—Case Reports—

Surgical Treatment for Isolated Multiple Pancreatic Metastases from Renal Cell Carcinoma: Report of a Case

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Abstract

A 70-year-old man was admitted to our hospital for evaluation of multiple pancreatic tumors. Twelve years earlier he had undergone left radical nephrectomy for renal cell carcinoma (RCC). Computed tomography revealed two well-defined mass lesions in the head and tail of the pancreas, with strong contrast enhancement in the arterial phase. Fluorine-18 fluorodeoxyglucose positron emission tomography detected an elevated uptake within the lesions but no extrapancreatic uptake. The preoperative diagnosis was isolated multifocal metastatic pancreatic tumors from RCC. The patient underwent total pancreatectomy with splenectomy. Both of the tumors were well-demarcated, gray-white, and firm on gross observation. Microscopic examination, meanwhile, revealed solid tumors consisting of clear oval cells with severe nuclear atypia. These pathologic findings were consistent with the preoperative diagnosis of pancreatic metastasis from RCC. Radical resection improves the long-term survival of patients, and total pancreatectomy may be an appropriate procedure.
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Key words: isolated multiple pancreatic metastases, total pancreatectomy, renal cell carcinoma

Introduction

Pancreatic metastasis from a nonpancreatic primary tumor is rare, accounting for less than 5% of all pancreatic neoplasms[1,2]. Colon cancer, breast cancer, lung cancer, and renal cell carcinoma (RCC) have all been shown to metastasize to the pancreas. Pancreatic metastasis from RCC represents only 0.25% to 3% of all resected specimens, although hematogenous metastasis to the lung, bone, and liver frequently occurs[1,2].

Surgical resection has been reported to improve the long-term survival of patients with isolated pancreatic metastasis and, thus, to constitute the best therapeutic option[3,4]. In cases with multifocal pancreatic metastases, however, the strategy for surgical resection remains controversial.

In this report we describe our experience with a patient with isolated multiple pancreatic metastases and review the literature to assess surgical indications for patients with isolated multifocal lesions.

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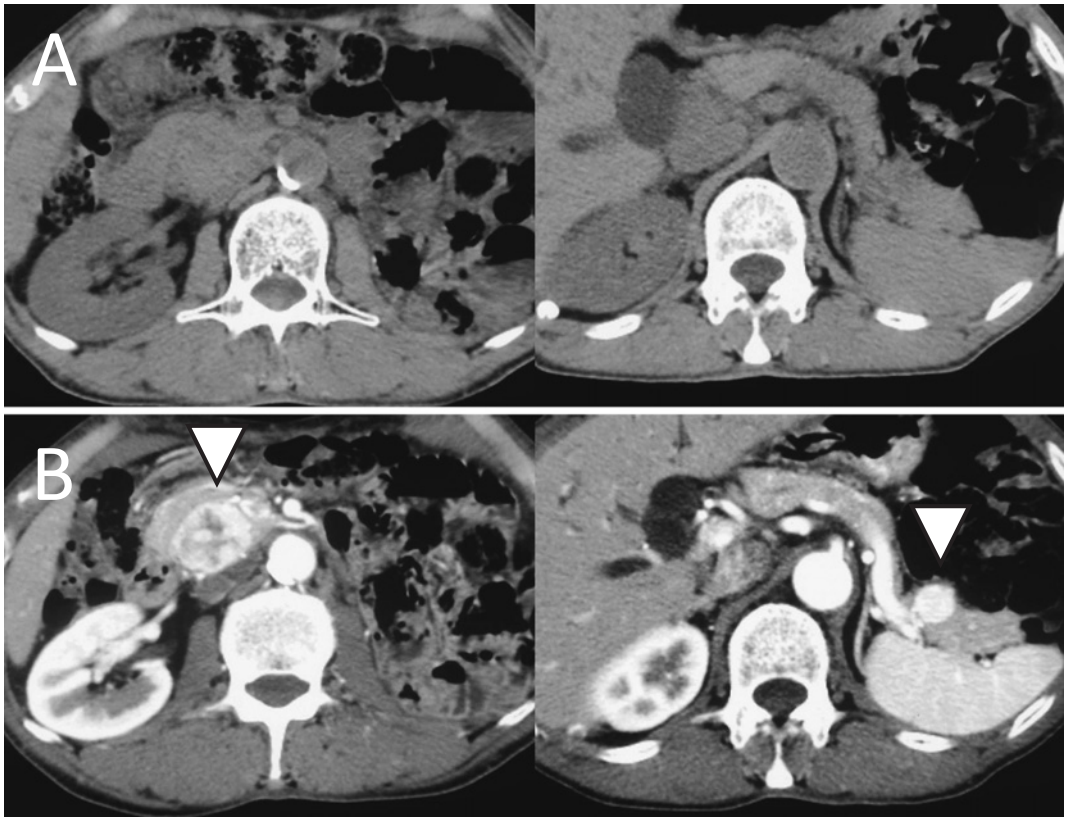

