

# Peripancreatic Tuberculous Lymphadenitis Diagnosed via Endoscopic Ultrasound-guided Fine-needle Aspiration and Polymerase Chain Reaction

Jun Arai<sup>1</sup>, Katsuya Kitamura<sup>1</sup>, Akira Yamamiya<sup>1</sup>, Yu Ishii<sup>1</sup>, Tomohiro Nomoto<sup>1</sup>,  
Tadashi Honma<sup>1</sup>, Hiroo Ishida<sup>2</sup>, Eisuke Shiozawa<sup>3</sup>, Masafumi Takimoto<sup>3</sup> and Hitoshi Yoshida<sup>1</sup>

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## Abstract

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We performed endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) on a patient presenting with an asymptomatic peripancreatic mass-like lesion. The aspiration cytologic finding was class II. On positron emission tomography-computed tomography (PET-CT), there were hot spots in the left supra-clavicular lymph node and the peripancreatic lesion. A whole biopsy of the left supra-clavicular lymph node revealed tuberculous lymphadenitis. Polymerase chain reaction (PCR) using tissue obtained via EUS-FNA showed that the peripancreatic mass-like lesion was also positive for tuberculosis. We made a diagnosis of peripancreatic tuberculous lymphadenitis. In patients with enlarged lymph nodes, including those in the abdominal area, tuberculous lymphadenitis is a potential diagnosis.

**Key words:** endoscopic ultrasound-guided fine needle aspiration (EUS-FNA), *Mycobacterium tuberculosis*, peripancreatic tuberculous lymphadenitis, polymerase chain reaction (PCR), positron emission tomography (PET)-CT

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## Introduction

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Peripancreatic tuberculous lymphadenitis or pancreatic tuberculosis (TB) is uncommon and is reported to accompany pulmonary TB in <5% of cases. In a 2011 survey of extrapulmonary TB across Japan, among 7,561 cases, 3,929 (52%) and 1,199 (16%) involved tuberculous pleuritis and extrapulmonary lymphadenitis, respectively (1). In a Taiwanese analysis (2000-2010), the average prevalence of diabetes mellitus (DM) among patients with TB was 27.9%, which was over 4 times the prevalence (4.31-6.38%) in the general population (2, 3).

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## Case Report

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In 2014, a 76-year-old man with an approximately 26-

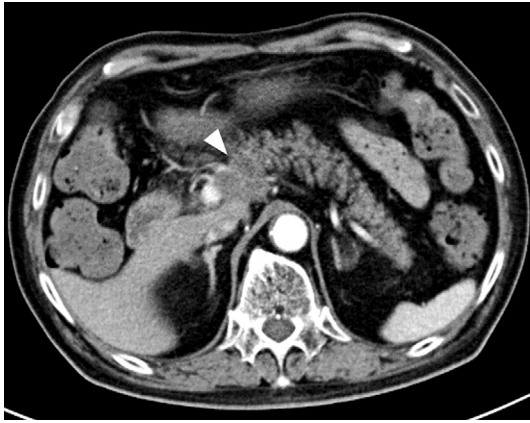
year history of DM collapsed and was admitted to a community hospital with dehydration and a fever. His HbA1c (National Glycohemoglobin Standardization Program) level was 6.4%. The patient's mother, with whom he had lived for a long period during his youth, had once been successfully treated for pulmonary TB. Computed tomography (CT) was performed to investigate the cause of the fever and inadvertently revealed a 25-mm mass-like lesion in the pancreas head (Fig. 1). The patient was referred to our hospital for further examination. Contrast-enhanced CT revealed the lesion to be hypovascular. The lesion showed a high-intensity signal on diffusion magnetic resonance imaging (MRI) (Fig. 2). The serum levels of carcinoembryonic antigen (CEA), CA19-9, DUPAN-2, and SPAN-1 were all normal. Enlarged peripancreatic lymph nodes are often seen secondary to chronic liver diseases; however, the patient was negative for hepatitis B surface antigen, anti-hepatitis C vi-

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<sup>1</sup>Division of Gastroenterology, Department of Medicine, Showa University School of Medicine, Japan, <sup>2</sup>Division of Respiratory Medicine and Allergology, Department of Medicine, Showa University School of Medicine, Japan and <sup>3</sup>Division of Pathology, Department of Medicine, Showa University School of Medicine, Japan

