A Case of Pancreatic Carcinoma with Bilateral Hilar ^{18}F-FDG and ^{67}Ga Hyperaccumulation

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A pancreatic mass was found in a 47-year-old female by abdominal CT. ^{18}F-fluorodeoxyglucose positron emission tomography (FDG PET) showed abnormal uptake in the pancreatic mass as well as in the bilateral hilar region of the chest. Chest CT revealed the presence of bilateral hilar lymphadenopathy (BHL). These findings suggested not only pancreatic carcinoma but also autoimmune pancreatitis (AIP). A pancreatoduodenectomy was performed and the pancreatic lesion was diagnosed as pancreatic carcinoma. Non-caseous granulomas were observed in the peri-pancreatic tissue and regional lymph nodes of the pancreas, and they were thought to be sarcoid-like reactions. Hilar ^{18}F-FDG uptake had vanished on the follow-up PET study ; therefore the result suggested that BHL was also a sarcoid-like reaction. Lymphadenopathy due to sarcoid-like reaction associated with malignancy should be considered in the differentiation between a pancreatic carcinoma and AIP. *Shinshu Med J 66 : 151—155, 2018*

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Key words : pancreatic carcinoma, autoimmune pancreatitis (AIP), sarcoid-like reaction, bilateral hilar lymphadenopathy (BHL)

Ⅰ Introduction

It is often difficult to differentiate pancreatic carcinoma from autoimmune pancreatitis (AIP) in computed tomography (CT) as well as in MR imaging (MRI). ^{67}Ga scintigraphy and FDG PET are useful to distinguish between the two conditions. ^{67}Ga and ^{18}F-FDG uptake in the bilateral hilar lymph nodes are observed more frequently in AIP than in pancreatic carcinoma[1)2)]. If a pancreatic mass with bilateral hilar ^{67}Ga or ^{18}F-FDG uptake is shown, the possibility of AIP must be considered.

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Ⅱ Case Report

A 47-year-old female was hospitalized for an examination of upper abdominal pain. CT and MRI showed a mass about 3 cm in diameter in the pancreatic head. The pancreatic body and tail were swollen and the main pancreatic duct was slightly dilated **(Fig. 1)**. These findings were suggestive of either pancreatic carcinoma or AIP. FDG PET showed intense uptake in the pancreatic lesion and bilateral hilar regions **(Fig. 2)**, and chest CT showed bilateral hilar lymphadenopathy (BHL) **(Fig. 3)**. These image patterns were more likely to reflect AIP than pancreatic carcinoma. However, her serum IgG4 level was normal. ^{67}Ga scintigraphy showed hyperaccumulation in the bilateral hilar region, but no accumulation in the pancreatic lesion **(Fig. 4)**. The absence of ^{67}Ga accumulation in the pancreatic mass strongly indicated a pancreatic carcinoma. Another