Fig. 1 **A**: CT revealed two well-defined mass lesions in the head and tail of the pancreas. **B**: Pancreatic tumors exhibited strong contrast enhancement in the arterial phase **(white arrowheads)**.

Case Report

A 70-year-old man was admitted to our hospital for evaluation of pancreatic tumors in August 2007. Twelve years earlier, in 1995, he had undergone left radical nephrectomy for renal cell carcinoma (RCC). Although not having a history of von Hippel-Lindau disease, he had been taking oral prednisolone (5 mg/day) for the last 3 years because of autoimmune hepatitis. Physical examination on admission revealed no abnormalities. Laboratory studies indicated hyperglycemia (190 mg/dL), but levels of the tumor markers CEA, CA19-9, and DUPAN-II were all within normal limits. Computed tomography (CT) revealed two well-defined mass lesions in the pancreas: one in the head (3 × 2.5 cm) and the other in the tail (2 × 1.5 cm) **(Fig. 1A)**. Both of the tumors showed strong contrast enhancement in the arterial phase **(Fig. 1B)**. On magnetic resonance imaging (MRI), the tumors showed hypointensity on both T1-weighted and T2-weighted images. Positron emission tomography (PET) with F-18 fluorodeoxyglucose (18-FDG) showed increased uptake of 18-FDG within the lesion of the pancreatic head but no extrapancreatic uptake **(Fig. 2)**. On the basis of these findings, isolated multifocal metastatic pancreatic tumors from RCC were diagnosed. Total pancreatectomy with splenectomy was performed in September. On gross examination, both tumors were well-demarcated, gray-white, and firm. Microscopic examination revealed solid tumors consisting of clear oval cells with severe nuclear atypia **(Fig. 3)**. The tumor cells were immunoreactive for CAM 5.2, vimentin, CD10, and CD15 but not for chromogranin, keratin, CK7, or CK20. These pathologic findings were consistent with pancreatic metastasis from RCC. The postoperative course was uneventful, and the patient was discharged 4 weeks after surgery.

Discussion

Although earlier reports have described isolated multiple pancreatic metastases as extremely rare, the number of cases is now reported to be considerably higher[5]. Of 187 patients with pancreatic

