

Puzzling Clinical Appearance of a Pancreatic Tuberculosis Case

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ABSTRACT

Tuberculosis (TB) is generally known as an infectious disease caused by Mycobacterium tuberculosis. Not only the lungs, TB can also infect various other organs. Pancreatic TB is a rare manifestation of extrapulmonary TB infection accounting for only 0-4.7% of the total TB cases worldwide. It's still intrincating for clinicians to diagnose pancreatic TB due to the extremely rare prevalence and non-specific clinical signs and symptoms. Herein we report a 71-year-old male patient complaining of jaundice and weight loss. Clinical condition, laboratory and tumor markers, also MRI imaging showed no abnormality. We made the diagnosis through histopathological examination of tissues extracted from bypass biliodigestive procedure, showing granulomas, along with confirmed bacteriological analysis with Ziehl Nelsen staining. This patient received Fixed Drug Combination (FDC) of anti-tuberculosis therapy for 6 months. The patient gained weight, had an improvement of serum bilirubin level and had no remaining lesion in abdominal CT scan.

Keywords: Pancreatic tuberculosis, granuloma, Ziehl Nelsen, Anti-tuberculosis drug.

INTRODUCTION

Tuberculosis (TB) infection may locate in the lungs and extrapulmonary organs.¹ Pancreatic TB is seldom found as a manifestation of extrapulmonary TB infection reaching only 0-4.7% of the global TB cases.² The spread of TB infection through the lympho-hematogenic system from primary and post-primary infection reaching the pancreas is assumed to bring about this manifestation³. With regard to the extremely rare case and unspecified clinical features, the clinicians are expected to discuss the comprehensive diagnostic and treatment approach. The gold standard for diagnosis of pancreatic TB is histopathological and

microbiological examination. Besides, radiology examination and surgery may support the diagnosis as well⁴.

The prime management of pancreatic TB is antituberculosis for 6-12 months. The evaluation of treatment includes monitoring clinical condition lesions on CT scan or MRI. The operative management consists of stent placement and biliary system bypass, indicated for patients with obstructive jaundice or any other conditions causing deterioration^{5,6}.

CASE ILLUSTRATION

A 71-year-old male patient came to the hospital, with suspected pancreatic head

malignancy. He complained of yellowish skin for three months, weight loss, and epigastric pain. The clinicians suspected pancreatic head cancer as the clinical, ultrasound, and CT examination showed concordant results. The patient had a cholecystostomy drain installed at the previous hospital due to severe obstructive jaundice.

The patient was alert, with a blood pressure of 120/70 mmHg, heart rate of 98 bpm, respiratory rate of 20 breaths per minute, body temperature of 37°C (axillary), and visual analogue score (VAS) of 5. Abdominal examination revealed epigastric and umbilical tenderness, normal bowel sounds, and no detected mass. Cholecystostomy drain was observed on right hypochondrium producing 50ccs green-colored sludge.

The laboratory results showed total bilirubin of 12.78 mg/dl, direct bilirubin of 9.05 mg/dl, decreased serum albumin, ESR of 55 mm/hour, amylase of 152 mg/dl, lipase of 523 mg/dl, Ca 19-9 of 9.67 U/mL, CEA of 8.00 ng/mL, AFP of 9 ng/mL, ALP of 1307 U/L (See Table 1.) Abdominal ultrasound examination revealed a widened biliary system, cystic duct, and hydrops of the gallbladder, while the pancreas, kidney, urinary bladder, and prostate were normal. No intra-abdominal fluid was seen, whereas, on abdominal CT scan with contrast, a hypodense lesion (77 HU) with no margins was detected. (See Figure 1) In the descending duodenum, the impression of the periampullary-ampullary area was firm showing contrast enhancement,

hydrops gallbladder, dilated Intrahepatic Bile Euct (IHBD), Extrahepatic Bile Duct (EHBD), and cystic duct. Abdominal MRI with contrast exhibited a mass in the head of the pancreas with a size of 3.7 x 2.4 cm showing contrast enhancement, hypointense on TIW1, and hyperintense on T2W1 dilating pancreatic duct, cystic duct, common hepatic duct, and right and left IHBD. On the left side, a drain and a sludge gall bladder were visible.

