CRCP Case Reports in Clinical Practice

Case Report

Journal Homepage: http://crcp.tums.ac.ir

Metastatic Renal Cell Carcinoma to Duodenum and Pancreas 10 Years After Nephrectomy: A Case Report

Mahsa Akbari Oryani[1], Azade Zare[1*], Mohsen Soltani Sabi[2], Mohammad Taghi Mashhadi-Rajabi[3]

1. Department of Pathology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
2. Department of Neurology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
3. Department of Surgery, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.

Use your device to scan and read the article online

Citation Akbari Oryani M, Zare A, Soltani Sabi M, Mashhadi-Rajabi MT. Metastatic Renal Cell Carcinoma to Duodenum and Pancreas 10 Years After Nephrectomy: A Case Report. Case Reports in Clinical Practice. 2022; 7(4): 199-203.

Running Title Metastatic RCC to Duodenum and Pancreas

Article info:
Received: June 10, 2022
Revised: June 26, 2022
Accepted: July 22, 2022

Keywords:
Renal cell carcinoma;
Metastases;
Duodenum;
Surgery;
Case report

ABSTRACT

Renal cell carcinoma (RCC) accounts for 2-3% of the malignant tumors in adult patients. The most common sites of metastasis are the lung, bone, liver and brain respectively. Unusual metastatic sites require attention during follow-up of renal cell carcinoma. The duodenum and pancreas are uncommon sites for metastasis from renal cell carcinoma. We describe here a 62-year-old man with metastastic renal cell carcinoma to the duodenum and pancreas. The patient presented with melena and bowel obstruction, 10 years after nephrectomy for renal cell carcinoma, then with initial diagnosis of ampula vater adenocarcinoma undergo an exploratory laparotomy and a mass was found in duodenum, vater ampulla and pancreas, then pancreaticoduodenectomy was performed. histopathological examination of mass showed a metastatic renal cell carcinoma with sarcomatoid component. In conclusion, patients after radical nephrectomy due to renal cell carcinoma require long-term systematic monitoring. Gastrointestinal metastasis from Renal cell carcinoma should be considered in nephrectomized patients with gastrointestinal symptoms.

Introduction

Renal cell carcinoma (RCC) accounts for 2-3% of the malignant tumors in adults, the incidence of RCC is 2% per year. There are several distinct subtypes of RCC include clear cell, papillary, chromophobe and other rare RCC subtypes which include carcinoma of the collecting ducts of Bellini, mucinous tubular and spindle cell carcinoma, multilocular clear cell RCC, Xp11.2 translocation carcinoma, renal medullary carcinoma, carcinoma associated with neuroblastoma, and unclassified RCC. Sarcomatoid or rhabdoid differentiation, a rare finding that can occur in any subtype, is associated with a highly aggressive behavior and poor prognosis [1]. Newly recognized epithelial renal tumors are hereditary leiomyomatosis and renal cell

*** Corresponding Author:**
Azade Zare
Address: *Department of Pathology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.*
E-mail: *azadezare80@gmail.com*

carcinoma (RCC) syndrome–associated RCC, succinate dehydrogenase–deficient RCC, tubulocystic RCC, acquired cystic disease–associated RCC, and clear cell papillary RCC [2], Clear cell RCC is the most common type of RCC, about 65-70% of all renal cancers. After surgical resection of renal cell carcinoma, 25–50% of patients will develop metastasis [3]. Lung, bone, liver, adrenal and brain are the most common sites of metastasis [4]. Rate of RCC metastasis to the gastrointestinal (GI) tract is only about 0.2–0.7% (liver excluded) [5]. Metastases in uncommon areas are one of the characteristics of renal cell carcinoma. In different studies, patient survival after metastasis diagnosis is usually one year or less [6]. Unusual metastatic sites require attention during the follow-up of renal cell carcinoma. Metastasis to the small bowel is exceedingly rare and can cause obstruction, bleeding or rarely perforation [7].

Here, we report on a patient with duodenal metastasis with pancreas involvement who presented with melena and bowel obstruction 10 years after nephrectomy.