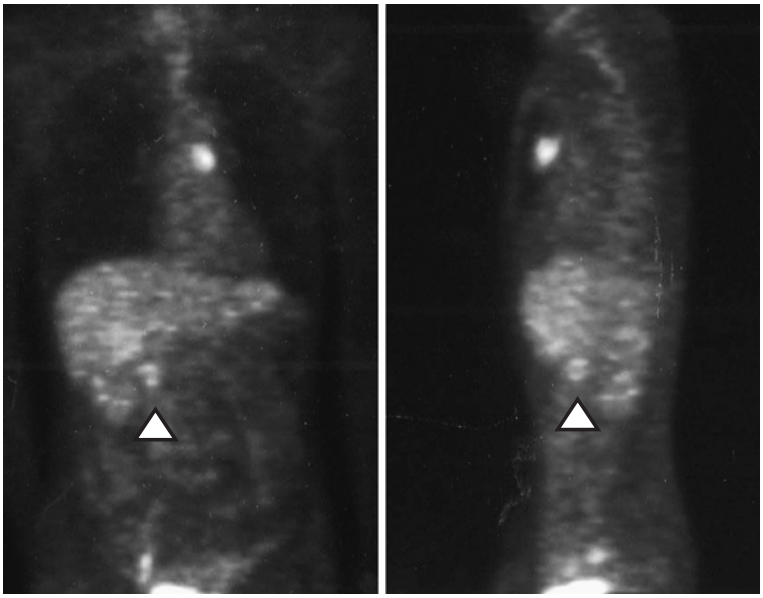

Fig. 2 PET revealed elevated uptake of 18-FDG within the lesion of the pancreatic head **(white arrowhead)**. No extrapancreatic uptake was detected, however.

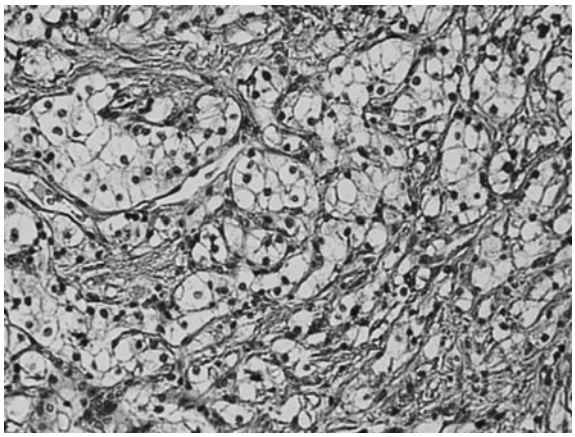

Fig. 3 Microscopic examination revealed a solid tumor consisting of clear oval cells with severe nuclear atypia (hematoxylin-eosin stain, ×400).

metastases from RCC reported from 1952 through 2003, at least one-third had multiple isolated pancreatic metastases[5].

The preoperative diagnosis of pancreatic metastases has been a challenge for clinicians. Contrast-enhanced CT may depict multiple hypervascular tumors, which are suggestive of metastatic disease to the pancreas[6]. When multiple pancreatic lesions are detected in a patient with a history of RCC, multiple metastases to the pancreas from RCC should be considered[5,7,8]. Accurate staging, meanwhile, is crucial for determining whether radical resection is indicated. The use of 18-FDG PET has recently been used for this purpose[9]. These imaging techniques were useful in the present case for accurately diagnosing and staging the lesions before surgery.

Surgical treatment for multiple pancreatic metastases remains controversial. Some authors recommend surgical resection for these lesions[5], whereas others shun surgical treatment on the assumption that multiple pancreatic metastases represent fatal disseminated metastatic disease[10,11]. The actuarial 3- and 5-year survival rates for patients with unresected metastases to the pancreas, however, are reported to be significantly lower than those for patients with resected lesions[5]. Recent reports identify surgical resection as the most effective treatment for isolated solitary pancreatic metastasis from RCC, with 5-year survival rates of up to 75%[5,7,8]. Sellner et al.[5] report actuarial 3-year and 5-year survival rates of 78% and 78%, respectively, for multiple lesions versus 75% and 64%, respectively, for solitary lesions. They conclude, on the basis of their review, that radical resection is beneficial for patients with multiple metastases and solitary metastasis alike[5]. Radical resection should be chosen for patients with isolated multiple metastases, as this approach has been proven to be associated with better quality of life[7] as well as improved survival.

