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Case Report

A case of acinar cell carcinoma of the pancreas

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Background Acinar cell carcinoma (ACC) is a very rare malignancy and represents only 1% to 2% of pancreatic exocrine carcinomas. At the time of diagnosis, 75% of ACC are resectable. Reliable data concerning effective adjuvant chemotherapy has not been established.

Case presentation A 30-mm tumor in the pancreatic tail was incidentally discovered by computed tomography in a 71-year-old man. Several swollen lymph nodes were seen around the main tumor. Endoscopic retrograde cholangiopancreatography (ERCP) revealed disruption of the main pancreatic duct. The patient underwent curative resection (R0) with distal pancreatectomy and node dissection. Histopathological examination revealed ACC with lymph node metastases; adjuvant chemotherapy was performed with gemcitabine after surgery. Twelve months later, the patient showed no sign of recurrence.

Conclusion The prognosis of ACC is dismal, although compared to ductal adenocarcinoma, the mean survival appears to be longer. Patients with advanced-stage ACC might benefit from gemcitabine-based adjuvant chemotherapy.

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Keywords: acinar cell carcinoma, adjuvant chemotherapy, operation

Introduction

Pancreatic acinar cells represent more than 80% of pancreatic tissue, but acinar cell carcinoma (ACC) accounts for only 1% of primary pancreatic neoplasms[1-2]. At the time of diagnosis, 38% to 76% of patients with ACC have disease that is considered resectable[3-5]. After tumor resection, patients with ACC have a good prognosis, with a median survival time of 36 to 41 months[4]. While surgical therapy is the only curative approach, ACC has a high recurrence rate of 72% after this treatment[5]. In order to improve the clinical outcome of ACC, adjuvant chemotherapy is sometimes necessary. The efficacy and protocols for adjuvant therapies for ACC have not been established by large-scale clinical studies. Reported herein is a patient who underwent adjuvant chemotherapy with gemcitabine after curative resection for ACC.

Case presentation

A 71-year-old man who was being followed for bleeding from a diverticulum of the ascending colon had an incidental finding of a pancreatic tumor that was discovered by computed tomography (CT). Laboratory parameters, including tumor markers such as alpha-fetoprotein (AFP),

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carcinoembryonic antigen (CEA), and cancer antigen 19-9 were within normal ranges. CT showed a tumor with a diameter of 30 mm which originated from the tail of the pancreas. Remarkably swollen lymph nodes were easily visualized around the main tumor. The tumor was slightly enhanced in early phase dynamic enhanced CT (Figure 1). On endoscopic retrograde cholangiopancreatography (ERCP), the main pancreatic duct in the pancreatic body was found to be disrupted (Figure 2). As ^{18}F-FDG positron emission tomography (FDG-PET) revealed that high uptake values were limited to main tumor and surrounding lymph nodes, we decided that the tumor was resectable (Figure 3).

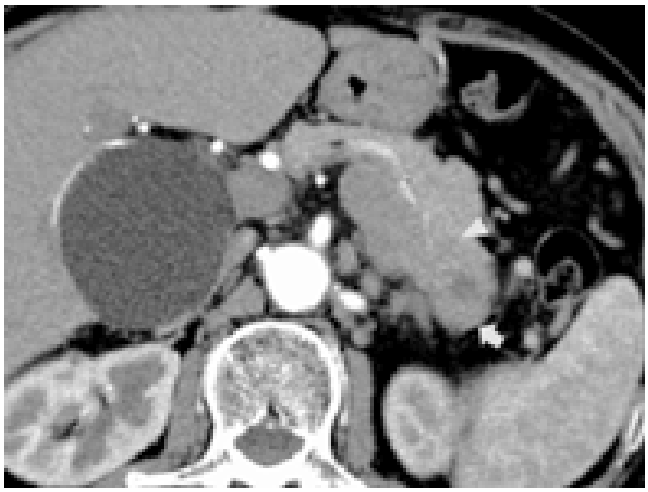

Figure 1. Abdominal computed tomography reveals relatively hypovascular mass (arrow head) and swollen lymph nodes around the pancreas (arrow).