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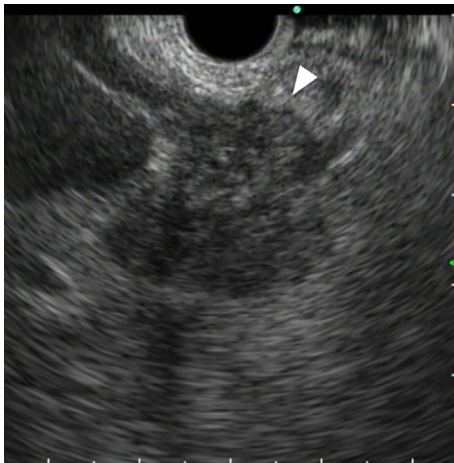
Correspondence to Dr. Jun Arai, araiguma10n20\_@hotmail.co.jp



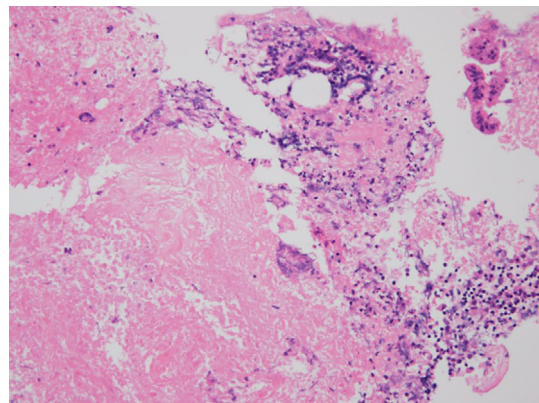
**Figure 1.** Contrast-enhanced computed tomography image of the abdomen showing a 25-mm low-density mass-like lesion in the pancreas head (*arrow*).



**Figure 2.** Diffusion magnetic resonance image of the abdomen showing a high-intensity signal at the pancreas head (*arrow*).



**Figure 3.** Endoscopic ultrasound image showing a hypoechoic and heterogeneous peripancreatic lesion (*arrow*).



**Figure 4.** Photomicrograph of a histological section of a specimen obtained via ultrasound-guided fine-needle aspiration involving a peripancreatic lesion showing necrotic tissue without malignant cells (200× with Hematoxylin and Eosin staining).

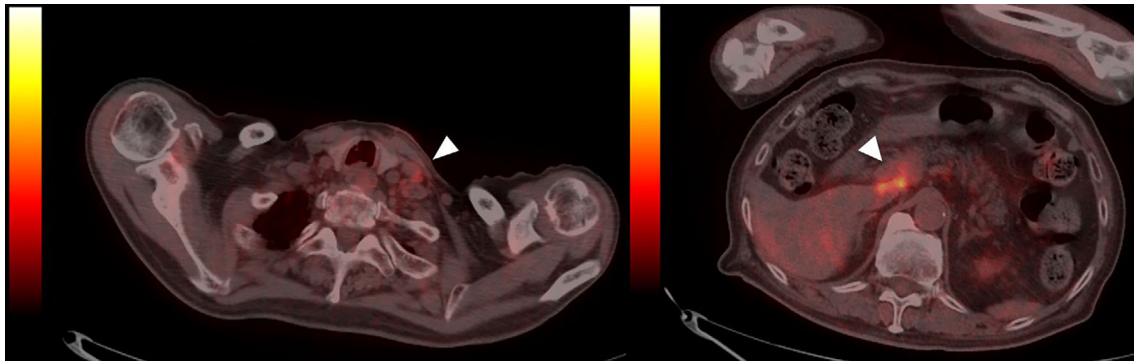
rus antibody, and anti-HIV antibody. Gastrointestinal endoscopy and colonoscopy showed no evidence of advanced malignant tumors causing malignant lymphadenopathy. Using a 22-gauge fine-needle aspiration (FNA) needle (SonoTip<sup>®</sup> Pro Control; Medi-Globe GmbH, Achenmühle, Germany), we performed endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) of the peripancreatic hypoechoic and heterogeneous lesion (Fig. 3). There were no abnormal signs, such as direct invasion or compression of the portal vein or common bile duct. Aspiration biopsy cytology via EUS-FNA was class II; a histological analysis revealed necrotic tissues without malignant cells or Langhans giant cells (Fig. 4).