Case presentation

A 62-year-old man presented to our hospital with melena and bowel obstruction. He had a history of renal cell carcinoma diagnosed 10 years prior, and he had been treated with a laparoscopic right radical nephrectomy in 2011 with a diagnosis of clear cell RCC in histopathologic report. In the early evaluation to diagnose the cause of bowel obstruction, a mass was found in duodenum and ampulla of vater, then with initial diagnosis of adenocarcinoma undergo an exploratory laparotomy and due to pancreas adhesion, pancreaticoduodenectomy was performed. Macroscopic evaluation of the surgical specimen confirmed the presence of a polypoid mass (5.5×5×4 cm) in duodenum (duodenal bulb) and ampulla of vater with pancreas involvement (Fig. 1). A histopathological examination showed a carcinomatous neoplasm with sarcomatoid component, carcinomatous component composed of compact alveolar tubular architecture of cells with clear cytoplasm, network of small thinwalled Vessels (Fig. 2) and sarcomatoid component composed of proliferation of atypical spindle cells with scattered mitoses and necrosis (Fig. 2). Immunohistochemical study performed and both components showed positivity for CD10, PAX8, CK and Vimentin (Fig. 3). Carcinomatous component was negative for inhibin, chromogranin, ck7, ck20, cdx2 and sarcomatous component was negative for DOG1, SMA, CD34 and S100. These findings confirmed diagnosis of metastatic clear cell RCC with sarcomatoid transformation. Unfortunately, the patient died after the surgery due to post-operative complications.

Fig. 1. Gross examination showed a polypoid mass in duodenum with pancreas involvement.

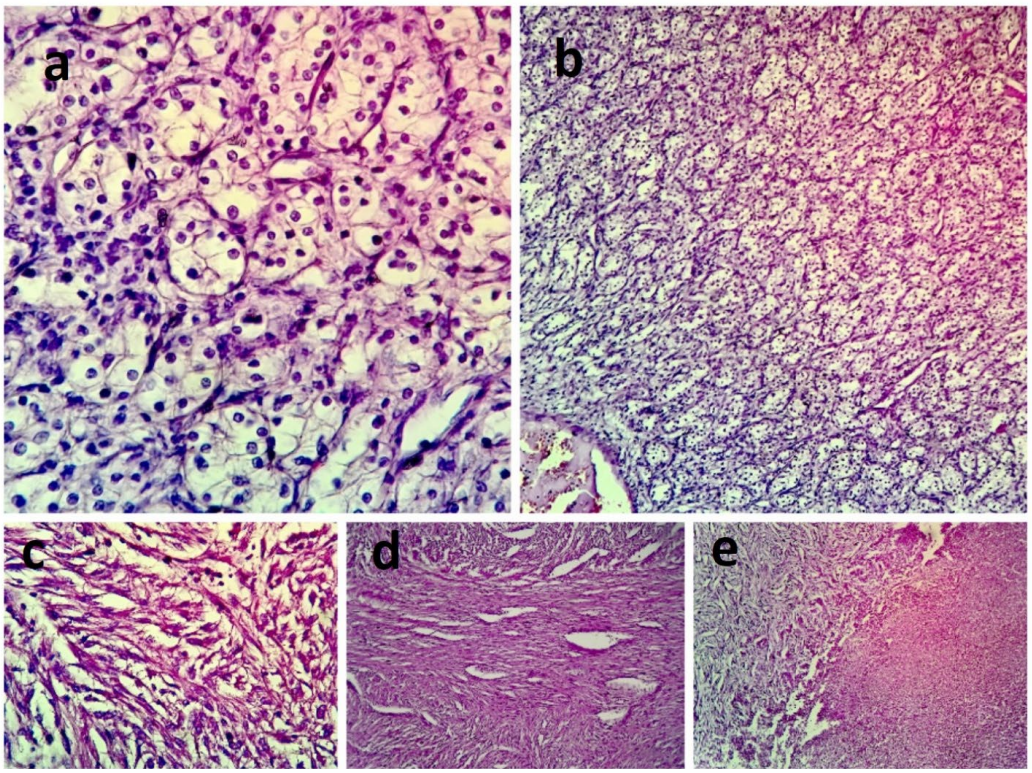

Fig. 2. Histologic features of epithelail component of RCC; epithelial cellular network with clear cytoplasm and hyperchromatic nuclei surrounded in a rich vascular network. (H&E; (a) ×100; (b) ×400); Histologic features of sarcomatous component of RCC (c) ×400; (d) ×100; Necrosis area of sarcomatoid component on the right side of the picture (e) ×100.