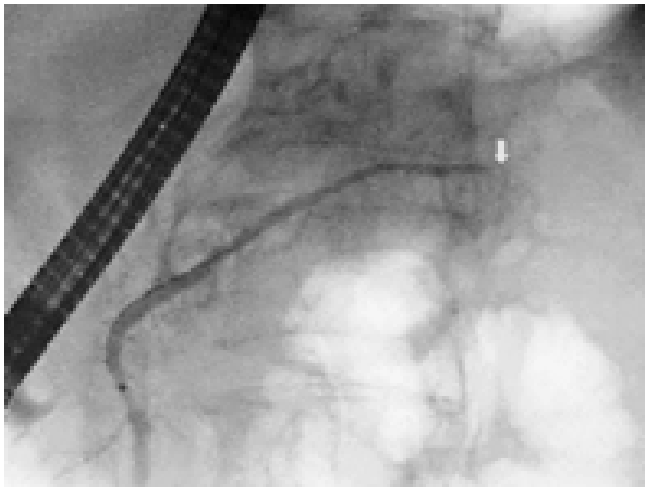

Figure 2. On endoscopic retrograde cholangiopancreatography (ERCP), the main pancreatic duct in the pancreatic body is disrupted.

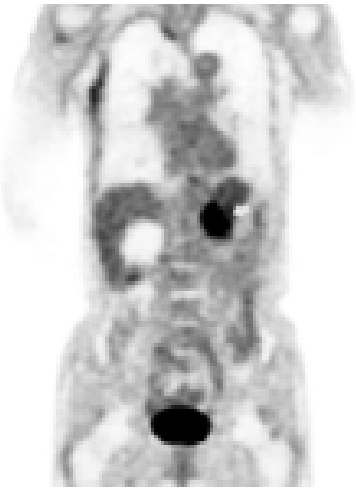

Figure 3. FDG-PET shows a high uptake value of the tumor and of lymph nodes around the pancreas.

The patient was diagnosed with a pancreatic ductal carcinoma located in the tail of the pancreas with lymph node metastases, and underwent operative resection by distal pancreatectomy. Intraoperative ultrasound revealed an ill-defined 30-mm low-echoic mass at the tail of the pancreas. Several swollen lymph nodes were found in the body and tail of pancreas (Figure 4).

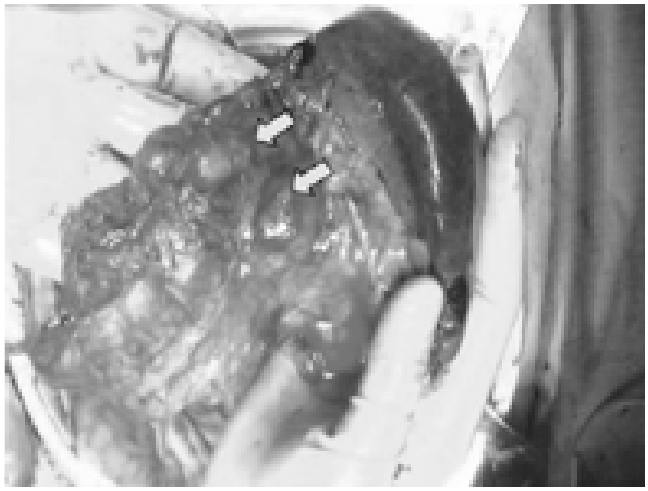

Figure 4. Operative findings show a 30-mm mass at the tail of the pancreas. Several swollen lymph nodes can be seen around the pancreas (arrow).

Histologically, the tumor displayed an acinar pattern of proliferation, with eosinophilic cells simulating the non-neoplastic acinar parenchyma. Basal nuclear polarization, single prominent nucleoli, and readily distinguished mitotic figures were seen, in contrast to pancreatic endocrine neoplasm (Figure 5a).

Immunolabeling for α1-antitrypsin and α1-antichymotrypsin were positive, but neuroendocrine markers (chromogranin A, synaptophysin) and pancreatic hormones were negative (Figure 5b, 5c). The histopathological diagnosis was acinar cell carcinoma of the pancreas, resulting in a tumor classification of pT2, N2, pM0, R0, Stage IIB according to the Union for International Cancer Control (UICC) 2002 guidelines.

The postoperative course was uneventful, and the patient received gemcitabine as adjuvant chemotherapy. Twelve months after the operation, he showed no signs of recurrent disease.

