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CASE REPORT

Metachronous Duodenal Metastasis from Renal Cell Carcinoma

Jeming Hu[1], Sheng-Tang Wu[2], Yu-Chieh Lin[3], Hao-Ming Chang[1]

[1]Division of General Surgery, Department of Surgery, [2]Division of Urology, Department of Surgery, [3]Department of Pathology, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan, Republic of China

Renal cell carcinoma (RCC) is a common aggressive genitourinary tract tumor and in which distant metastases eventually develop. It is known to have potential to metastasize to almost any site, but metastatic RCC to the duodenum is extremely rare. We discuss a 57-year-old male patient who had undergone a right radical nephrectomy 12 years previously and free of disease for RCC presented with a 3-days history of shortness of breath, fatigue, dyspepsia, black tarry stools, and generalized weakness. The diagnosis made from the biopsy specimens on upper gastrointestinal panendoscopy study was metastatic RCC in the duodenum. He underwent the surgical exploration for pancreaticoduodenectomy subsequently. He had an uneventful recovery with Sutent (Sunitinib malate) was used after surgery for adjuvant target therapy and there was no evidence of recurrence 6 months after the procedure.

Key words: Renal cell carcinoma, duodenum, metastases pancreaticoduodenectomy

INTRODUCTION

Some literature reviews indicate that renal cell carcinoma (RCC) can metastasize to the whole gastrointestinal tract, from esophagus to the rectum, but autopsy data indicate that RCC metastases account for 7.1% of metastatic tumor of the small intestine.[1,2] Metastases from RCC in the duodenum with upper gastrointestinal symptom are exceptional. The signs and symptoms are atypical, depending on the depth the invasion degree. Most of the patients with solitary duodenal RCC metastasis present with gastrointestinal bleeding with anemia or fatigue due to the invasion of intestinal vessels by the neoplastic disease and intestinal obstruction with early satiety, abdominal pain or jaundice.[1,3-6]

In general, early stage RCC cure is possible after nephrectomy; however, there is also the possibility of a long period of the disease latency, followed by recurrence of metastatic disease at any unsuspected anatomic locations.[7] Therefore, any nephrectomized patient has presented with gastrointestinal symptoms, the possibility of metastasis should be suspected and a complete evaluation, especially endoscopic examination followed by biopsy, should be carried out. We share our experience in clinical data, diagnostic course, and successful surgical approach in the case of duodenal metachronous metastasis from RCC.

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Corresponding Author: Dr. Hao-Ming Chang, Division of General Surgery, Department of Surgery, Tri-Service General Hospital, National Defense Medical Center, No. 325, Sec. 2, Cheng-Gong Road, Taipei 114, Taiwan, Republic of China. E-mail: jeming@mail.ndmctsgh.edu.tw

CASE REPORT

A 57-year-old male presented to the emergency room with 3 days of progressively worsening shortness of breath, dyspepsia, tarry stools and generalized weakness. No medication use or body weight loss recently was noted. He had a history of right RCC (according to American Joint Committee on Cancer, 7th edition), T1N0M0, stage I underwent right radical nephrectomy without adrenalectomy and remained free of disease for RCC 12 years of follow-up.

Physical examination showed pale conjunctiva, tarry stools and old surgical scars over right flank region. Laboratory investigations showed normocytic anemia with hemoglobin 7.1 g/dl. Liver enzymes and serum levels of the tumor markers CA19-9 and carcinoembryonic antigen were within normal range.

Abdominal computed tomography scan showed an intraluminal heterogeneous enhancing lesion measuring 5.5 cm × 3.9 cm × 3.1 cm at proximal second portion of the duodenum [Figure 1]. No evidences of intra-abdominal metastases were found. The upper gastrointestinal panendoscopy clearly demonstrated a 5 cm irregular, polypoid, ulcerative mass with friability and actively bleeding plus hemostasis management from the bulb to the second portion of duodenum and obstruction over duodenum [Figure 2]. The previous two times of biopsy of ulcerative mass were

not provided consistent with malignancy cells. Due to high suspicious circumstances about the gross view and no evidence of malignancy for surgery, a biopsy was taken from the mass for the third time. This time, histopathology of this biopsy from the duodenal mass revealed metastatic RCC.

On exploring the abdominal cavity, there was no evidence of malignant intra-abdominal ascites or carcinomatosis. A tumor about 5 cm × 4 cm × 3.5 cm in size was palpable in the second portion of the duodenum. Frozen section from the mass was consistent with metastatic RCC, pancreaticoduodenectomy was performed subsequently due to obstruction over duodenum and gastrointestinal bleeding.