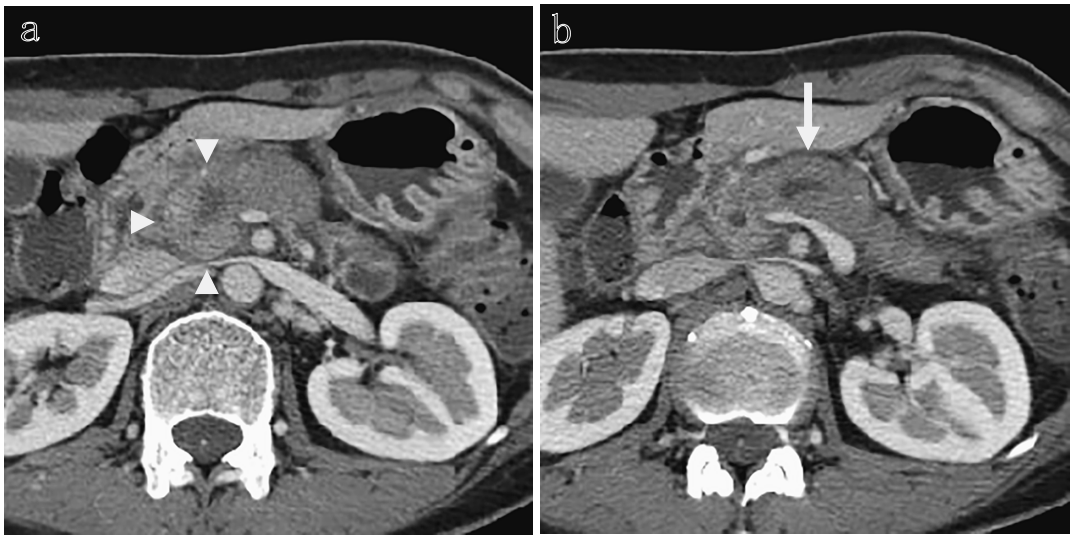

Fig. 1　Abdominal CT
(a) Contrast-enhanced abdominal CT shows a mass lesion at pancreatic head (arrowheads).
(b) The pancreatic body and tail are slightly swollen and main pancreatic duct is dilated (arrow).

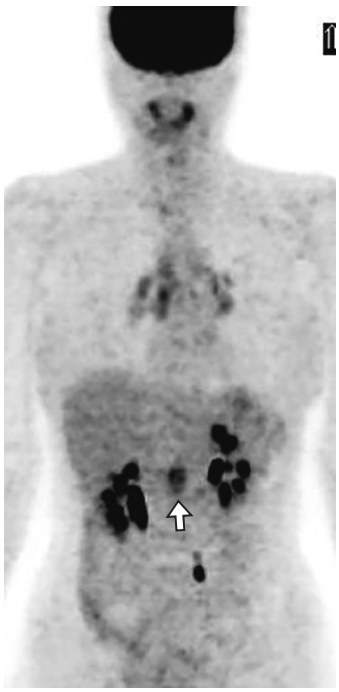

Fig. 2　FDG PET
A FDG PET image shows hyperaccumulation at the pancreatic lesion (arrow) and bilateral hilar region.

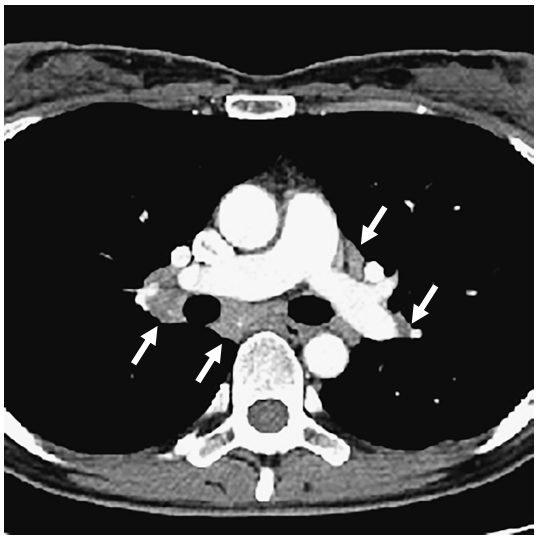

Fig. 3　Chest CT
Contrast-enhanced chest CT shows bilateral hilar lymphadenopathy (BHL).

possibility was a pancreatic carcinoma complicated with sarcoidosis. However, there was no clinical evidence of systemic sarcoidosis and her serum ACE level was normal. The cause of BHL was not diagnosed. Because pancreatic carcinoma could not be ruled out, a pancreatoduodenectomy was performed. Pathological examination showed a carcinoma in the pancreatic mass and non-caseous granulomas in the pancreatic tissue near the tumor and in the regional lymph nodes **(Fig. 5)**. These granulomas were thought to be sarcoid-like reactions. Eight months after the operation, FDG PET showed no accumulation in the hilar region **(Fig. 6)**. Therefore, the BHL was also thought to have been a sarcoid-like reaction.

