

## CASE REPORT

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# Pancreaticobiliary Tuberculosis Diagnosed by Endoscopic Brushings

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### ABSTRACT

**Context** Isolated pancreaticobiliary involvement with tuberculosis is extremely unusual. Clinical manifestations include abdominal discomfort, weight loss, obstructive jaundice or pancreatitis. Mass/cystic lesions are seen on imaging studies and are often mistaken for pancreatic malignancy. Diagnosis is by demonstration of caseation necrosis or the presence of acid-fast bacilli on Ziehl Neelson staining in the aspirated or biopsied specimen.

**Case report** A 35-year-old man presented with pain in the upper abdomen of two-month duration associated with significant weight loss. Investigation showed elevated alkaline phosphatase. Imaging studies revealed a mass in the region of the head of the pancreas with dilated intra-hepatic biliary radicles. The diagnosis of pancreaticobiliary tuberculosis was confirmed by cytology from biliary brushing. Biliary brushings taken during endoscopic retrograde cholangiopancreatography have never previously confirmed the diagnosis of pancreaticobiliary tuberculosis.

**Conclusions** To the best of our knowledge, this is the first case report where the diagnosis was made on the basis of biliary brushings.

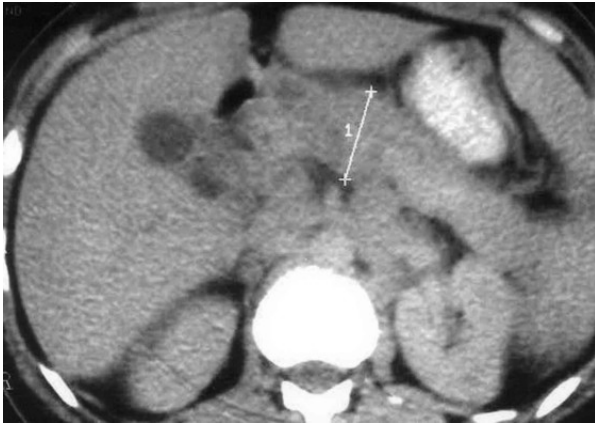
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### INTRODUCTION

Tuberculosis is a common disease in the developing world. The incidence is slowly

rising in developed countries, subsequent to the acquired immunodeficiency syndrome (AIDS) epidemic [1] and the aggressive use of immunosuppressant drugs. With the resurgence of tuberculosis, the incidence of extra pulmonary tuberculosis is also on the rise. Since the clinical presentation of extra-pulmonary tuberculosis is atypical, tissue samples for confirmation of diagnosis can sometimes be difficult to procure. The availability of imaging and endoscopy have helped tremendously in anatomical localization.

The pancreas is rarely affected in extra-pulmonary tuberculosis and as a part of miliary tuberculosis [2]. The reason the pancreas is only rarely involved is not known. Probably the pancreatic enzymes interfere with the seeding of *Mycobacterium tuberculosis* [3], thereby protecting the pancreas. Tuberculosis of the pancreas can have protean manifestations. These include abdominal pain, constitutional symptoms [4], obstructive jaundice [5], pancreatic abscess [6], massive gastro-intestinal bleeding [7], acute [8] and chronic pancreatitis [9], secondary diabetes [10], iron deficiency anemia [11], splenic vein thrombosis and a pancreatic mass mimicking malignancy [12]. The presence of either caseating granulomas or acid-fast bacilli on ultrasound [4] or computed tomogram (CT), guided [13] or laparoscopic, [6] or surgically taken aspirations or biopsy [14] confirms the diagnosis.



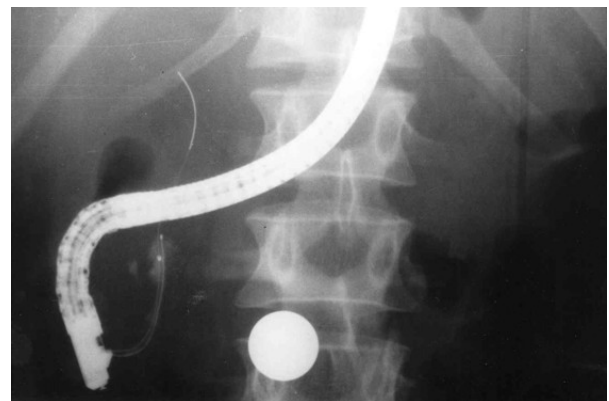
**Figure 1.** CT scan picture showing the presence of a mass lesion in the head of the pancreas.

