Resected metachronous renal metastasis of pancreatic cancer after pancreaticoduodenectomy—a case report

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Abstract: Majority of patients experience recurrence of pancreatic cancer after pancreatectomy which results in poor prognosis. This is an initial report on a patient with resected solitary renal metastasis from pancreatic cancer. The case was a 58-year-old man who underwent pancreaticoduodenectomy for pancreatic cancer. He was on S1 treatment as adjuvant chemotherapy, where 10 mm left renal nodule was detected 9 months after primary resection. The renal nodule increased to 15 mm in 2 months, although there were no increase in tumor markers. Nephrectomy revealed that the pathological diagnosis was adenocarcinoma of pancreatic origin. No definite evidence of recurrence was observed with gemcitabine treatment for 10 months after nephrectomy. When a renal mass is newly detected in the post-operative course of pancreatic cancer, renal metastasis should be considered as a differential diagnosis. Among the multidisciplinary treatments, aggressive surgery for solitary renal metastasis may contribute to better survival in selected patients.

Keywords: Pancreatic cancer; renal metastasis; multidisciplinary treatment; case report

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Introduction

Pancreatic cancer harbors high malignant potential with high frequency of local invasion and distant metastasis, with the 5-year overall survival of approximately 7% in Japan (1). Even after curative pancreatectomy, most of them would experience metastasis, commonly to the liver, peritoneum or the lungs (2). We experienced a case of metachronous renal metastasis of pancreatic cancer treated with nephrectomy and adjuvant chemotherapy, who remained recurrent free for 10 months after metastasectomy. Renal metastasis of pancreatic cancer is extremely rare with a single case report of a synchronous metastasis existing among the literatures (3). Although treatment centers on non-surgical strategies for advanced staged diseases, reports advocating benefits of resection of metastatic lesions are increasing (4-6). This is an initial report of a patient who underwent resection of a solitary renal metastasis from pancreatic cancer. In selected patients, surgical treatment for metastatic lesion may play a favorable role in prolonging survival.

Case presentation

A 58-year-old otherwise healthy man diagnosed with pancreatic head cancer underwent pancreaticoduodenectomy with portal vein resection. Preoperative contrast enhanced computed tomography (CT) showed a 25 mm hypovascular lesion at the pancreatic head with invasion to the superior mesenteric vein. Lymph nodes were not enlarged, and no distant metastases were detected. Carcinoembryonic antigen (CEA) and carbohydrate antigen 19-9 (CA19-9) were elevated at 12.3 μg/L (reference range: 0.8–4.8) and 129 U/mL, (reference range: <36) respectively. Splenic vein was preserved and complete microscopic resection (R0) was achieved. The pathological results were adenocarcinoma with squamous differentiation (*Figure 1*), pT3N1bM0 stage IIB according to the 7th edition of Japanese General Rules for the Study of Pancreatic Cancer (7) (T2N2M0 stage