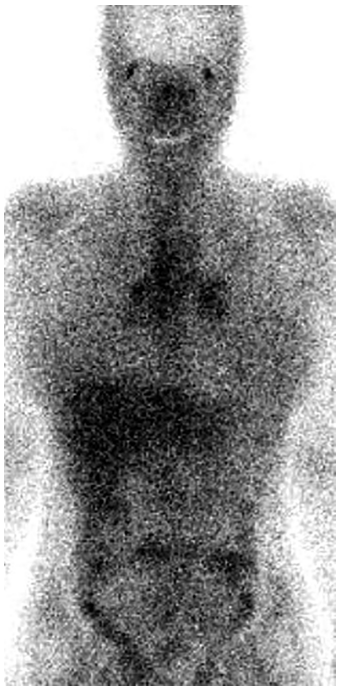

Fig. 4 ^{67}Ga scintigraphy
A ^{67}Ga scintigram shows hyperaccumulation at the bilateral hilar region, and unclear accumulation at the pancreatic region.

Ⅲ Discussion

Patients with malignant tumors rarely have non-caseous granulomas, which are called sarcoid-like reactions, in the tissue near a primary tumor, regional lymph node and hilar lymph node. A case of pancreatic carcinoma with sarcoid-like reactions in the pancreatic tissue near the tumor and regional lymph nodes was reported[3].

Up to now only a few cases of BHL with a sarcoid-like reaction in an extra-thoracic malignancy, such as a testicular tumor and hemangiopericytoma of the upper leg, have been reported[4)5)]. The etiology of BHL with sarcoid-like reaction has remained unclear. Sarcoid-like reactions were more commonly observed in lymph nodes without metastases than in those with metastases[6]. Therefore, sarcoid-like reactions at distant sites might be regarded as a reaction caused by macrophages activated by T-lymphocytes against metabolic or disintegration products from the tumor[6)7)]. No cases of BHL with a sarcoid-like

