Ann Hepatobiliary Pancreat Surg 2017;21:176-179
https://doi.org/10.14701/ahbps.2017.21.3.176

Case Report

Pancreatic resection for renal cell carcinoma metastasis: a case review

Sanghwa Ko[1], Sungpil Yun[1], Suk Kim[2], Tae-nam Kim[3], and Hyung-Il Seo[1]

[1]Department of Surgery, [2]Department of Radiology, and [3]Department of Urology, Pusan National University Hospital, Pusan National University School of Medicine and Biomedical Research Institute, Busan, Korea

Renal cell carcinoma (RCC) is the most common type of kidney malignancy. The pancreas is an infrequent site of metastasis in relation to any type of malignancy. However, RCC is one of the tumor types that most frequently metastasize to the pancreas. In this study, we report our experiences with two patients who underwent pancreatic resection for metastatic RCC tumors; of these two patients, one patient had a tumor was a metachronous pancreas-only tumor, and the other patient's tumor was synchronous with hematogenous lung metastasis. Following left-side pancreatic resection, the patients were administered tyrosine kinase inhibitors. **(Ann Hepatobiliary Pancreat Surg 2017;21:176-179)**

Key Words: Renal cell carcinoma; Metastasis; Pancreas

INTRODUCTION

Renal cell carcinoma (RCC) is the most common type of kidney malignancy. Almost one third of patients have synchronous metastatic disease, and 20-50% of patients with this disease experience recurrent metachronous lesions after nephrectomy.[1] The pancreas is a rare site of metastasis for any kind of malignancy, and pancreatic metastasis occurs in only 3-10% of patients. Approximately 3% of pancreatic tumors represent instances of metastatic disease. Solitary metastases from RCC account for 1-4% of pancreatic tumors, and 1-2% of RCC patients experience metastasis to the pancreas. Notably, 70% of resectable pancreatic metastases originate from RCC.[2] Compared with other RCC metastatic sites, the time interval from nephrectomy, and the survival period, tend to be greater for pancreatic metastases.[3] For this reason, in the relevant research literature, patient cases have been described in case reports and retrospective case series. However, the lack of postpancreatectomy follow-up data makes it difficult to determine whether resection is beneficial for survival. In this study, we report our experiences of this multidisciplinary treatment, including the procedures of pancreatic resection and tyrosine kinase inhibitor (TKI) administration, utilized in cases of pancreatic RCC metastases.

CASE

Two patients underwent pancreatic resection for metastatic pancreatic tumors at our Department of Surgery. The tumors were not direct RCC invasion.

One tumor was metachronous and the other was synchronous with extrapancreatic metastases. Written informed consent forms were obtained from both patients.

Case 1

A 78-year-old man was admitted with a recurrent RCC pancreatic mass. The primary tumor was in the left kidney and had been excised 8 years previously. Following detection of the recurrence of the tumor, 16 months had passed without any form of treatment. The size of the pancreatic mass had increased without extrapancreatic metastasis. A well-defined hypoechoic tumor in the body of the pancreas was shown in a transabdominal ultrasound, and a mass with a heterogeneous signal intensity in T2-weighted magnetic resonance imaging (MRI) scan was detected (Fig. 1). The patient underwent a distal pan-

Received: March 4, 2017; **Revised:** March 29, 2017; **Accepted:** May 22, 2017
Corresponding author: Hyung-Il Seo
Department of Surgery, Biomedical Research Institute, Pusan National University Hospital, 305 Gudeok-ro, Seo-gu, Busan 49241, Korea
Tel: +82-51-240-7238, Fax: +82-51-247-1365, E-mail: seohi71@hanmail.net

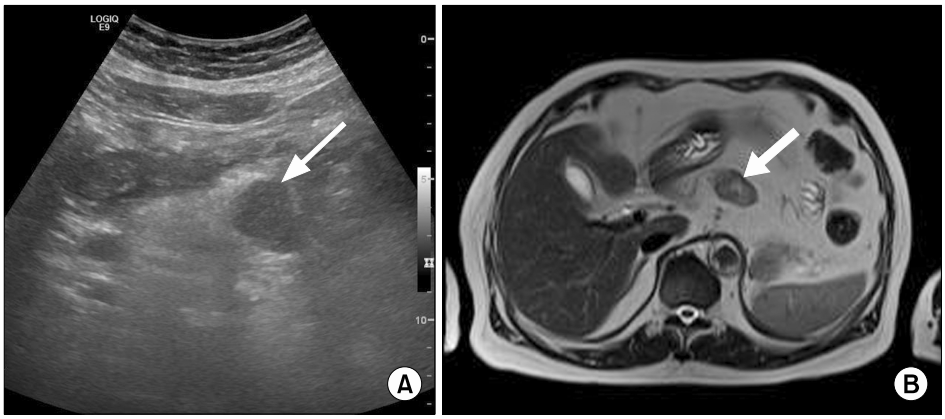

Fig. 1. Transabdominal ultrasound shows a well-defined hypoechoic mass in the body of the pancreas (arrow) (A). T2-weighted magnetic resonance imaging (MRI) shows a well-defined mass with heterogeneous signal intensity in the body of the pancreas (arrow) (B).

