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Necrotizing pancreatitis after transcatheter arterial chemoembolization for hepatocellular carcinoma

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ABSTRACT

A patient who developed necrotizing pancreatitis after transcatheter arterial chemoembolization (TACE) for hepatocellular carcinoma (HCC) is presented. A 55-year-old man had been followed for chronic hepatitis B infection for 10 years at another institution. He presented with multiple masses in the right lobe of the liver and a metastasis in the left adrenal gland. He was referred after a percutaneous liver biopsy which revealed a moderately differentiated HCC. He was treated by TACE. At the third session of TACE, the right hepatic artery was found to be thrombosed; however, angiography also demonstrated collateral feeder vessels (arising from the pancreaticoduodenal artery) which were used for treatment. He developed necrotizing pancreatitis, possibly due to regurgitation of the chemotherapeutic agents to the pancreas. He recovered without complications with imipenem-cilastatin prophylaxis. Acute pancreatitis is a rare but severe complication of TACE. Selective catheterization of the tumor vessels is the established standard in TACE. A careful risk-benefit analysis is mandatory in patients with abnormal collateral vessels. Treatment of acute necrotizing pancreatitis (ANP) after TACE is the same as the accepted approach to ANP due to other causes.

Key words: • *pancreatitis, acute necrotizing* • *chemoembolization, therapeutic* • *hepatocellular carcinoma*

Common postprocedural complications after transcatheter arterial chemoembolization (TACE) are the postembolization syndrome (fever, abdominal pain, nausea, vomiting) and transient impairment of liver and kidney functions (1–3). Rarely, ischemic damage in extrahepatic organs (gastrointestinal tract ulceration, acute cholecystitis, acute pancreatitis, and necrosis of epigastric skin) may occur (4–6). The proposed mechanism of this complication is inadvertent embolization through collateral vessels or regurgitation of chemotherapeutic agents to the arteries of other organs (1, 7, 8). If TACE is performed via the proper hepatic artery without direct catheterization of the tumor feeder vessels (i.e., nonselective), hyperamylasemia is detected in about 40% of patients (9). Clinically evident acute pancreatitis occurs at an incidence between 1.7% to 4% (4, 9, 10). The published data on necrotizing pancreatitis is limited to case reports (9). Here, we report a case of necrotizing pancreatitis after TACE for hepatocellular carcinoma (HCC).

Case report

A 55-year-old man, who had been followed for chronic hepatitis B infection for 10 years, presented with multiple masses in the right lobe of the liver and a metastasis in the left adrenal gland. He was referred after a percutaneous liver biopsy that revealed a moderately differentiated hepatocellular carcinoma. The magnetic resonance imaging (MRI) appearance of the left adrenal gland was compatible with a malignant tumor. A definite diagnosis would require percutaneous biopsy. The patient was not considered to be a good candidate for surgery. In view of his general condition and multicentricity of HCC, we decided to perform TACE to control intrahepatic disease and reach a definite conclusion on adrenal gland in follow-up. Two sessions of TACE through the right hepatic artery were performed with minor complications of abdominal pain, nausea, and vomiting, which responded promptly to appropriate medications. At the third procedure, the right hepatic artery was found to be thrombosed; however, angiography also demonstrated feeder vessels arising from the pancreaticoduodenal artery (Figs. 1, 2). TACE was performed via these vessels. After the third session, nausea and vomiting occurred for about 24 hours, then resolved. However, he continued to have abdominal pain after meals. Ultrasonography showed a 2-cm stone in the gallbladder but no evidence of cholecystitis. Serum amylase and lipase levels were markedly elevated: serum amylase level was 608 U/L (25–110 U/L), and serum lipase level was 296 U/L (0–60 U/L), respectively. Acute pancreatitis was suspected, and computed tomography (CT) was performed. CT showed patchy necrosis in the pancreatic head and neck (Fig. 3). He was followed conservatively; oral diet was gradually started. However, jaundice and vomiting developed on the 15th day after TACE. CT showed further expansion of the pancreatic head with

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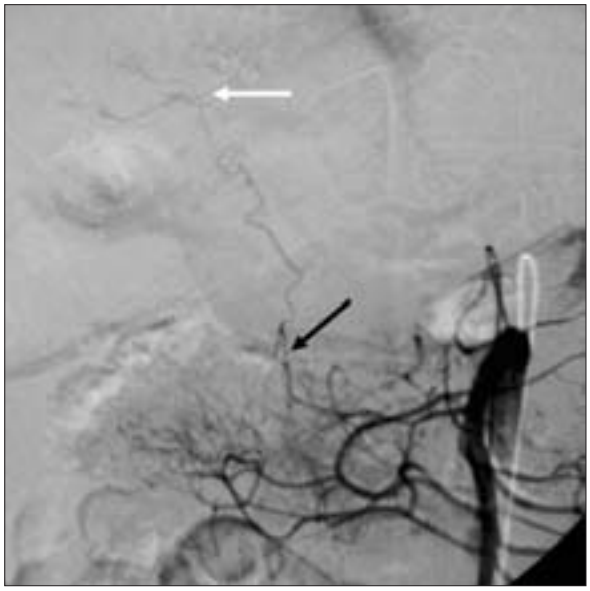

