Fine Needle Aspiration Diagnosis of Isolated Pancreatic Tuberculosis.  
A Case Report and Review of Literature

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ABSTRACT

Context Tuberculosis is a common disease in the developing world and its incidence is slowly increasing in developed countries where a resurgence has been seen subsequent to the AIDS epidemic. Tuberculosis, in its extrapulmonary form, though emerging as a clinical problem, rarely affects the pancreas. The pancreas is biologically protected from being infected by Mycobacterium tuberculosis. Pancreatic tuberculosis presents with a wide spectrum of symptoms such as abdominal pain, constitutional symptoms, obstructive jaundice, iron deficiency anemia, pancreatic abscess, massive gastro-intestinal bleeding, acute/chronic pancreatitis, secondary diabetes, splenic vein thrombosis and a pancreatic mass mimicking malignancy. It should be suspected clinically in patients having a pancreatic mass, particularly if the patient is young, not jaundiced, coming from an area of high tuberculosis endemicty and having a normal endoscopic retrograde cholangio-pancreatography. Its indolent course and vague symptomatology along with non-specific laboratory and radiological findings call for greater vigilance.

Case report We report a case of pancreatic tuberculosis which presented with pancreatic pain. Imaging techniques revealed a mass located in the head of the pancreatic gland. Fine needle aspiration cytology revealed caseating granulomas. The diagnosis of pancreatic tuberculosis was made and the patient was put on anti-tubercular therapy. Five months later, a repeat CT scan of the abdomen revealed resolution of the pancreatic lesion.

Conclusion The diagnosis of pancreatic tuberculosis is usually not suspected prior to laparotomy. Most patients have been diagnosed at laparotomy, thus fine needle aspiration cytology/biopsy is useful in obviating the need for major surgery with its accompanying morbidity. Exploratory laparotomy may be required in technically difficult cases due to risk of injury to the vessels in the vicinity of the mass.

INTRODUCTION

Tuberculosis is a common disease in the developing world and its incidence is slowly increasing in developed countries [1] where a resurgence has been seen subsequent to the AIDS epidemic. The development of abdominal tuberculosis is independent of pulmonary disease in most patients, with a reported incidence of coexisting disease varying from 5 to 36% [2]. Up to 12% of patients infected with tuberculosis may have involvement of abdominal organs [3]. Tuberculosis of the digestive tract may involve any part from the esophagus to the anus. Intra-abdominal tuberculosis usually involves the liver, spleen, bowel, peritoneum
and mesenteric lymph nodes, with the commonest site being the ileo-caecal area. Atypical presentations of gastrointestinal tuberculosis are more likely in immunocompromised individuals [4]. Pancreatic involvement is unusual and is generally associated with miliary tuberculosis [5].

We report a case of pancreatic tuberculosis which presented with a pancreatic mass and was diagnosed with the help of fine needle aspiration cytology (FNAC), thereby obviating the need for surgery.

CASE REPORT

A 23 year old male presented at our Institute with pain of one year duration in the epigastric and right hypochondrial region. The pain was of intermittent nature, not colicky, with recurrent exacerbations over the last year. There was no history of radiation of pain to the back or the shoulder, nor was there any food pain relationship or any history suggestive of intestinal obstruction. There was no past history of jaundice or upper gastro-intestinal bleeding. He also had a history of low-grade intermittent fever. He had lost 8 kilograms of weight over the preceding year. Physical examination was unremarkable. Investigations including haemogram, serum amylase, liver function tests, renal function tests, stool examination, and chest and abdominal radiographs were normal on many occasions. His HIV serology was negative and a Mantoux test was non-reactive. Ultrasound of the abdomen revealed a mass in the region of the head of the pancreas which was confirmed on CT scan of the abdomen (Figure 1). Upper gastro-intestinal endoscopy showed antral gastritis and mild duodenitis. Considering a possibility of recurrent pancreatitis with pancreatic mass, an endoscopic retrograde cholangiopancreatography (ERCP) was done. The ERCP revealed an erythematous medial duodenal wall. There was no nodularity or ulcerations in the duodenum. Deep cannulation of the ducts was not possible. Ultrasound guided FNAC was done which revealed caseating granulomas; stain for acid fast bacilli was negative (Figure 2). Based on this finding, a diagnosis of pancreatic tuberculosis was made and the patient was put on anti-tubercular therapy in September 1998 (rifampicin, isoniazid, pyrazinamide and ethambutol for 2 months followed by rifampicin and isoniazid for the next 7 months). A repeat CT scan of the abdomen (Figure 3) was done in February 1999 which revealed the resolution of the pancreatic lesion. The patient is doing well on follow-up and has gained 8 kilograms since then.