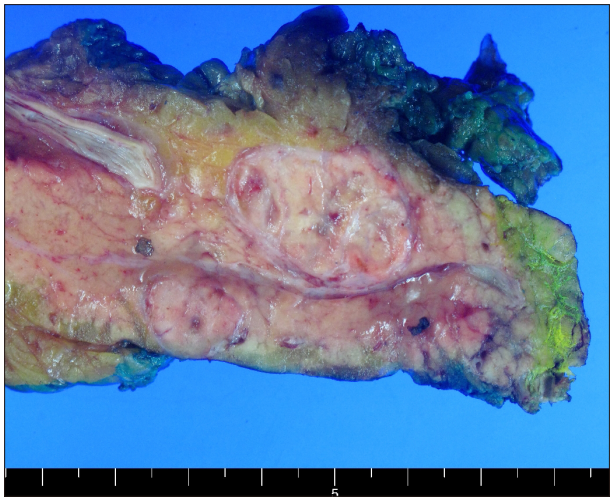

Fig. 2. Macroscopic appearance of the resected specimen.

createctomy and splenectomy to determine whether the metastasis was a neuroendocrine tumor or an acinar cell tumor. The pathological diagnosis for this patient was a 2.6-cm RCC metastasis without lymph node metastasis, which indicated positive CD10, positive vimentin and negative CK7 immunohistochemically (Fig. 2). The patient experienced no complications and was discharged 11 days after surgery. The TKI Votrient® was administered and the patient remained recurrence-free of tumors for over 24 months.

Case 2

A 56-year-old man was admitted with gross hematuria and was diagnosed with right RCC, pancreatic metastases, and lung metastases. A well-defined homogeneously enhanced mass at the tail of the pancreas was shown in an abdominal computed tomography (CT) scan (Fig. 3). The patient underwent a right-sided nephrectomy, distal pancreatectomy, and splenectomy. The pathological findings of this case were a 1.8-cm pancreatic RCC metastasis. The patient experienced no complications and was discharged 12 days after surgery. The TKI Sorafenib® was administered to the patient. Disease progression was observed 7 months after surgery, but further treatment was refused. The patient died 19 months after surgery.

DISCUSSION

In patients with kidney-limited RCC, the 5-year survival rate is 70%. However, this rate drops to less than 10% when disseminated metastases occur. Pancreatic metastases are rare, as they account for less than 5% of pancreatic malignancies.[4] Generally, pancreatic metastases appear to correlate with a poor prognosis, as well as an early progression of disseminated metastatic disease after pancreatic metastasis resection. The outcome of the administration of surgical resection in patients depends upon the clinical and biological characteristics of the primary malignancy. Pancreatic RCC metastasis resection is reported to be associated with a favorable prognosis. However, in contrast to liver and lung metastases, no control studies investigating prognosis in the absence of resection have been conducted in the previous research literature. As such, resection remains a controversial therapeutic option.

The preoperative differential diagnosis of a primary pancreatic neoplasm and a metastatic tumor can be difficult and somewhat challenging, especially in metachronous cases. Sole metastatic lesions in the pancreas following nephrectomy are uncommon, and pancreatic meta-

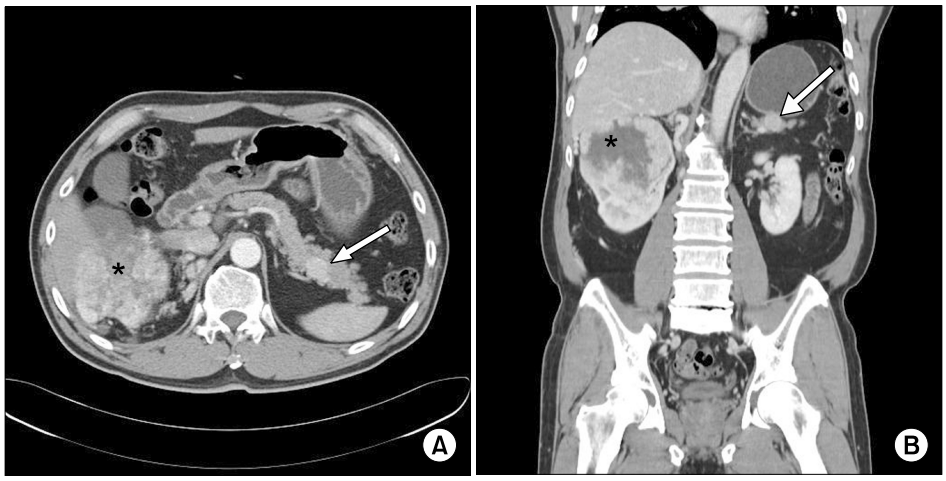

Fig. 3. Axial (A) and coronal (B) contrast-enhanced computed tomography scan images show a well-defined homogeneously enhanced mass in the tail of the pancreas (arrow). A heterogeneously enhanced mass with central necrosis was also detected in the right kidney (*), suggesting renal cell carcinoma.

stasis typically takes a long time to occur. As a result, it can be difficult to distinguish a metastatic mass from a neuroendocrine tumor or acinar cell tumor because of these conditions. In Case 1 of our study, the preoperative magnetic resonance imaging scan showed a hypervascular lesion in the pancreatic tail, which had previously been misdiagnosed from abdominal ultrasonography results as a nonfunctioning neuroendocrine tumor.

