A Case of Small Pancreatic Cancer with Intra-pancreatic Metastasis Diagnosed by Endoscopic Ultrasound

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Introduction: The usefulness of endoscopic ultrasound (EUS) in the diagnosis of small pancreatic cancer is widely accepted. We experienced a small, 8 mm, pancreatic cancer with intra-pancreatic metastasis of 2 mm revealed by EUS. The patient was a 71-year-old female with a small low echo tumor observed by abdominal ultrasonography. She was referred to our hospital for further investigation. She complained of mild abdominal pain. She had a past history of myoma uteri. Ultrasonography showed a 10 mm low echo mass in the body of the pancreas, but it was difficult to make a distinction between a solid mass and a cystic lesion. No tumor was shown by CT or MRI. EUS was performed, and showed a solid low echo tumor of 8 mm and a low echo mass of 2 mm in a diameter near the tumor. An ERCP study was performed, but the cytology of the normal main pancreatic duct was shown to be benign. We diagnosed the patient with pancreatic cancer, and surgery was performed. A pathological examination revealed a 10 mm invasive ductal carcinoma and intra-pancreatic metastasis.

Key words: EUS, small pancreatic cancer, intra-pancreatic metastasis, CT, MRI

INTRODUCTION

Endoscopic ultrasonography (EUS) has been widely accepted as a useful diagnostic tool for biliary-pancreatic and gastrointestinal tract diseases. EUS was developed for the early diagnosis of pancreatic carcinoma and evaluation of digestive diseases in 1980 [1, 2]. Pancreatic cancer is the 5th leading cause of cancer-related death in Japan, and more than 26,000 people die from pancreatic cancer each year. Pancreatic cancer has a very poor prognosis, with the recent five year survival rate being 5.5% [3]. This poor prognosis is caused by the difficulties in detecting small pancreatic cancer. New imaging technologies have been investigated over the past few years in order to improve the early diagnosis of pancreatic cancer.

CASE REPORT

A 71-year-old Japanese female presented with a chief complaints of mild upper abdominal pain. A small low echo pancreatic tumor was indicated by ultrasonography. She was referred to our hospital for detailed examination and treatment. She had a past history of uterectomy due to a myoma of the uterus at thirty-seven years of age, but no family history of any note.

The patient’s physical findings on admission were as follows: blood pressure 118/78 mmHg, heart rate 81 beats per minute, body temperature 36.5℃, no anemia of the palpebral conjunctivae, no jaundice of the bulbar conjunctivae, normal vesicular breath sounds, normal heart sounds, and flat abdomen with normal bowel sounds.

The laboratory findings on admission were as follows: leucocyte count 5,300/μL, hemoglobin 11.7 g/dL, hematocrit 36.2%, platelets 18.5 × 10^3/μL, total protein 7.7 g/dL, C-reactive protein (CRP) < 0.09 mg/dL, carcinoembryonic antigen (CEA) 3.3 ng/mL, carbohydrate antigen 19–9 (CA19–9) 27.6 U/mL, and normal liver function tests.

Abdominal ultrasound (US) showed a 10 × 9 mm low echo mass lesion in the body of the pancreas, but it was difficult to make a distinction between whether it was a solid mass or a cystic lesion (Fig. 1). Abdominal enhanced CT revealed no tumors, and showed a normal pancreatic duct (Fig. 2). Abdominal MRI revealed no tumors or cystic lesions (Fig. 3).

Endoscopic ultrasonography (EUS) was performed and clearly showed a solid low echo tumor that was 8 × 7 mm. We suspected that this lesion was pancreatic cancer. Near this lesion, a low echo lesion of 2 mm was pointed out by EUS. However, we could not diagnose this small lesion at that time (Fig. 4).

Endoscopic retrograde cholangiopancreatography (ERCP) was performed, but it showed a normal main pancreatic duct, and the cytology was concluded to be benign (Fig. 5). However, based on the EUS, pancreatic carcinoma was suspected, and a distal pancreactectomy was performed. The macroscopic findings of the resected specimen (Fig. 6) showed two solid masses in the pancreatic body.
The histopathological findings revealed moderately differentiated tubular adenocarcinoma, of the serous type, INFβ, ly1, v3, ne1, sized 15 × 12 × 10 mm (Fig. 7a) and an intra-pancreatic metastasis, sized 2 × 2 × 3 mm (Fig. 7b).

The patient’s postoperative course was uneventful. She underwent adjuvant therapy with gemcitabine for six months, and has had no recurrence of the cancer for a year.