In an electronic review of the literature, biliary brushings during endoscopic retrograde cholangiopancreatography (ERCP) have never previously diagnosed pancreaticobiliary tuberculosis. This is the first such case where biliary brushings demonstrated caseating granulomas as well as acid-fast bacilli (AFB), thereby confirming the diagnosis.

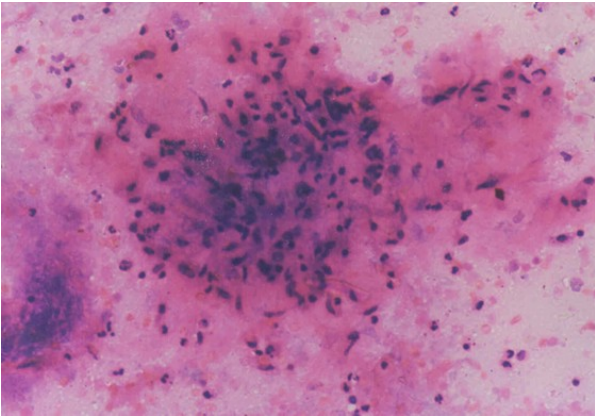
## CASE REPORT

A 35-year-old man, presented with pain in the upper abdomen of two months duration. It was a dull, continuous, poorly localized pain which worsened after eating. He had lost eight kilograms during this period. He denied any history of jaundice, pruritus, vomiting, gastrointestinal bleed, altered bowel habits or fever. There was no history of tuberculosis in family members. General physical and systemic examination was normal except for the presence of pallor. On laboratory investigation, his hemoglobin was 8 g/dL (reference range: 12-18 g/dL), mean corpuscular volume 85 fL (reference range: 80-96 fL), total leukocyte count was 8,600 mm<sup>-3</sup> (reference range: 4,000-11,000 mm<sup>-3</sup>), neutrophils 71% (reference range: 40-75%), lymphocytes 25% (reference range: 22-45%), monocytes 3% (reference range: 2-8%), eosinophils 1% (reference range: 1-6%), platelets 2.8x10<sup>5</sup> mm<sup>-3</sup> (reference range: 1.5x10<sup>5</sup>-4.0x10<sup>5</sup> mm<sup>-3</sup>) and an erythrocyte sedimentation rate of 55 mm in first hour (using the Westergren method; reference

range: 0-20 mm). the biochemical profile showed blood urea nitrogen 18 mg/dL (reference range: 8-22 mg/dL), serum creatinine 0.8 mg/dL (reference range: 0.8-1.2 mg/dL), fasting blood glucose 98 mg/dL (reference range: 60-110 mg/dL), calcium 9.2 mg/dL (reference range: 8.0-10.4 mg/dL), phosphorus 3.1 mg/dL (reference range: 2.5-4.5 mg/dL). A liver function evaluation revealed a total serum bilirubin level of 0.8 mg/dL (reference range: 0.8-1.0 mg/dL), aspartate amino transferase (AST) 32 IU/L (reference range: 5-40 IU/L), alanine aminotransferase (ALT) 28 IU/L (reference range: 5-35 IU/L), alkaline phosphatase 600 IU/L (reference range: 100-250 IU/L). Serology for human immunodeficiency virus (HIV) 1 and 2 was negative. The Mantoux test induration was 6x8 mm at 48 hours. The radiographs of the chest and abdomen were not contributory. A mass in the region of the head of the pancreas containing dilated intrahepatic biliary radicles and the common bile duct (CBD) was visualized on abdominal ultrasound and subsequently confirmed by a contrast-enhanced computed tomogram (CECT) (Figure 1). The possibility entertained at the time was carcinoma of the head of the pancreas. No abnormality was seen on upper gastrointestinal endoscopy. The patient underwent ERCP with contrast-free cannulation of the CBD to prevent cholangitis. (Figure 2). Resistance was encountered during the passage of the guide wire above the mid-CBD level. Caseating



**Figure 2.** Picture showing contrast-free cannulation of the biliary tract with the endoscopic biliary brush in situ.



**Figure 3.** Photomicrograph of biliary brush smear showing epithelioid cell granuloma in a background of inflammatory cells and necrosis. Stain H&E, x200.

granulomas (Figure 3) along with AFB (on Ziehl-Neelson staining) (Figure 4) were seen on biliary brushings confirming the diagnosis of pancreaticobiliary tuberculosis. The patient was started on anti-tubercular therapy with four drugs (isoniazid, rifampicin, pyrazinamide and ethambutol) for two months followed by two drugs. After five months of treatment, the symptoms disappeared and he had regained seven kilograms with normalization of hemoglobin, erythrocyte sedimentation rate, alkaline phosphatase and resolution of the pancreatic mass on ultrasound.

