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A case of an ectopic Pacinian corpuscle in the pancreas mimicking pancreatic metastasis of renal cell carcinoma

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Pacinian corpuscles in the pancreas are extremely rare, with only a few pathological case reports to date. Previous reports on this condition did not describe imaging findings; to our knowledge, this is the first report on the computed tomography (CT) findings of Pacinian corpuscles in the pancreas.

A pancreatic tumor was detected in a 73-y-old man on ultrasonography and CT during the follow-up after surgery for renal cell carcinoma (clear cell type). He was referred to our hospital for surgical treatment with a diagnosis of pancreatic metastasis of renal cell carcinoma. His medical history was unremarkable other than left renal cell carcinoma that was resected 17 y ago. Multiphase contrast-enhanced CT revealed an approximately 12-mm nodule in the pancreatic tail (Fig. 1A). The nodule showed mild contrast enhancement during the arterial phase and hyperdense enhancement during the pancreatic phase but was indistinct during the portal venous and delayed phases as it was almost isodense compared with the surrounding normal pancreatic parenchyma. In addition to the aforementioned nodule, three nodules in the pancreatic tail and one in the pancreatic head were observed on the thin (0.5 mm) slice images in the pancreatic phase of multiphase contrast-enhanced CT (Fig. 1B-E). These small nodules were approximately 3 to 5 mm and showed hyperdense enhancement during the pancreatic phase. However, they were isodense compared with the surrounding normal pancreatic parenchyma during the arterial, portal venous, and delayed phases. Although not detected by CT at the referring hospital (slice thickness of 5 mm) and endoscopic ultrasonography (EUS), these were also considered pancreatic metastasis of renal cell carcinoma. Distal pancreatectomy and resection of the nodule in the pancreatic head were performed. This nodule (Fig. 2A, B) was diagnosed using intraoperative findings. Postoperative CT (Fig. 2C) also confirmed that it had been resected. Histologically, the approximately 12-mm nodule in the pancreatic tail was pancreatic metastasis of renal cell carcinoma as diagnosed preoperatively; other small nodules in the pancreatic tail also had the

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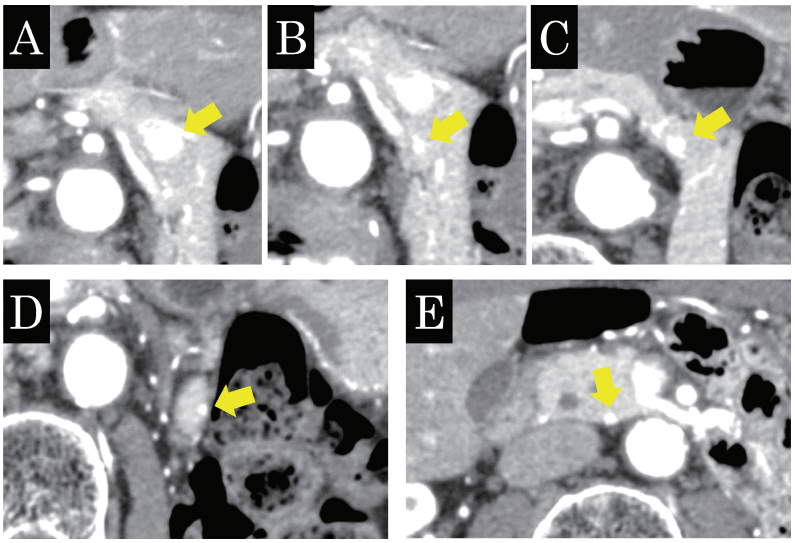

Fig. 1 Pancreatic phase of multiphase contrast-enhanced computed tomography
Fig. 1A–D: Pancreatic tail nodule.
Fig. 1E: Pancreatic head nodule.
A nodule approximately 12 mm in size can be observed in the pancreatic tail (arrow in Fig. 1A). There was an area with hyperdense enhancement during the pancreatic phase compared with the surrounding normal pancreatic parenchyma. In addition to the nodule seen in Fig. 1A, three small nodules can be observed in the pancreatic tail (arrows in Fig. 1B–D) and one in the pancreatic head (arrow in Fig. 1E), showing hyperdense enhancement.

same diagnosis. On the other hand, the nodule in the pancreatic head showed no malignancy (Fig. 2D), and an onion-like structure with thin layers arranged in concentric circles was observed (Fig. 2E). Immunohistochemical staining with S-100 was positive in the central lesion (Fig. 2F). Based on these pathological findings, this was diagnosed as a Pacinian corpuscle in the pancreas.