Gross examination of the classic pancreaticoduodenectomy specimen revealed a tan-red polypoid, pedunculated tumor protruding into the duodenum [Figure 3]. Microscopically, the tumors were composed of clear cells arranged in predominant solids with focal alveolar and acinar growth patterns. The tumor cells had centrally located small nuclei with inconspicuous nucleoli and clear cytoplasm [Figure 4]. Immunohistochemistry staining showed the tumor cells were positive for CD10, epithelial membrane antigen, and negative for CK7. Histopathological features and immunostaining findings were concluded with a diagnosis of metastatic clear cell RCC. Four regional lymph nodes showed no apparent metastasis. However, the tumor emboli in the vessels were identified.

The postoperative course was uneventful, except for a transient gastroplegia and wound infection. Given the presence of duodenal metastases and high risk, it was decided to start first-line systemic treatment with Sunitinib (Sunitinib malate). There was no evidence of recurrence 6 months after the procedure.

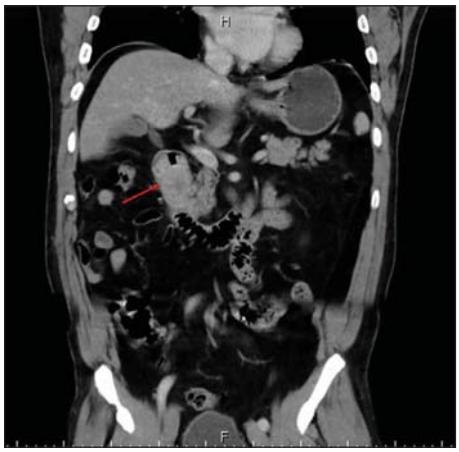

Figure 1. Computed tomography reveals a hypervascular round mass in the pancreatic head (red arrow). The low density area inside the mass indicates tumor necrosis

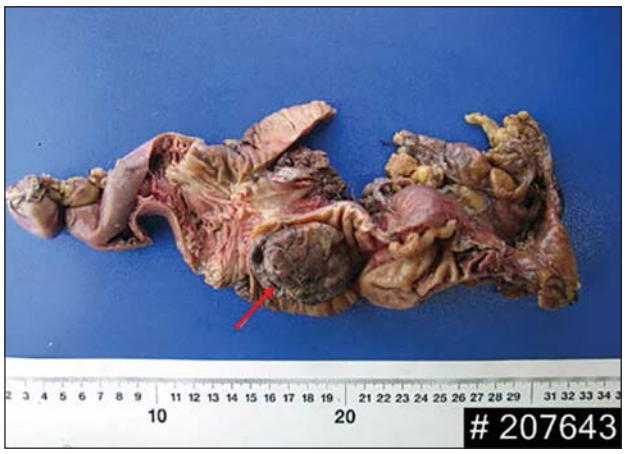

Figure 3. Gross specimen revealing a 5 cm × 4 cm × 3.5 cm tan-red polypoid, pedunculated tumor (black arrow) protruding into the duodenum

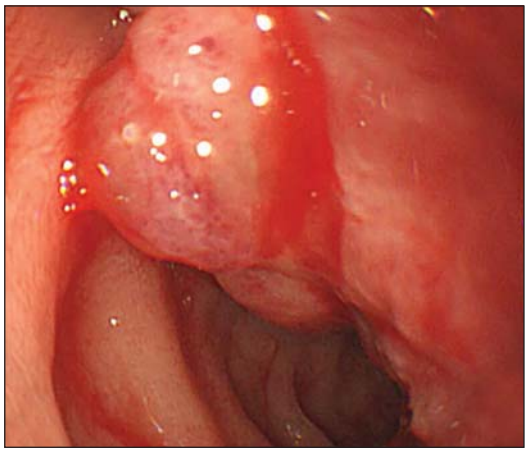

Figure 2. Esophagogastroduodenoscopy showed an actively bleeding, 5 cm irregular, polypoid, ulcerative mass with friability from the bulb to the second portion of duodenum

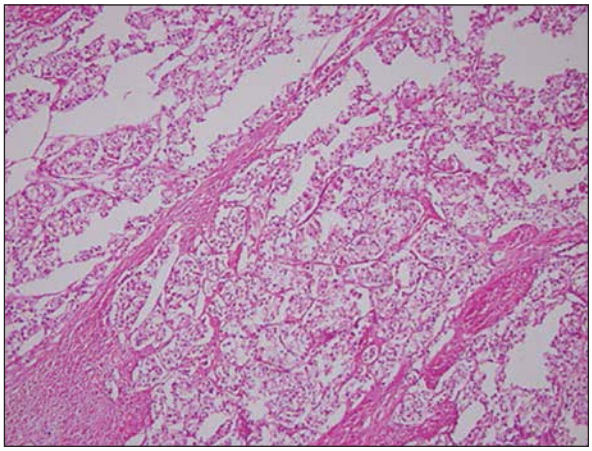

Figure 4. Section H and E stained (×200) shows tumor cells arranged in alveolar and acinar patterns. The tumor cells had centrally located small nuclei with inconspicuous nucleoli, and clear cytoplasm