Figure 1. Digital subtraction angiography (DSA) image demonstrates thrombosed right hepatic artery and feeder vessels arising from the pancreaticoduodenal artery *(black arrow)* filling the intrahepatic neoplastic arteries *(white arrow)*.

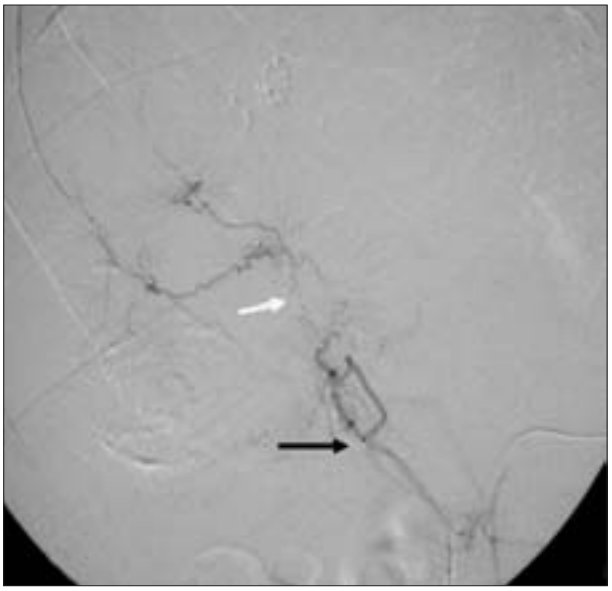

Figure 2. DSA image shows the distal tip of the microcatheter *(black arrow)* placed in the pancreaticoduodenal artery and the collaterals from this location *(white arrow)* feeding the distal branches of right hepatic artery.

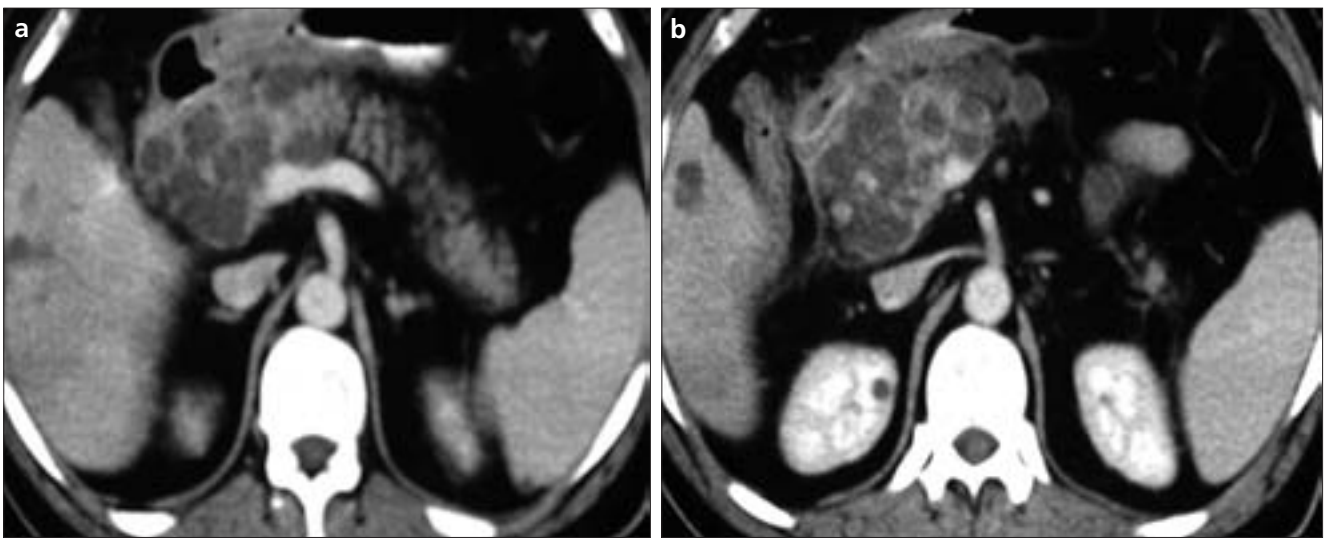

Figure 3. a, b. Contrast-enhanced abdominal CT images **(a, b)** reveal necrosis at the head and neck of the pancreas.

extensive necrosis and dilatation of the proximal biliary tree. Oral intake was stopped; total parenteral nutrition and antibiotic treatment were started (imipenem/cilastatin 500 mg four times daily). Jaundice resolved gradually. By the 30th day after the procedure, he had normal physical examination findings and normal laboratory results. Abdominal CT scan showed decreased necrosis at the pancreas (Fig. 4), and he was discharged from the hospital.