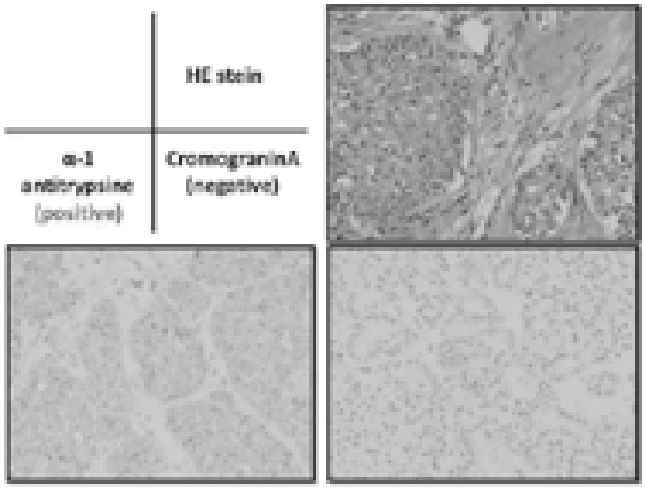

Figure 5a (upper right), 5b (under left), 5c (under right): Histologically, the tumor shows an acinar pattern of proliferation of eosinophilic cells simulating the non-neoplastic acinar parenchyma. Basal nuclear polarization, single prominent nucleoli, and readily distinguished mitotic figures are seen in contrast to pancreatic endocrine neoplasm.

On immunohistochemical analysis, α1-antitrypsin and α1-antichymotrypsin are positive (Figure 5b), but neuroendocrine markers (chromogranin A, synaptophysin) and pancreatic hormones are negative (Figure 5c).

Discussion

Acinar cell carcinoma is a very rare pancreatic tumor that has non-specific symptoms and laboratory findings[1]. Radiographically, Chen et al. described ACC as an exophytic, well-defined, and hypervascular masses on enhanced CT[6]. Calcifications are observed in about 30% of ACC[7]. In another report, FDG-PET revealed a high uptake value for ACC[8]. However, it remains difficult to distinguish ACC from malignant lymphoma and pancreatic neuroendocrine tumor with imaging findings alone. In fact, the mass in the present report had no calcifications, and was ill-defined and comparatively hypovascular.

Diagnosis of ACC cannot be made without histopathological examination[2]. ACC is made up of monomorphic cells with a single, central, prominent nucleolus[3]. ACC is positive for immunohistochemical markers (i.e., trypsin, chymotrypsin, α1-antitrypsin, α1-antichymotrypsin), but negative for neuroendocrine markers (i.e., chromogranin A, synaptophysin) and pancreatic hormones.

In the present case, the tumor showed eosinophilic cells simulating non-neoplastic acinar parenchyma. Basal nuclear polarization, single prominent nucleoli, and readily distinguishable mitotic figures were seen, in contrast to pancreatic endocrine neoplasms. On immunohistochemistry, α1-antitrypsin and α1-antichymotrypsin were found to be positive, but neuroendocrine markers (chromogranin A, synaptophysin) and pancreatic hormones were negative, so ACC was diagnosed.

It is certain that surgical therapy is the only curative approach for ACC. After tumor resection, patients with ACC show a good prognosis[2]. However, Kitagami and colleagues reported a clinical analysis of 115 patients with ACC, and revealed that 70% of patients who had lymph node invasion experienced a recurrent of disease. On histological study of the present case, several metastatic lymph nodes were discovered, so adjuvant chemotherapy was considered to be indicated. Although there is no definite consensus for the extent of resection, it has been reported that resection of ACC with limited metastatic disease results in increased survival time[9]. Extended resection and extensive lymph node dissection can therefore lead to a good prognosis.
Gemcitabine is a key drug in palliative and adjuvant settings for pancreatic ductal carcinoma[10]. However, to date, there have only been a few reports of ACC successfully treated with gemcitabine-based chemotherapy[11-12].

In their *in vivo* study, Bockman et al. reported that acinar cells transdifferentiated to ductal cells without cell division, and that this process can lead to the development of pancreatic ductal carcinoma[13]. It has also been shown that there are several pathways for the growth of pancreatic tumors[16]. These two studies indicated that gemcitabine has potential use as a chemotherapy for ACC.

Table 1 shows previous reports concerning adjuvant chemotherapy after R0 resection of ACC[17-22]. The median tumor diameter was found to be relatively large, with a median size of 53 mm. Most cases received gemcitabine as adjuvant chemotherapy, with more than half of patients alive without evidence of disease.

In the present case, gemcitabine was chosen after radical

resection, and no evidence of recurrent disease has been found at 12 months follow-up. Adjuvant chemotherapy using gemcitabine can provide survival benefit by avoiding ACC tumor recurrence after resection. Further experience and refined chemotherapeutic protocols should be promising.

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