The 5-year survival rate following pancreatectomy of isolated pancreatic metastases is estimated at being approximately 70%.[2,5,6] Surgery with curative intent has been proposed as the sole option available as a potential cure. Dong et al.[7] have suggested that patients without extrapancreatic metastases are optimal candidates for pancreatic resection, based on the Memorial Sloan Kettering Cancer Center (MSKCC) criteria, which are as follows: lactate hydrogenase level; hemoglobin level; corrected serum calcium level; disease-free survival after nephrectomy; prior radiotherapy; and metastatic sites.[8] However, Santoni et al.[9] have questioned the use of surgery as a potential cure since the 5-year DFS following pancreatic surgery for isolated metastasis is 67%, and their analysis indicates that surgery may not be an independent prognostic factor for good outcomes. Nevertheless, in patients with isolated pancreatic metastases, surgery as part of a multidisciplinary treatment does provide a survival advantage.

Unlike solitary pancreatic metastases, extrapancreatic metastases are associated with a shorter overall survival rate. In Case 2 of our report, a lung metastasis was synchronously detected. The patient died 19 months after surgery despite the administration of multidisciplinary treatment. As such, the efficacy of pancreatic resection for pancreatic metastases in the presence of extrapancreatic lesions may need further investigation.

The advent of targeted therapies has changed the treatment options for metastatic RCC, and has also dramatically improved treatment outcomes.[10] Our patients were both treated with targeted therapies after surgery. In Case 1, the patient remained disease-free for 24 months, although our other patient died 19 months after surgery. Santoni et al.[9] have shown the outcomes associated with TKI administration; despite inconsistent numbers of patients with solely pancreatic metastases in the groups, Santoni et al. showed that surgery following TKI administration did not produce a statistically significant increase in survival, as compared with the administration of TKIs alone. Surgery and TKI administration were only recommended for the highest potential chance of disease-free survival. This needs to be considered further as new target therapies emerge. Large prospective studies investigating TKI administration for metastatic RCC are required to accurately determine the criteria for patient selection.

In instances of RCC that have only metastasized to the pancreas, an improved survival rate is associated with smaller single lesions, an absence of symptoms, and a low Memorial Sloan Kettering Cancer Center (MSKCC) score. In this study, the data for our two patients were not sufficient to predict their outcome. We believe that pancreatic resection of solitary RCC metastases may be a good method of achieving local tumor control, although further studies are required to validate this idea.

REFERENCES

1. 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.
2. Strobel O, Hackert T, Hartwig W, Bergmann F, Hinz U, Wente MN, et al. Survival data justifies resection for pancreatic metastases. Ann Surg Oncol 2009;16:3340-3349.
3. Ballarin R, Spaggiari M, Cautero N, De Ruvo N, Montalti R, Longo C, et al. Pancreatic metastases from renal cell carcinoma: the state of the art. World J Gastroenterol 2011;17:4747-4756.
4. Thompson LD, Heffess CS. Renal cell carcinoma to the pancreas in surgical pathology material. Cancer 2000;89:1076-1088.
5. Sellner F, Tykalsky N, De Santis M, 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. Tanis PJ, van der Gaag NA, Busch OR, van Gulik TM, Gouma DJ. Systematic review of pancreatic surgery for metastatic renal cell carcinoma. Br J Surg 2009;96:579-592.
7. Dong J, Cong L, Zhang TP, Zhao YP. Pancreatic metastasis of renal cell carcinoma. Hepatobiliary Pancreat Dis Int 2016;15:30-38.
8. Mekhail TM, Abou-Jawde RM, Boumerhi G, Malhi S, Wood L, Elson P, et al. Validation and extension of the Memorial Sloan-Kettering prognostic factors model for survival in patients with previously untreated metastatic renal cell carcinoma. J Clin Oncol 2005;23:832-841.
9. Santoni M, Conti A, Partelli S, Porta C, Sternberg CN, Procopio G, et al. Surgical resection does not improve survival in patients with renal metastases to the pancreas in the era of tyrosine kinase inhibitors. Ann Surg Oncol 2015;22:2094-2100.
10. Grassi P, Verzoni E, Mariani L, De Braud F, Coppa J, Mazzaferro V, et al. Prognostic role of pancreatic metastases from renal cell carcinoma: results from an Italian center. Clin Genitourin Cancer 2013;11:484-488.