We diagnosed the patient with pancreatic TB referring to the histopathological assessment of the tissue after biliodigestive double bypass. Histopathological results showed granulomas, whilst Ziehl nelsen staining showed acid-fast bacteria. (**Figure 2**) The patient received fixed-dose combination antituberculosis therapy for 6 months. After the intensive phase, we observed clinical improvement as the patient gained weight and became less jaundice. The evaluation on abdominal CT scan with contrast at the third month of treatment did not reveal a mass in the head of the pancreas, but there was still a widening of the biliary system.

DISCUSSION

Tuberculosis (TB) infection can appear in the lungs and extra-pulmonary organs. Extrapulmonary TB can occur in almost any organ system. The most frequently infected organs are lymphoid tissue, pleura, genitourinary, and bone^{1,7}. Pancreatic tuberculosis is an atypical

Table 1. Laboratory result on admission

Hb	11.6 g/Dl [†]	Albumin	2,97 g/dL [†]	Total bilirubin (before cholesistostomy)	19,97 mg/Dl [†]
HCT	30.10%	Fasting glucose	92 mg/dL	Direct bilirubin (before cholesistostomy)	17,72 mg/Dl [†]
WBC	10.98	Postprandial glucose	132 g/dL		
PLT	417 X 10 ³	Hba1C	5,6 %		
Neutrophil	82,3 %	HBsAg	Non-reactive		
Lymphocyte	22%	Anti-HCV	Non-reactive		
Eosinophil	5%	HIV rapid	Non-reactive		
Monocyte	7,2 %	BSR [†]	55 mm/hr [†]		
BUN	10 mg/Dl	Ca 19-9	9,67 U/MI		
Serum creatinine	0,61 mg/Dl	AFP	9 ng/MI		
Total bilirubin [†]	12,78 mg/Dl [†]	ALP	1307		
Direct bilirubin	9,05 mg/dL [†]	CEA	8 ng/Dl		

[†]Abnormal value

Hb: hemoglobin; HCT: hematocrit; WBC: white blood cells; PLT: platelets; BUN: blood urea nitrogen; HIV: human immunodeficiency virus; BSR?

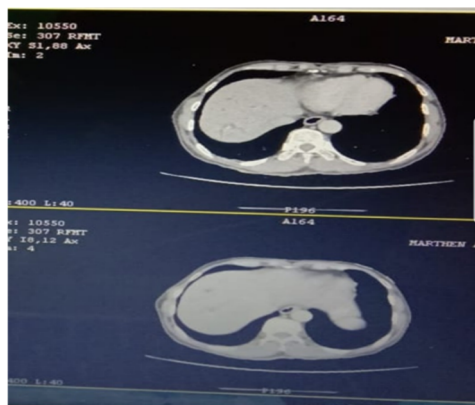


Figure 1. Abdominal CT showing hypodense lesion

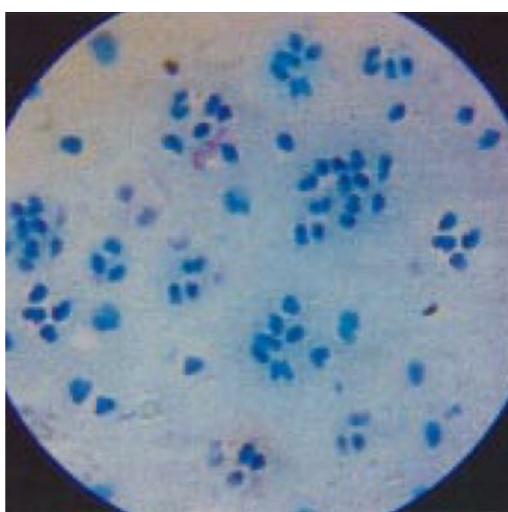


Figure 2. Positive acid-fast staining for *Mycobacterium tuberculosis*.

manifestation of TB infection with a prevalence of only 0-4.7% of the total cases worldwide⁸. The first case of pancreatic TB was reported by Auerbach in 1944 who performed autopsies on 1656 patients with TB. In this case report, only 14 cases involving the pancreas were found. In cases with immunodeficiency, the incidence of pancreatic TB was only 0.46%³. However, diagnosing pancreatic TB is still an issue to explore, since the symptoms, radiological, and laboratory features are not specific⁹. Patients may be admitted to the health center complaining of abdominal pain (31-75%), weight loss (19-48%), fever (20-50%), and obstructive-type jaundice (10-31%). A case report in India on 39 patients with pancreatic TB showed that only 7% of 39 patients with pancreatic TB had a history of tuberculosis². Moreover, the laboratory features

of patients with pancreatic TB were atypical and pathognomonic. A case report examining 32 patients revealed supportive laboratory abnormalities, such as Hb <11gr/dl (56.25%), increased erythrocyte sedimentation rate (ESR) > 20 mm/hour (81.25%), HIV-positive serology (53%), increased lipase and amylase (15.62%), markers of impaired liver function (12.50%), normal Ca 19-9 and AFP¹⁰.