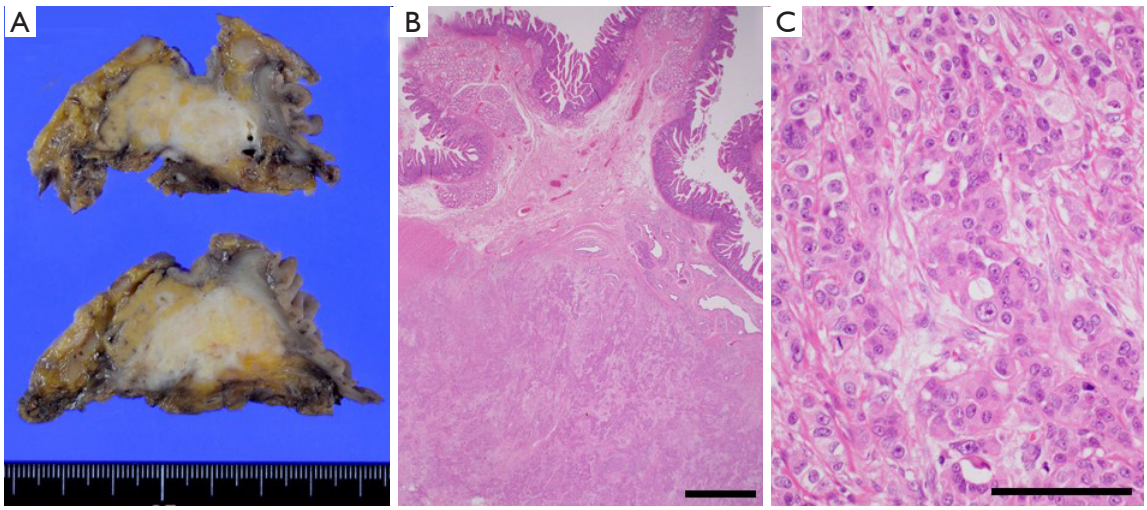

Figure 1 Pathology of the primary pancreatic tumor. (A) Gross appearance of the primary pancreatic tumor. An ill-demarcated white mass, measuring 32×30 mm in size, is observed on the cut surface; (B) low-power view of the primary pancreatic tumor (H&E). (bar, 1 mm); (C) microscopic findings of the pancreatic tumor (H&E), consisting of poorly differentiated adenocarcinoma with focal squamous cell differentiation, accounting for 10% of the tumor. (bar, 100 μm).

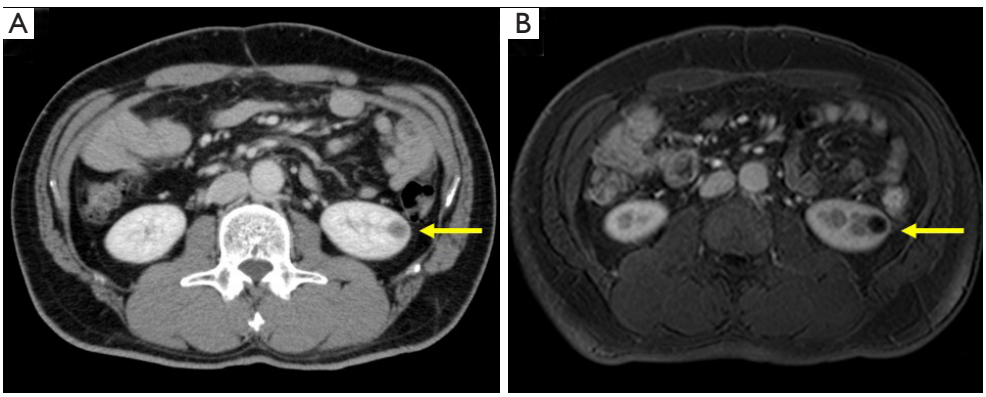

Figure 2 Imaging findings of the kidney. (A) Contrast enhanced computed tomography (CT) shows a 10 mm hypovascular tumor in the left kidney (arrow); (B) contrast enhanced magnetic resonance imaging shows a 15 mm tumor in the left kidney (arrow).

III in UICC classification). Adjuvant chemotherapy with S1 (tegafur, gimeracil, oteracil) was initiated according to the "*Clinical practice guidelines for pancreatic cancer 2019 from the Japan Pancreas Society: a synopsis*" (8). Follow up CT examined 9 months after surgery revealed a 10 mm hypovascular nodule in the left kidney (*Figure 2A*). As there were no elevation of the tumor markers, primary renal tumor or focal bacterial nephritis was suspected. Magnetic resonance imaging 2 months later revealed growth of the nodule to 15 mm (*Figure 2B*), and left nephrectomy was indicated for suspected primary renal tumor.

Immunohistochemistry results of the resected tumor were CAIX(–), AMACR(–), and PAX8(±), indicating that the tumor was not renal origin. Pathological results were compatible with adenocarcinoma of pancreatic origin (*Figure 3*), and we initiated adjuvant chemotherapy with gemcitabine. He is routinely followed up, and from the tumor markers and imaging studies, there is no definite evidence of recurrence for 10 months (*Figure 4*).

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s)