**DISCUSSION**

Pancreatic cancer has a very poor prognosis, and the most recent five year survival rate was 5.5% [3]. This poor prognosis is caused primarily by the difficulty in detecting small early pancreatic cancer. Small pancreatic cancer is mostly asymptomatic and sometimes cannot be revealed by imaging. Ishikawa et al. [4] reported that in 36 collected reported cases of “minute” pancreatic cancer measuring 1 cm or less in diameter from the Japanese medical literature, 3 patients had obstructive jaundice, while the other 33 patients did not show any specific initial symptoms. However, 28 (78%) out of the 36 patients showed an elevation in serum pancreatic enzyme levels and/or glucose intolerance. Among the 35 patients who had undergone ultrasonography (US) and/or computed tomography (CT), 20 (57%) patients showed duct dilation alone, whereas only 9 patients (26%) showed a tumor mass. Gangi et al. [5] reported that dilation of the pancreatic duct without an identifiable pancreatic mass can precede the diagnosis of pancreatic cancer by several months. Tanaka et al. reported in a cohort of 39 patients who were diagnosed with pancreatic cancer, that
65% of patients had a dilated pancreatic duct ≥ 2 mm in size more than 1 year before the diagnosis of the cancer. Therefore, identification of a dilated pancreatic duct should raise suspicion of pancreatic cancer [6]. The 5-year survival rate after a resection of small (≤ 20 mm) pancreatic cancers, as reported in case series and collective reviews, ranges from 30% to 60%. However, the 5-year survival rate in patients after a resection of minute (≤ 10 mm) pancreatic cancers exceeds 75% [7]. Therefore, it is considered that early detection of pancreatic cancer would improve the generally poor prognosis of pancreatic cancer.

In our case, the patient had mild abdominal pain, but her serum amylase and tumor markers were not increased, and there was no dilation or stenosis of the main pancreatic duct shown by imaging, and the tumor was not revealed by enhanced CT or MRI. EUS was able to detect the 8 mm tumor and 2 mm mass lesion that we could not diagnose as metastasis until performing a pathological examination. But it was difficult to distinguish whether the metastatic lesion or second primary lesion. The reason of our diagnosis as metastatic lesion was that the primary pancreatic lesion was revealed moderately differentiated tubular adenocarcinoma, of the scirrhous type, INFβ, ly1, v3, nel, and close to both lesion.

For the early detection of pancreatic cancer, imaging technology plays an important role, and it has been steadily improving. EUS was developed in 1980 for the early diagnosis of pancreatic carcinoma and the evaluation of digestive diseases [1, 2]. In the EUS imaging, small carcinoma of the pancreas can be delineated as a diffuse hypoechoic mass with a round shape or as an irregular hypoechoic mass with a nodular shape, both of which are clearly distinguishable from the pancreatic parenchyma [8].

Since then, several articles in the 1980’s and 1990’s reported that EUS was superior to CT in the detection of pancreatic cancer [9–12]. Two studies have compared the detection sensitivities of EUS and CT systems with multiphase helical scanners and rapid contrast infusion. Agarwal et al. [13] reported a comparison of the diagnostic accuracy of spiral, multi detector-row CT, EUS and EUS-FNA in the detection of pancreatic cancer, in a retrospective study of 81 patients. The diagnostic accuracy for CT, EUS and EUS-FNA was 74%, 94% and 88%, respectively. Dewitt et al. [14] also reported similar results in 80 patients eventually diagnosed with pancreatic cancer, showing that the sensitivity of EUS for detecting a pancreatic mass (98%) was greater than that of multi detector-row CT (86%). The detection sensitivity of EUS and CT was 89% and

Fig. 5 ERCP was performed, but the MPD was without obstruction or stenosis.

Fig. 6 The macroscopic findings of the resected specimen. Two solid masses were found in the pancreatic body (circles).
53%, respectively, for masses under 25 mm in diameter. These results suggest that EUS is also superior to multi detector-row CT.

EUS is a useful examination for detecting small pancreatic cancer [15]. In our case, it revealed a 2 mm pancreatic cancer, but it is very difficult to make a diagnosis of pancreatic cancer for such a small lesion. It is necessary that we have to make an effort to detect these lesions and diagnose them, preferably without requiring invasive surgery. It is expected that the diagnosis and survival of pancreatic cancer will improve as the imaging technology continues to improve.

REFERENCES


Fig. 7 The histopathological findings. a: The tumor was moderately differentiated tubular adenocarcinoma, of the scirrhou type, INFβ, ly1, v3, nel, sized 15 x 12 x 10 mm. b: The very small mass was an intra-pancreatic metastasis, sized 2 x 2 x 3 mm.