On positron emission tomography (PET)-CT, there were the lesions with abnormal uptake of fluorodeoxy glucose (FDG)-PET in the left supra-clavicular lymph node and the peripancreatic lesion (Fig. 5). A whole biopsy of the left supra-clavicular lymph node was performed by an otolaryngologist, and a tuberculous granuloma with caseous necrosis was found (Fig. 6). Polymerase chain reaction (PCR)

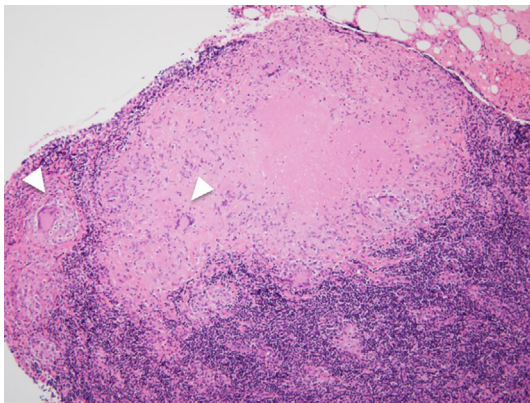
showed the granulomatous tissue to be positive for TB. PCR of the peripancreatic tissue obtained via EUS-FNA was also positive for TB (Fig. 7). Based on these findings, we made a diagnosis of tuberculous lymphadenitis, which was confirmed by a positive QuantiFERON test result. A follow-up examination after a 6-month course of treatment for extrapulmonary TB showed that the peripancreatic lymph node had decreased to approximately 10 mm in size.

## Discussion

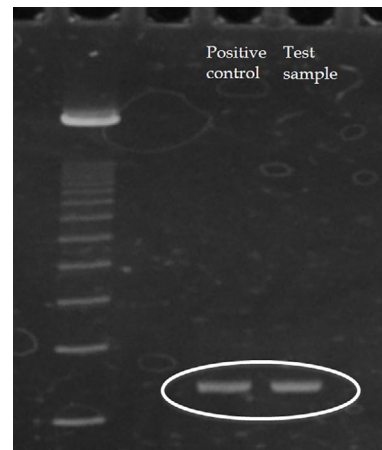
EUS-FNA has been successfully used to correctly diagnose peripancreatic tuberculous lymphadenitis (4, 5). PET-CT has been used to detect lesions with abnormal uptake of FDG-PET in pulmonary TB (6). In this case, CT itself did not reveal any abnormalities in the supra-clavicular lymph nodes; however, PET-CT detected the lesions with abnormal uptake of FDG-PET in the supra-clavicular lymph nodes. Davis et al. reported that PET-CT was able to be used to monitor the effectiveness of chemotherapy against TB in animal models (7). Although a correct diagnosis of tubercu-



**Figure 5.** Positron emission tomography-computed tomography image showing abnormal uptake of FDG-PET in the left supra-clavicular lymph node and the peripancreatic lesion (arrows).



**Figure 6.** A photomicrograph of a histological section of a biopsy specimen obtained from the left supra-clavicular lymph node showing an epithelioid cell granuloma with caseous necrosis and Langhans giant cells (arrows) (100× with Hematoxylin and Eosin staining).



**Figure 7.** A positive response to the polymerase chain reaction indicating tuberculosis in the peripancreatic tissue.

lous lymphadenitis can be missed using *Ziehl-Neelsen* staining of tissue samples, PCR positivity provides a more accurate diagnosis (47-96%) (8) than acid-fast bacillus smear (0-62%) and acid-fast bacillus culture (19-81%). Pathological findings of caseous necrosis are obtained in roughly 90% of cases of tuberculous lymphadenitis, as well as in cases of lymphadenitis with non-tuberculous anti-acid bacteria and fungi. Nested PCR protocols have been used in our institute for the accurate diagnosis of tuberculous complex-specific insertion sequence IS6110 in formalin-fixed paraffin-embedded (FFPE) tissue sections (9). In the present case, *Ziehl-Neelsen* staining of the peripancreatic sample was negative, but the sample was positive for the tuberculous complex-specific insertion sequence IS6110 in FFPE tissue sections. Therefore, the most important feature in this case is that it highlights the need to perform PCR to reach the correct diagnosis, even when the histology is negative for samples with suspected tuberculous lymphadenitis. Generally speaking, abdominal tuberculous lymphadenitis can occur after ingestion of sputum containing *Mycobacterium tuberculosis* and infectious food containing *Mycobacterium bovis* (10). A Taiwanese investigation showed that the aver-

age prevalence of DM among patients with TB was 27.9%, which was over 4 times the prevalence rate in the general population (2, 3). Patients who have had extended exposure to patients with TB and those with DM are at higher risk of TB infection than those without exposure or DM. In patients with enlarged lymph nodes, including those in the abdominal area, tuberculous lymphadenitis is a potential diagnosis that should be considered.

**The authors state that they have no Conflict of Interest (COI).**

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