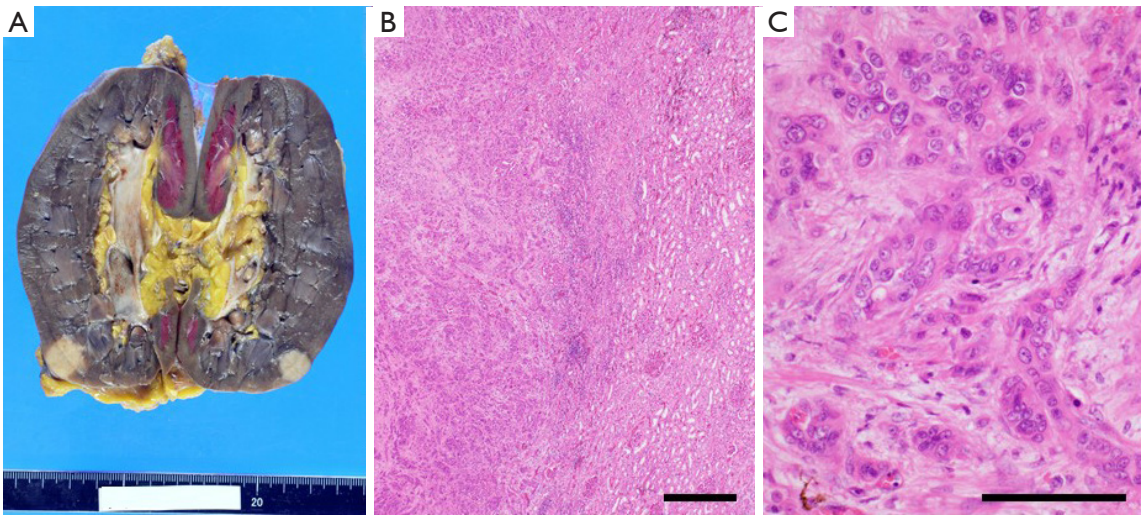

Figure 3 Pathology of the metastatic renal tumor. (A) Gross appearance of the metastatic renal tumor. An ill-demarcated white mass, measuring 16×15 mm in size, is observed on the cut surface; (B) low-power view of the metastatic renal tumor (H&E). (bar, 1 mm); (C) microscopic findings of the metastatic renal tumor (H&E), consistent with adenocarcinoma of pancreatic origin. (bar, 100 μm).

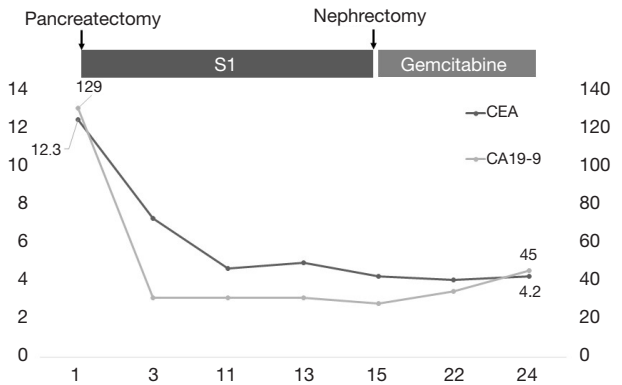

Figure 4 Clinical course with transitional changes of the tumor markers. CEA, carcinoembryonic antigen; CA19-9, carbohydrate antigen 19-9.

and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Discussion

This case highlighted two important issues. First, this is the first report of a resected renal metastasis of pancreatic cancer. Second, metastasectomy for pancreatic cancer should be considered in selected cases of oligometastatic disease after stability on chemotherapy.

Renal metastases of pancreatic cancers were identified in the autopsy series (9), however, there was only one previous case report of a pathologically diagnosed pancreatic cancer metastasizing to the kidney, which was a synchronous metastasis (3). Pancreatic cancer aggressively invades the local structures and metastasize to the distant organs, such as lung and liver in a short period. For this patient, as the lymph node metastasis was positive at primary resection, microscopic hematogenous metastasis may have taken place. We hypothesize that adjuvant S1 therapy favorably treated the microscopic metastasis for about 9 months. Thereafter, uncontrollable cancer increased solitary at the kidney.

This patient remained recurrent free for about 10 months after nephrectomy which was about 2 years after primary resection. While the median survival period after recurrence of pancreatic ductal adenocarcinoma was reported to be about 7 months (10), reports focusing on the significance of metastatic resection of pancreatic cancers are increasing. Groot *et al.* reported an overall survival of 69 months for the 19 patients operated for metachronous solitary lung metastases (4). Dünschede *et al.* reported an overall survival of 31 months for the 4 patients operated on metachronous liver metastasis (6). However, Chang *et al.* reported a possible survival benefit of reoperation only for non-adenocarcinoma recurrences (5). As these studies had limited population, the efficacy of resection of metastasis is still unclear and controversial; however, under effective

control of chemotherapy, resection of metachronous solitary metastasis could be feasible and may contribute to improved survival. Further investigation is needed to clarify the prognostic factors associated with the efficacy of chemotherapy and repeated surgery, with special focus on genetic variants of individuals.

This is an initial report of a patient who underwent resection of a solitary renal metastasis from pancreatic cancer. As for the rarity of a solitary renal metastasis of pancreatic cancer, preoperative diagnosis could be difficult. When a renal mass is newly detected in the post-operative course of pancreatic cancer, renal metastasis should be suspected. Role of surgery for recurrent pancreatic cancer remains uncertain; however, aggressive resection of metastasis may contribute to better survival in selected patients.

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Footnote

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/apc-20-1). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

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