The surgical strategy for pancreatic metastasis from RCC combines adequate resection margins and maximal tissue preservation[8]. The surgeon should thus consider a standard pancreatic resection, either distal pancreatectomy, pancreaticoduodenectomy, or total pancreatectomy, depending on the location of mass lesions[5,7,8] (distal pancreatectomy or pancreaticoduodenectomy for solitary lesions, and total pancreatectomy for multifocal lesions). The RCC tumor cells likely to metastasize to the pancreas, meanwhile, are thought to have a high affinity for the pancreatic parenchyma[5]. This affinity makes it crucial to consider whether recurrent lesions in the remnant pancreas can develop after pancreatic resection for earlier metastases. Bassi et al.[12] recommend standard pancreatic resection in view of the high recurrence rate (50%) after atypical resection. Some reports[5,13,14] have described metachronous late metastases, tumors ultimately requiring total pancreatectomy, in the residual pancreas after standard resection of solitary pancreatic metastasis. For multiple pancreatic metastases, on the other hand, total pancreatectomy has been performed somewhat more than one would expect[5]. Although maximal tissue preservation would have been possible in our case, the presence of multiple lesions and the risk of late metastases to residual pancreas led us to choose total pancreatectomy. Total pancreatectomy should be regarded as an appropriate therapeutic option for multiple pancreatic metastases, although its application to all patients with solitary metastasis remains controversial.

We have reported a case of isolated multiple pancreatic metastases from RCC. Radical resection improves the long-term survival of patients with isolated multiple pancreatic metastases, and total pancreatectomy may be an appropriate procedure.

References

1. Thompson LD, Heffess CS: Renal cell carcinoma to the pancreas in surgical pathology material. Cancer 2000; 89: 1076–1088.
2. Faure JP, Tuech JJ, Richer JP, Pessaux P, Arnaud JP, Carretier M: Pancreatic metastasis of renal cell carcinoma: presentation, treatment and survival. J Urol 2001; 165: 20–22.
3. Hiotis SP, Klimsta DS, Conlon KC, Brennan MF: Results after pancreatic resection for metastatic lesions. Am Surg Oncol 2002; 9: 675–679.
4. Z'graggen K, Fernandez-Del Castillo C, Rattner DW, Sigala H, Warshaw AL: Metastases to the pancreas and their surgical extirpation. Arch Surg 1998; 133: 413–417.
5. Sellner F, Tykalsky N, Santis MD, Pont J, Klimpfinger M: Solitary and multiple isolated metastases of clear cell renal carcinoma to the pancreas: an indication for pancreatic surgery. Ann Surg Oncol 2006; 13: 75–85.
6. Muranaka T, Teshima K, Honda H, Nanjo T, Hanada K, Oshiumi Y: Computed tomography and histologic appearance of pancreatic metastases from distant sources. Acta Radiol 1989; 30: 615–619.
7. Crippa S, Angelini C, Mussi C, et al.: Surgical treatment of metastatic tumors to the pancreas: a single center experience and review of the literature. World J Surg 2006; 30: 1536–1542.
8. Wente MN, Kleeff J, Esposito I, et al.: Renal cancer cell metastasis into the pancreas. A single-center experience and overview of the literature. Pancreas 2005; 30: 218–222.
9. Sperti C, Pasquali C, Liessi G, Pinciroli L, Decet G, Pedrazzoli S: Pancreatic resection for metastatic tumors to the pancreas. J Surg Oncol 2003; 83: 161–166.
10. Bechade D, Palazzo I, Desrame J: Pancreatic metastasis of renal carcinoma: report of three cases. Rev Med Interne 2002; 23: 862–866.
11. Eloubeidi M, Jhala D, Chhieng D, Jhara N, Eltoum I, Wilcox C: Multiple late asymptomatic pancreatic metastases from renal cell carcinoma: diagnosis by endoscopic ultrasound-guided fine needle aspiration biopsy with immunocytochemical correlation. Dig Dis Sci 2002; 47: 1839–1842.
12. Bassi C, Butturini G, Falconi M, Sargenti M, Mantovani W, Pederzoli P: High recurrence rate after atypical resection for pancreatic metastases from renal cell carcinoma. Br J Surg 2003; 90: 555–559.
13. Law CH, Wei A, Hanna SS, et al.: Pancreatic resection for metastatic renal cell carcinoma: presentation, treatment and outcome. Ann Surg Oncol 2003; 10: 922–926.
14. Kassabian A, Stein J, Jabbour N, et al.: Renal cell carcinoma metastatic to the pancreas: a single institution series and review of the literature. Urology 2000; 56: 211–215.

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