Radiological examination plays a significant role in establishing the diagnosis of pancreatic TB, although it is not typical and specific. Pancreatic tuberculosis based on radiological imaging often resembles malignancy. Ultrasound examination of pancreatic TB discloses focal lesion with a hypochoic appearance with body and head of pancreas as the predilection sites. Most lesions are accompanied by enlarged regional lymph nodes with a hypochoic appearance in the center. Widening of the common bile and pancreatic ducts can also be seen on sonographic images, especially in lesions of the head of the pancreas. CT scan is a vital imaging modality in evaluating pancreatic lesions^{11, 12}. In a case report on 32 patients with pancreatic TB, 87.5% had heterogeneous lesions (20-30 HU), 62.5% of patients with multiple solid lesions (> 30 HU), and 37.5% of patients with solitary solid lesions. Based on the nature of the lesion, 67.5% had a hypodense image with clear boundaries, while 33.5% had areas of calcification^{6, 10}. Lymph nodes circling the pancreas are frequently found along with ascites and vascular invasion of the portal vein, mesenteric artery, and hepatic artery¹³. In addition, MRI is used to support the diagnosis of pancreatic tuberculosis with better sensitivity and specificity. TB lesions are pictured as hypointense lesions on T1W1 and hyperintense lesions on T2W1, and after the administration of contrast, the rim enhancement appears. In the meantime, endoscopic ultrasound is the modality with the best sensitivity and specificity to evaluate abnormalities in the biliary system and pancreas. Endoscopic ultrasound can be an option to perform tissue extraction through fine needle aspiration.^{14, 15}

Histopathological examination is the gold standard to identify pancreatic TB, outlining the formation of granuloma tissue. According

to the algorithm of pancreatic TB diagnosis, tissue specimen retrieval is divided based on its resectability. The unresectable tumors require fine needle aspiration modality with CT scan guidance, whereas the resectable ones may be either resected or extracted using fine-needle aspiration guided by endoscopic ultrasonography. A case report on 19 patients with pancreatic TB in India found that 100% of patients had granuloma tissue, 47.4% of patients had positive acid-fast bacilli, 42.1% of patients had positive tissue culture results for *Mycobacterium tuberculosis*, and 80% of patients had a positive molecular examination^{6,16}.

Patients with clinically or bacteriologically confirmed tuberculosis infection should receive anti-tuberculosis therapy immediately to prevent morbidity, mortality, and transmission. Pancreatic TB is treated with a standard anti-tuberculosis regimen as well. Previous studies reported that treatment with standard doses for 6-12 months can improve the patient's recovery rate. When patients have severe jaundice and deteriorate, endoscopic or surgical treatment is required. Endoscopic Retrograde Cholangiopancreatography (ERCP) can evaluate and place a stent in a blocked biliary system. Surgery can be chosen if ERCP is unavailable. The Whipple procedure may be a treatment option for patients with resectable tumors, otherwise, biliodigestive bypass can be performed⁵.

CONCLUSION

Pancreatic TB is often confused with pancreatic malignancy and is still challenging for clinicians worldwide to establish a diagnosis on it due to similar clinical and radiological features. Imaging studies such as MRI is a method aiming to help diagnose pancreatic TB. The definitive diagnosis was obtained from histopathological examination through biopsy, using either operative or non-operative method. Treatment with regular anti-tuberculosis therapy for 6-12 months could boost the cure rate for pancreatic TB along with biliary tract drainage, which was done operatively or through ERCP.

ACKNOWLEDGMENTS

This work is supported by Tropical & Infectious Disease Division, Department of Internal Medicine, Faculty of Medicine of Universitas Airlangga, Dr. Soetomo General Hospital Surabaya, Indonesia.

FUNDING

The authors received no funding support for the research, authorship, and/or publication of this article.

CONFLICT OF INTEREST

All of the authors declare that there is no conflict of interest.

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