Pacinian corpuscles are pressure receptors found mainly in deep layers of the skin but are also widely distributed in the body.[1] They range from 1 to 5 mm in size[2]; large ones can be seen with the naked eye.[3] Although rare in the abdominal organs, its presence has been confirmed in the pancreas,[1,4] mesentery,[5] and prostate,[6] and is considered ectopic. Histologically, they appear as onion-like structures with thin layers arranged in concentric circles. The morphology also varies, such as oval, spherical, and irregularly coiled.[3] In immunohistochemical examination, the central region, called the inner bulb, is positive for nervous system markers such as S-100, while the other region, called the outer bulb, is negative.[7] Feeding arteries enter the structure together with axons and are distributed in the inner and outer bulbs.[8] The presence of Pacinian corpuscles in the pancreas was first demonstrated using immunohistochemistry in 2001, and three cases have been reported so far.[1,4,9] Although there is no consensus regarding the role of Pacinian corpuscles in the pancreas, research results in mammals suggest that they may regulate blood pressure, lymphatic flow, and the neuronal regulation of exocrine and endocrine secretion.[1] If the pathological image of this case is interpreted straightforwardly, it would mean that multiple Pacinian corpuscles are gathered together, but since our case was not viewed three-dimensionally, it is not possible to conclude whether there were multiple Pacinian corpuscles or whether there was only one Pacinian corpuscle bent into a coil shape, hence appearing to be multiple corpuscles in one cross section. In this case, the size of the Pacinian corpuscle was relatively large at about 4 mm, and Pacinian corpuscle hyperplasia[10] was also considered. However, since the pathological definition

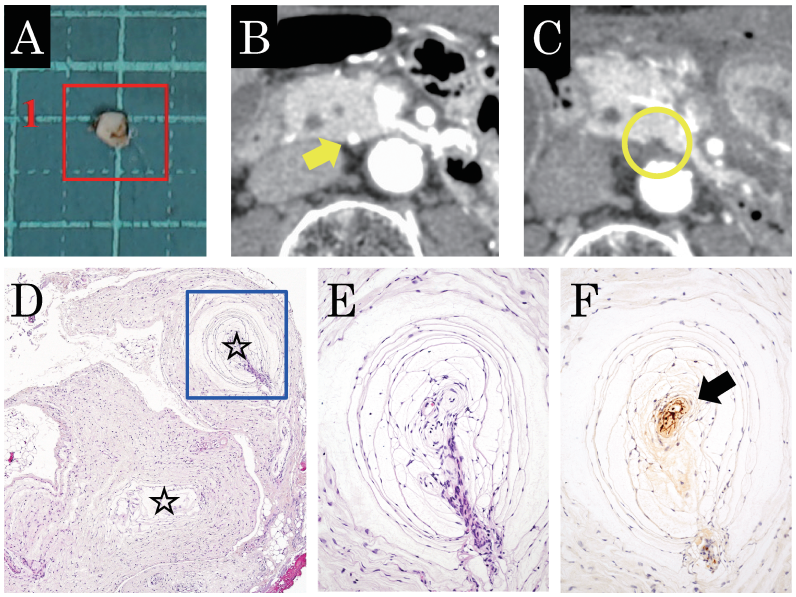

Fig. 2 Pancreatic head nodule
Fig. 2A: Resected specimen after formaldehyde fixation.
Fig. 2B: Preoperative CT.
Fig. 2C: Postoperative CT.
Fig. 2D: Low power image of H&E stain.
Fig. 2E: High power image of H&E stain (square part in Fig. 2D).
Fig. 2F: High power image of S-100 stain.
The nodule in the pancreatic head (Fig. 2A) was visible to the naked eye and could be removed. The nodule pointed out on preoperative CT (arrow in Fig. 2B) was confirmed to have been resected on postoperative CT (circle in Fig. 2C). No malignant cells are noted, and a structure consisting of concentrically arranged thin layers was observed (stars in Fig. 2D). In the square part of Fig. 2D, a structure resembling the cross section of an onion can be seen (Fig. 2E), and immunohistochemical staining with S-100 shows positivity in the central part (arrow in Fig. 2F).
CT: computed tomography
H&E: hematoxylin and eosin

of Pacinian corpuscle hyperplasia is unclear and there are no clinical symptoms, our case was difficult to differentiate. There have been no reports on imaging findings regarding Pacinian corpuscles in the pancreas. However, one report described routine plain and contrast-enhanced magnetic resonance imaging (MRI) findings of Pacinian corpuscles in the palms, wherein there was no contrast enhancement, and the involvement of the blood-nerve barrier was considered the cause for the condition.[11] In our case, the inner bulb that was positive for S-100, which is a nervous system marker in immunohistochemical examination, was only a part of the nodule. It is thought that the outer bulb, which comprises the majority of the nodule, showed contrast enhancement. However, arteries were not particularly noticeable in the pathological examination, and it was difficult to identify the reason for the hyperdense enhancement of the nodule during the pancreatic phase of the multiphase contrast-enhanced CT.

CONFLICTS OF INTEREST

None.

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