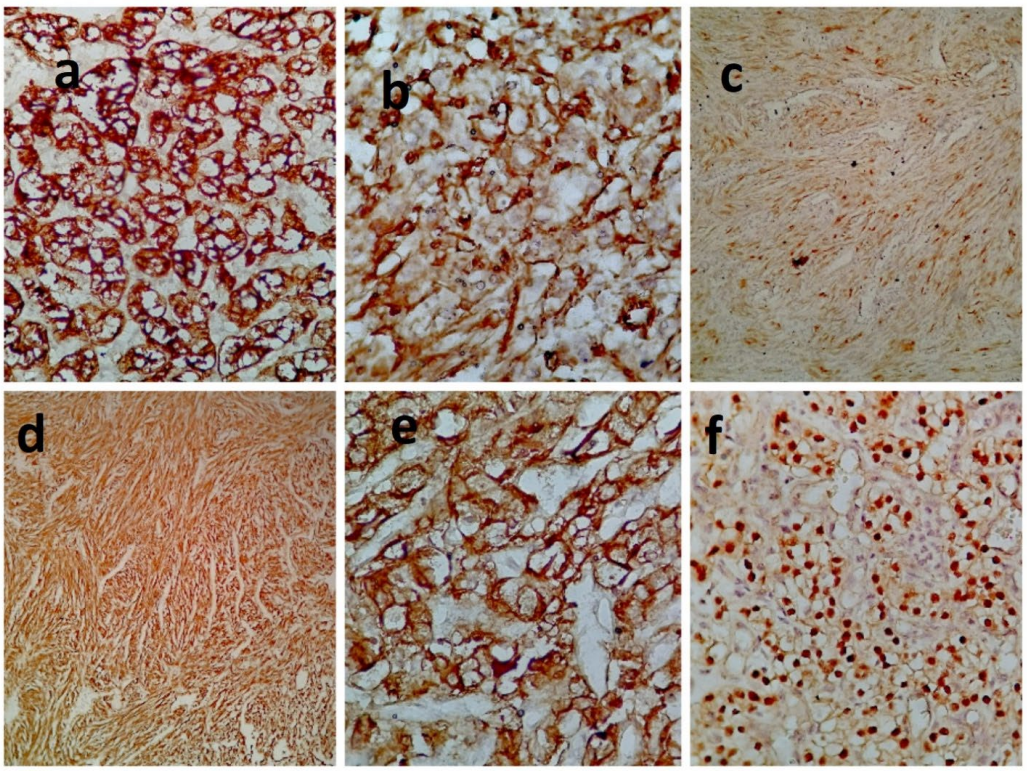

Fig. 3. IHC Staining; epithelial component of RCC is positive for CK by immunohistochemical staining (a); epithelial component of RCC is positive for Vimentin(b); sarcomatoid component of RCC are positive for CK(c); sarcomatoid component of RCC is positive for vimentin(d). tumoral cells are positive for CD10 (e); tumoral cells show nuclear staining by pax8 immunohistochemical staining (f).