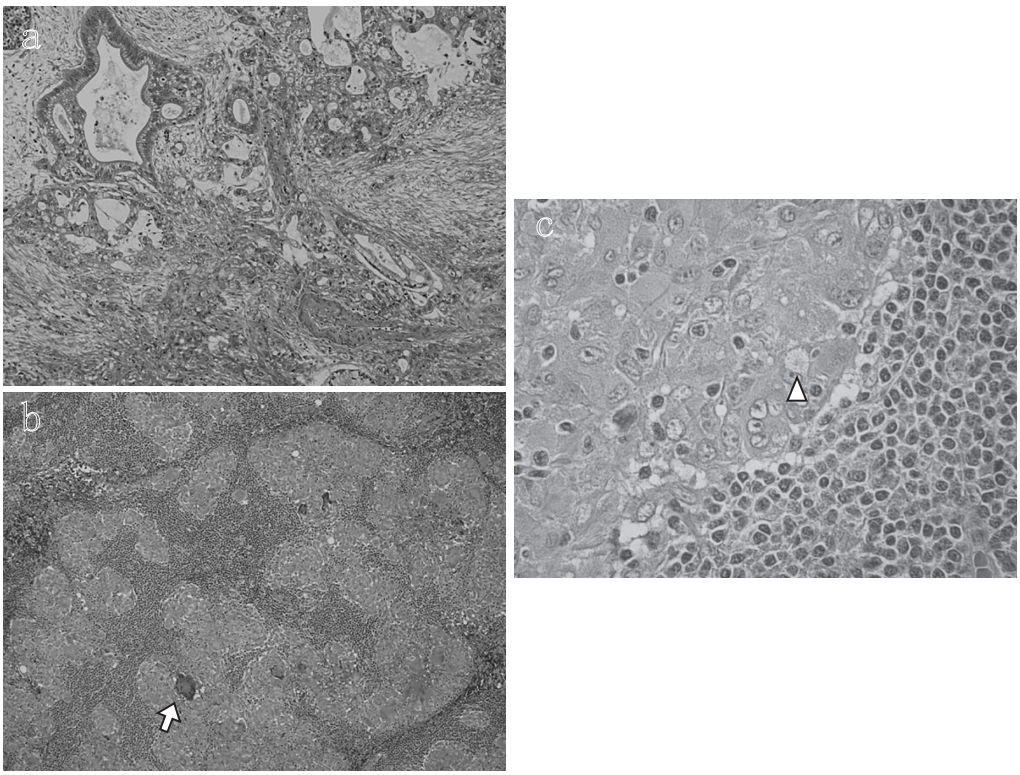

Fig. 5 Histopathological images
(a) HE staining. Poorly-differentiated adenocarcinoma is observed in the pancreatic mass. (b)(c) HE staining. Non-caseous granulomas are observed in the pancreatic regional lymph node. Langhans giant cell (arrow) and giant cell with asteroid body (arrowhead) are shown in the granuloma.

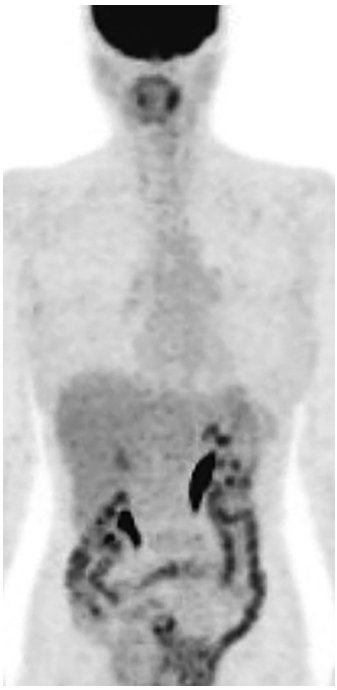

Fig. 6 FDG PET (post operation)
A FDG PET image obtained 8 months after operation shows decreased accumulation at the bilateral hilar region.

reaction in a pancreatic carcinoma have been reported previously. However, the previous reports suggest the possibility that sarcoid-like reactions at hilar regions may occur in patients with pancreatic carcinoma.

In our case, there was no pathological proof that the BHL was a sarcoid-like reaction. The most important differential diagnosis was metastasis. However, ^{67}Ga scintigraphy showed no accumulation at the pancreatic lesion and hyperaccumulation at the hilar region. These findings suggested the hilar lesion was not of the same pathology as the pancreatic lesion. In this case, non-caseous granulomas were observed in the pancreatic tissue near the tumor and in the regional lymph nodes. Therefore, this BHL was suspected to be a sarcoid-like reaction associated with pancreatic carcinoma.

Bilateral hilar lymph node lesions are seen frequently in patients with AIP and sarcoidosis. Michel et al.[8] reported a case with both AIP and sarcoidosis. This report suggests a possible association between them. ^{67}Ga and ^{18}F-FDG hyperaccumulation in the bilateral hilar regions are one of the characteristic findings of AIP and sarcoidosis. Ozaki et al. reported the clinical utility of FDG PET for differentiation between AIP from pancreatic carcinoma[2]. ^{18}F-FDG uptake is significantly more frequent in AIP than in pancreatic carcinoma and ^{18}F-FDG uptake to extrapancreatic organs may assist in differentiating AIP from pancreatic carcinoma. The bilateral hilar lymph nodes are one of the extrapancreatic organs where ^{18}F-FDG uptake is frequently seen in AIP. Therefore, in our case, the possibility of AIP could not be excluded by the FDG PET findings.

A sarcoid-like reaction may be one of the pitfall conditions in the differentiation between pancreatic carcinoma and AIP by FGD PET and ^{67}Ga scintigraphy.

In conclusion, we presented a case of pancreatic carcinoma with BHL that was suspected to be a sarcoid-like reaction. FDG PET and ^{67}Ga scintigraphy showed hyperaccumulation in the bilateral hilar region. These findings made it difficult to distinguish pancreatic carcinoma from AIP. It is important to consider the possibility of sarcoid-like reactions associated with malignancy, especially in the differentiation of pancreatic mass lesions.

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