Discussion

We report a case of necrotizing pancreatitis caused by retrograde injection regurgitation of embolic and chemotherapeutic agents into the pancreatic arteries. This mechanism is similar to the "ischemic" acute pancreatitis models, in which microspheres are injected into the pancreatic arteries (11–14).

Pancreatitis of varying severity occurs as a complication of TACE. Since it may clinically mimic postembolization syndrome, serum pancreatic enzyme levels should be tested systematically for abdominal pain following chemoembolization. Acute pancreatitis should be kept in mind even when TACE has been performed safely (5). Ischemia is important in the development of acute pancreatitis (15). This complication is unusual after selective arterial embolization (16, 17). To prevent this complication, the catheter tip should be placed as close to the distal branches of hepatic artery as possible (5), although a highly selective procedure may not be possible in all patients.

The treatment of necrotizing pancreatitis induced by chemoembolization for treatment of HCC is conservative, as is necrotizing pancreatitis from other causes. Prophylactic antibiotics (e.g., imipenem) reduce the incidence of pancreatic infection in patients

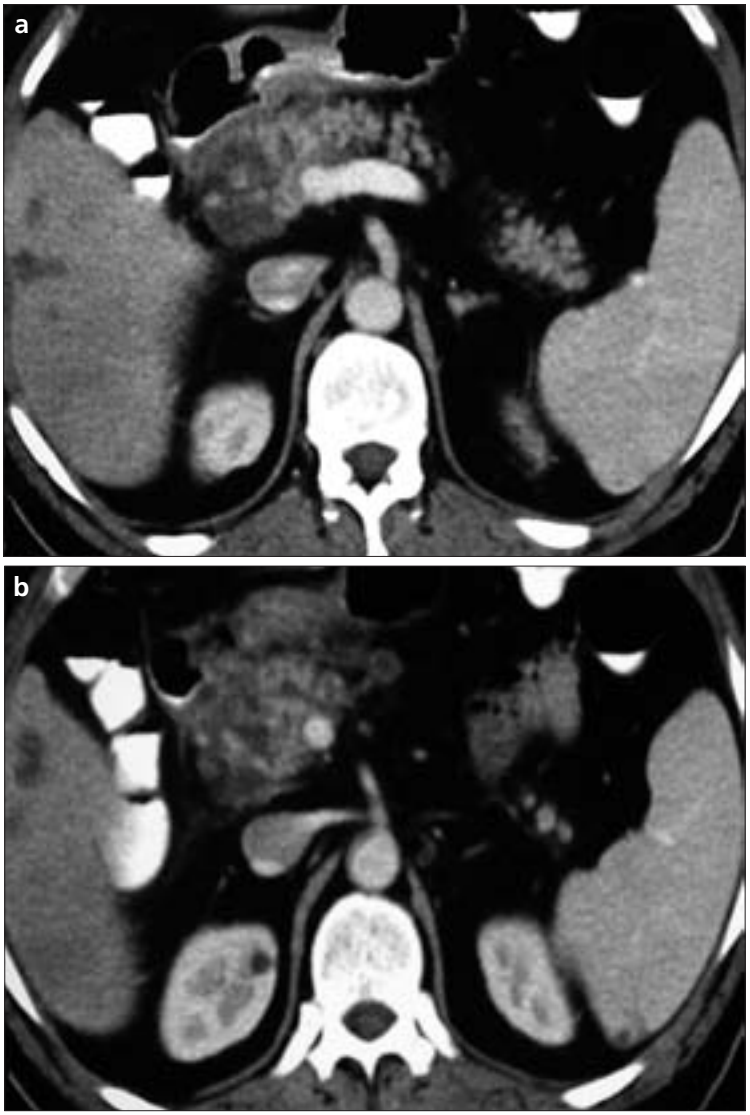

Figure 4. a, b. Contrast-enhanced CT images **(a, b)** show partially resolved necrosis at the head and neck of the pancreas.

with severe acute pancreatitis with pancreatic necrosis (18). In our case, we chose conservative treatment, and the patient was discharged from the hospital without need for surgical intervention.

In conclusion, acute necrotizing pancreatitis after TACE is not commonly seen, but the awareness of this complication and routine monitoring of serum pancreatic enzymes is important in the early detection and treatment of acute postprocedural pancreatitis.

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