Discussion

Generally, Metastases to the small bowel are rare but some tumors such as melanomas, cervical carcinomas, lung carcinomas, thyroid carcinomas, hepatocellular carcinoma, Merkel cell carcinoma may metastasize more frequently than others [8]. RCC can metastasize to any site, but the most common sites are lung, lymph nodes, bone, liver, adrenal glands, kidney, brain, heart, spleen, intestine and skin [9], Males are more affected than female (male: female = 1.5:1) and the incidence of metastasis increases with age [10]. In about 20–30% cases, primary RCC and its metastasis to the distant organ will be diagnosed in the same time, which is called synchronous presentation. 20% of RCC patients with non-metastatic disease at diagnosis will later develop metastases during the follow-up (metachronous presentation) [11]. The lung is most common site of metastasis from RCC. The peritoneum is the second most common site of RCC metastasis. The incidence of Gastrointestinal (GI) metastasis from RCC is much lower than that of peritoneal metastasis and the GI tract is considered a late metastatic site. RCC metastasized to the GI tract through peritoneal seeding or hematogenous and not lymphatic dissemination. Metastatic RCC is frequently hypervascular, thus, metastatic lesions may have been the sources of GI bleeding. GI bleeding is one of the non-specific signs of GI pathology, so Computed Tomography (CT) scan may be the primary modality to evaluate metastatic lesions, particularly in the small bowel [12]. Metastasize to any part of GI tract can occur but metastasis to colonic is much rarer compared to the gastric. Colon usually involved by metastatic cancers from breast, stomach and malignant melanoma of the skin. RCC not infrequently metastasizes to pancreas, RCC metastases to pancreas account for 2–5% of all pancreatic neoplasms and metastatic RCC is the most common secondary neoplasms in the pancreas followed by malignant melanoma and colorectal carcinoma [11]. The duodenum is the very rare site for RCC and metastatic lesions of the duodenum are most frequently located in the periampullary region or the duodenal bulb [13], Duodenal metastases present by gastrointestinal hemorrhage, obstruction, intussusceptions, perforation or obstructive jaundice. Duodenal metastases diagnosis is a challenge due to its rarity and low suspicion for diagnosis these metastases tend to be confused with primary tumors of the organs [14, 15]. Patients after radical nephrectomy due to renal cell carcinoma require a long-term systematic monitoring. Due to the anatomical position of the pancreas and duodenum as well as the number, location and size of metastatic lesions, the course of the disease may be initially asymptomatic or oligosymptomatic [16]. A complete evaluation, such as endoscopic examination and biopsy, should be performed in such patients. Endoscopy shows non-ulcerative mass, sub-mucosal elevated mass with apex ulceration or multiple varying sized nodules with apex ulceration. The involvement is the result of direct infiltration, lymphatic invasion, hematogenous invasion or transcoelomic spread**.** The longest duration between nephrectomy and duodenal metastasis that had been reported was 16 years [17]. The bile duct or pancreatic duct dilation in patients with duodenal metastasis, especially in the ampulla of vater and the duodenal second portion has reported [12]. In this study and some other studies, right kidney nephrectomy was more common than left, similar to our case [18]. These metastases are often solitary, at least at the clinical level [19]. The standard of treatment for localized metastatic RCC is surgery. It has been shown that pancreaticoduodenectomy in patients with solitary duodenal metastasis can be curative and improve patient survival [18]. In these patients overall, the 5-year survival rates are less than 10% but surgical resection can improve the 5-year survival rates up to 88% [11].

Conclusion

Renal cell carcinoma can metastaze to unusual distant site and present with unusual symptoms. Unusual metastatic sites require attention during the follow-up of renal cell carcinoma. Metastasis to the small bowel is exceedingly rare and can cause obstruction, bleeding or rarely perforation. Duodenal metastases diagnosis is a challenge due to its rarity and low suspicion for diagnosis these metastases tend to be confused with primary tumors of the organs. Metastatic RCC is frequently hypervascular, thus, metastatic lesions may have been the sources of GI bleeding and in RCC cases with gastrointestinal symptom such as GI bleeding, duodenal metastasis should be suspected. GI bleeding is one of the non-specific signs of GI pathology, so CT scan may be the primary modality to evaluate metastatic lesions, particularly in the small bowel. The standard of treatment for localized metastatic RCC is surgery. It has been shown that pancreaticoduodenectomy in patients with solitary duodenal metastasis can be curative and improve patient survival.

Acknowledgment

Written informed consents for publication of clinical details and accompanying images were obtained from the patients' relatives.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or nonprofit sectors.

Conflict of Interests

The authors have no conflict of interest to declare.

References

1. Low G, Huang G, Fu W, Moloo Z, Girgis S. Review of renal cell carcinoma and its common subtypes in radiology. World journal of radiology. 2016 May 28;8(5):484. https://doi.org/10.4329/wjr.v8.i5.484

2. Moch H, Cubilla AL, Humphrey PA, Reuter VE, Ulbright TM. The 2016 WHO classification of tumours of the urinary system and male genital organs-part A: renal, penile, and testicular tumours. European urology. 2016 Jul 1;70(1):93-105. https://doi.org/10.1016/j.eururo.2016.02.029

3. Gorski RL, Jalil SA, Razick M. An obscure cause of gastrointestinal bleeding: renal cell carcinoma metastasis to the small bowel. International journal of surgery case reports. 2015 Jan 1;15:130-2. https://doi.org/10.1016/j.ijscr.2015.08.011

4. Zhao H, Han K, Li J, Liang P, Zuo G, Zhang Y, Li H. A case of wedge resection of duodenum for massive gastrointestinal bleeding due to duodenal metastasis by renal cell carcinoma. World journal of surgical oncology. 2012 Dec;10(1):1-5. https://doi.org/10.1186/1477-7819-10-199

5. Senadhi V, Jani N, Erlich R. Metastatic renal cell cancer and a gastric mass: an unusual finding. Case reports in gastroenterology. 2010;4(3):421-8. https://doi.org/10.1159/000320871

6. Gooran S, Yasseri AF, Behtash N, Khalili M, Asadi M. Mandibular mass as an only presentation of metatatic renal cell carcinoma for four years: a case report. Urology Journal. 2017 Jan 18;14(1):2979-81.