## DISCUSSION

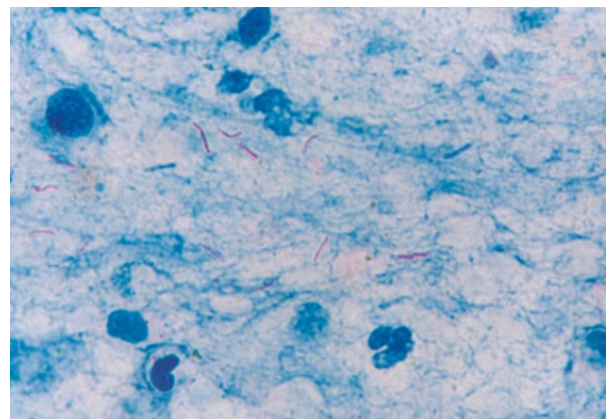
Abdominal tuberculosis can occur either in isolation or with concomitant pulmonary involvement (the frequency of coexistence varies from 5 to 36% [15]). Up to 12% of patients infected with tuberculosis have abdominal involvement [16].

Infection of the pancreas by *Mycobacterium tuberculosis* is extremely unusual in immunocompetent individuals [2, 3] even in disseminated disease. Up to 4.7% of such cases have pancreatic involvement [2]. The route of spread to the pancreas is still debatable with some authors favoring a hematogenous route, others a contiguous spread from neighboring lymph nodes [11] and still others believing that the pancreas could be involved as a part of a toxic-allergic reaction to infection elsewhere [9]. The most

plausible explanation seems to be direct spread from contiguous lymph nodes. The involvement of the biliary tract could be due to the rupture of the caseating granulomas into the biliary tree from the involved lymph nodes.

Pancreatic tuberculosis can have varied manifestations, the most common being a mass lesion which is difficult to differentiate from pancreatic cancer [12]. A diffusely enlarged pancreas, a mass lesion or focal hypoechoic or hypodense lesions are usually visualized on ultrasound or CT scan in the pancreatic head region. However, these findings are non-specific [5]. Findings on imaging studies suggestive of pancreatic tuberculosis are the presence of characteristic hypo-dense lymph nodes with rim enhancement in the peripancreatic region and/or mesentery, ascites and/or mural thickening affecting the ileo-cecal region [17]. A chest radiograph could be of help. MRI findings of focal pancreatic tuberculosis include a sharply delineated mass located in the pancreatic head, showing heterogeneous enhancement. The lesions are hypointense on fat-suppressed T1-weighted images and a mixture of hypo- and hyperintense on T2-weighted images [18].

The definitive diagnosis rests on the demonstration of either caseating granulomas, the presence of AFB on Ziehl-Neelson staining or the presence of *Mycobacterium tuberculosis* DNA by a polymerase chain reaction (PCR) [19] in specimens obtained



**Figure 4.** Photomicrograph of biliary brush smear showing numerous acid fast bacilli. Ziehl-Neelson stain x1,000.

through US-guided fine needle aspiration cytology (FNAC) as reported earlier by us [4], CT guidance [13] or by surgical means [6, 14]. In a study from Thailand, the sensitivity and specificity of FNAC in cervical tubercular adenitis were 48% and 87.5%, respectively while those of PCR were 84% and 75%, respectively. When FNAC and PCR were combined, the sensitivity and specificity increased to 84% and 100%, respectively [20]. In a study evaluating the role of ultrasound-guided FNAC in abdominal tuberculosis from North India, 18 out of 31 FNACs (58%) revealed a positive diagnosis of tuberculosis; however AFB was demonstrated in only 9 (29%) of these cases [21]. Exploratory laparotomy may be required in technically difficult cases due to the risk of injury to vessels in the vicinity of the mass [22].

After an extensive electronic search, this is the first case in the literature where brushings from the biliary tract have shown concrete evidence of pancreaticobiliary tuberculosis.

In conclusion, in young people with pancreatic mass lesions and an obstructed biliary system living in an endemic area a possibility of pancreaticobiliary tuberculosis should be kept in mind. Further studies should be conducted to evaluate this modality for diagnosing pancreaticobiliary tuberculosis in endemic areas where, for some reason, FNAC is not possible.

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**Keywords** Cholangiopancreatography, Endoscopic Retrograde; Cytology; Pancreas; Tuberculosis

**Abbreviations** AFB: acid-fast bacilli; CBD: common bile duct; FNAC: fine needle aspiration cytology; HIV: human immunodeficiency virus

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