification [2]. Those with a cystic component may be more clinically aggressive [7]. Histological subtypes, according to the Heidelberg classification (and relative incidence), include clear cell (conventional) adenocarcinoma (80%), papillary (15%), chromophobe (5%), collecting duct (1%), and unclassified (4%) [8]. Our patient had an adenocarcinoma, without a cystic component. This is a relatively common form with theoretically little aggressive potential.

Spread in RCC can be lymphatic, hematogenous, transcoelomic or by direct invasion. Lymph node and distant metastases occur even in small RCCs and the risk of metastasis increases with tumor size [9]. RCC can metastasize to the whole gastrointestinal tract, from esophagus to rectum [3], although colonic metastasis from RCC is extremely rare. Indeed, no specific lymphatic or hematogenous path that can efficiently explain colonic metastasis from renal cell cancer has yet been described.

A number of different diagnostic imaging modalities, such as excretory urography, CT scanning, ultrasonography, arteriography, venography, magnetic resonance imaging and positron emission tomography, are used to diagnose, evaluate and stage renal masses [2]. For the evaluation of metastatic disease and local recurrence, CT has excellent sensitivity and is believed to be the

gold standard imaging test. Our patient had undergone a CT scan of his abdomen after his initial diagnosis and no metastasis was found. After the discovery of the metastasis in his right colon by colonoscopy, a further CT scan did not reveal the metastatic lesion.

A search of the medical literature was performed using PubMed (www.ncbi.nlm.nih.gov). This revealed 15 published case reports since 1983 of patients who had metastases to the colon secondary to RCC [1,10-22]. The time of diagnosing the occurrence of colonic metastasis from RCC varies, ranging from being found simultaneously with the primary tumour up to 17 years after the patient has received adjuvant treatment for his primary cancer [2,10-22]. The site of the colonic metastasis also varies, the most common being the sigmoid, splenic flexure, transverse colon and hepatic flexure.

From the previously published cases, most patients with colonic metastasis from RCC presented with either hematochezia or melena. Other clinical presentations were anemia, hypotension, fatigue and bowel obstruction. In one of the reports, an arterial-phase helical CT performed as part of a patient's routine follow-up 8 years after nephrectomy revealed a hypervascular sigmoid mass, proved later to be an RCC metastasis [16]. In the remaining cases, CT scanning had no proven efficacy in promptly detecting metastatic lesions in the large intestine.

In summary, it appears that renal cell carcinomas can metastasize early and, despite curative surgery with tumor-free margins, recurrence of the disease is a particular characteristic of this malignancy. Any human tissue can be a site of metastasis and patients would benefit from long-term follow-up with a detailed medical history and physical examination. Furthermore, if patients with a history of previous RCC present with an abdominal complaint, anemia or gastrointestinal bleeding, the surgeon should always consider a recurrence or distant metastasis. Abdominal CT has diagnostic value but should not appease the surgeon's suspicion of a potential colonic metastasis [23].

Conflicts of interest

The authors declare that they have no conflict of interest.

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