7. Eo WK, Kim GY, Choi SI. A case of multiple intussusceptions in the small intestine caused by metastatic renal cell carcinoma. Cancer research and treatment: official journal of Korean Cancer Association. 2008 Jun;40(2):97. https://doi.org/10.4143/crt.2008.40.2.97

8. Bhatia A, Das A, Kumar Y, Kochhar R. Renal cell carcinoma metastasizing to duodenum: a rare occurrence. Diagnostic Pathology. 2006 Dec;1(1):1-4. https://doi.org/10.1186/1746-1596-1-29

9. Lynch-Nyhan A, Fishman EK, Kadir S. Diagnosis and management of massive gastrointestinal bleeding owing to duodenal metastasis from renal cell carcinoma. The Journal of urology. 1987 Sep;138(3):611-3. https://doi.org/10.1016/S0022-5347(17)43275-7

10. Pavlakis GM, Sakorafas GH, Anagnostopoulos GK. Intestinal metastases from renal cell carcinoma: a rare cause of intestinal obstruction and bleeding. The Mount Sinai journal of medicine, New York. 2004 Mar 1;71(2):127-30.

11. Abdul-Ghafar J, Din NU, Saadaat R, Ahmad Z. Metastatic renal cell carcinoma to pancreas and gastrointestinal tract: a clinicopathological study of 3 cases and review of literature. BMC urology. 2021 Dec;21(1):1-8. https://doi.org/10.1186/s12894-021-00854-z

12. Park HJ, Kim HJ, Park SH, Lee JS, Kim AY, Ha HK. Gastrointestinal involvement of recurrent renal cell carcinoma: CT findings and clinicopathologic features. Korean journal of radiology. 2017 May;18(3):452. https://doi.org/10.3348/kjr.2017.18.3.452

13. Pavlakis GM, Sakorafas GH, Anagnostopoulos GK. Intestinal metastases from renal cell carcinoma: a rare cause of intestinal obstruction and bleeding. The Mount Sinai journal of medicine, New York. 2004 Mar 1;71(2):127-30.

14. McNichols DW, Segura JW, DeWeerd JH. Renal cell carcinoma: long-term survival and late recurrence. The Journal of urology. 1981 Jul 1;126(1):17-23 https://doi.org/10.1016/S0022-5347(17)54359-1

15. Shah IA, Haddad FS, Wheeler L, Chinichian A. Metastatic Renal Cell Carcinoma: Late Recurrence and Prolonged Survival. Journal of Urologic Pathology. 1996;4:289-98.

16. Piskorz Ł, Mitura K, Olejniczak W, Misiak P, Jablonski S. Atypical locations of renal cell carcinoma metastases to the pancreas and duodenum. Research and Reports in Urology. 2021;13:17. https://doi.org/10.2147/RRU.S290150

17. Geramizadeh B, Mostaghni A, Ranjbar Z, Moradian F, Heidari M, Khosravi MB, Malekhosseini SA. An unusual case of metastatatic renal cell carcinoma presenting as melena and duodenal ulcer, 16 years after nephrectomy; a case report and review of the literature. Iranian journal of medical sciences. 2015 Mar;40(2):175.

18. Omranipour R, Zadeh HM, Ensani F, Yadegari S, Miri SR. Duodenal metastases from renal cell carcinoma presented with melena: review and case report. Iranian journal of pathology. 2017;12(3):272. https://doi.org/10.30699/ijp.2017.25687

19. Radley MG, McDonald JV, Pilcher WH, Wilbur DC. Late solitary cerebral metastases from renal cell carcinoma: report of two cases. Surgical neurology. 1993 Mar 1;39(3):230-4. https://doi.org/10.1016/0090-3019(93)90189-8