DISCUSSION

Any type metastatic neoplasm to the duodenum is extremely unusual and accounts for <1-2% of all metastases.[1,2] Duodenum involvement from metastatic RCC is exceedingly rare, and only few cases have been described in the English literature and 31 reports before 2012.[5] It most frequently is located in the duodenal bulb or the periampullary region.[3,8] Males are more commonly affected (male:female = 1.5:1) and the incidence of metastasis increases with age.[3] The majority of patients were male and duodenal metastases occurred from less 1 year up to 17.5 years postnephrectomy.[1,2]

RCC has a potential to metastasize to almost any site. It commonly metastasizes to sites such as lung, bone, liver, soft tissue, pleura, adrenal glands, the contralateral kidney, thyroid, pancreas, brain, and heart.[7] In general, early stage RCC cure is possible after nephrectomy; however, there is also the possibility of a long period of disease latency, followed by recurrence of metastatic disease at unsuspected anatomic locations.[7] The routes of spread can be direct spread from a hematogenous and lymphatic spread, as well as by direct invasion into intra-abdominal adjacent anatomic structures.[9] The duodenum is an exceptionally rare site of metastasis in RCC, which is perhaps counterintuitive given its retroperitoneal proximity to the right kidney, though a majority cases (around 70%) occur on the right kidney.[5]

Most early duodenum metastases of RCC may be clinically silent. When present, signs and symptoms are atypical, depending on the depth the invasion degree. Gastrointestinal bleeding with anemia or fatigue due to the invasion of intestinal vessels by the neoplastic disease and intestinal obstruction with early satiety, abdominal pain or jaundice presented by patients may require prompt diagnosis and evaluation immediately.[1,3,4,10,11]

Any patients have a gastrointestinal symptom, presenting with history of nephrectomy for RCC, the physician must be alert to the possibility of metastatic disease using whole diagnostic work-up. For this purpose, endoscopic and radiologic evaluation are the best complementary examination due to its biopsy of suspicious lesions provides tissue for histologic diagnosis of metastasis and helps to distinguish primary gastrointestinal malignancy from metastatic disease. On endoscopy, the lesion can be seen as a submucosal mass with ulceration of the tip, multiple nodules of varying sizes or raised plaques, but biopsy could show necrotizing or inflammatory cells easily if not within the main parts.[12] Repeat biopsy might be important for the patient of high suspicion of malignancy or metastasis, even if it showed a benign lesion or no living cells in the initial times.

Treatment options in these cases of solitary duodenal RCC metastasis depend upon the extent and location of the lesion, and complete resection must be individually tailored whenever surgically feasible. Surgical treatment of solitary RCC metastasis has been shown to improve survival. A curative pancreaticoduodenectomy (Whipple procedure) in patients with solitary duodenal metastasis has been necessary due to provide an opportunity for improving meaningful disease-free survival.[6,11,13-15] In patients with massive gastrointestinal bleeding secondary to metastatic duodenal RCC, successful interventional arteriography with embolization of the gastroduodenal artery has been reported to be effectively. However, the physician should keep in mind that embolization for control of hemorrhage in the small bowel carries a significant risk of bowel infarction. For disseminated malignancy, other mainly supportive and palliative therapeutic methods have been used, including palliative surgery, radiotherapy, chemotherapy, target therapy (Sunitinib) or immune-stimulating agents (interleukin-2).[4,16,17] In a randomized double-blind placebo-controlled trial, it demonstrates the superiority of Sunitinib versus interferon-α, with a mean disease-free survival of 11 versus 5 months, the response rate of 31% versus 6%, and overall survival of 28 versus 14 months.[18]

Our patient had isolated proximal duodenal involvement with adherence to the head of the pancreas making it impossible to separate the duodenal and pancreatic border. Thus, given the involvement of the mass with the proximal duodenum, a classic pancreaticoduodenectomy was performed, with successful excision of all involved structures with clear margins and no lymph node involvement. In fact, all resection specimens from all reviewed case reports have revealed no lymph node involvement. For improved survival rates, our patients have been a combination of classic pancreaticoduodenectomy and the use of Sunitinib.

CONCLUSION

This case highlights the importance of early recognition and high index of suspicion in any nephrectomized patient presenting with any new clinical gastrointestinal symptoms. The possibility of metastasis should be suspected and a complete evaluation, especially endoscopic examination, followed by biopsy, should be carried out in such patients. In this subgroup of patients with symptoms of metastatic RCC to the duodenum with gastrointestinal bleeding, fatigue, anemia, and early satiety or obstruction, all patients should be considered a candidate for complete surgical excision. Invasive surgical intervention provides an opportunity for meaningful disease-free survival.

DISCLOSURE

The authors declare this study has no conflict of interest.

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