DISCUSSION

Tuberculosis, in its extrapulmonary form, though emerging as a clinical problem rarely affects the pancreas. The pancreas is

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**Figure 1.** Contrast enhanced CT scan showing a mass in the region of the head of the pancreas with hypodense areas.

**Figure 2.** Ultrasound guided FNAC from the lesion showing an epitheloid cell granuloma on the bottom left and a sheet of ductal epithelial cells in the upper right corner. Stain H&E Magnification 10×.
biologically protected from being infected by Mycobacterium tuberculosis, probably because of the presence of pancreatic enzymes which interfere with the seeding of Mycobacterium tuberculosis [6]. Its indolent course and vague symptomatology along with non-specific laboratory and radiological findings call for greater vigilance.

Isolated pancreatic tuberculosis is extremely rare in immunocompetent individuals. However, when diagnosed, it is a welcome pathological surprise. Auerback reviewed 1,656 autopsies performed on tuberculosis patients. Of these, 297 (17.9%) had acute miliary tuberculosis. He did not find any cases of isolated tuberculosis of the pancreas; however, among the cases with acute generalized tuberculosis, the pancreas was also involved in 14 cases (4.7%) [5]. Bhansali did not have a single case of pancreatic tuberculosis in a series of 300 cases of abdominal tuberculosis [7]. In an electronic search of the literature [MEDLINE/Pubmed 1966-2002: http://www.ncbi.nlm.nih.gov/entrez/], only 73 cases of isolated pancreatic tuberculosis in immunocompetent individuals have been reported worldwide.

Our patient fulfils all the criteria except one for the diagnosis of primary pancreatic tuberculosis. He had no history of tuberculosis, the disease was localized, his chest radiograph was normal, he had no other detectable foci of tuberculosis and a positive cytological diagnosis. However, acid fast bacilli could not be demonstrated and a culture of the pancreatic tissue was not performed. Farer et al. reported bacteriological confirmation in only 57% of cases having extrapulmonary tuberculosis [3].

Pancreatic tuberculosis presents with a wide spectrum of symptoms such as abdominal pain (100%), constitutional symptoms such as anorexia, weight loss and night sweat, fever, obstructive jaundice [8, 9], iron deficiency anemia, pancreatic abscess [10], massive gastro-intestinal bleeding [11], acute pancreatitis [12], chronic pancreatitis [13], secondary diabetes [14], splenic vein thrombosis, and a pancreatic mass [15] mimicking malignancy as in the present case. It has been speculated that the pancreas can be involved in tuberculosis either by a hematogenous route or by direct spread from contiguous lymph nodes [10]. Others argue that the pancreas could be involved by a toxic-allergic reaction of the pancreas in response to tuberculosis elsewhere [13].

Pancreatic tuberculosis is rare and may present a problem in differential diagnosis, especially with carcinoma of the pancreas. Investigations are usually non-contributory, as a firm diagnosis can only be made with the help of histopathological or microbiological evidence of the disease. Even if the initial microbiological results are negative using conventional techniques, polymerase chain reaction (PCR) can yield more rapid results and avoid an unnecessary laparotomy [16, 17].

Chest radiographs and sputum smears for acid-fast bacilli are often negative as they were in our case. ERCP may show displacement and stenosis of the main duct [18] or involvement of the common bile duct leading to intra-hepatic biliary radical dilatation, signs which are non-specific. Ultrasonography and CT scan may show a diffusely enlarged pancreas, a mass lesion as in our case, or focal hypo-echoic or hypo-dense lesions usually in the pancreatic head

Figure 3. Contrast enhanced CT scan following completion of medical therapy showing resolution of the lesion and a normal appearing pancreas.
region. These finding are non-specific and may be seen with focal pancreatitis of any etiology, such as in pancreatic carcinoma [8]. However, one should still suspect tuberculosis of the pancreas. Radiological indicators leading to the diagnosis of pancreatic tuberculosis could include the presence of characteristic hypo-dense lymph nodes with rim enhancement in the peri-pancreatic region and/or mesentery, ascites and/or mural thickening affecting the ileo-caecal region [19]. A chest radiograph may be of help. It should be suspected clinically in patients with a pancreatic mass, particularly if the patient is young, not jaundiced, coming from an area of high tuberculosis endemicity and having a normal ERCP [20].

It is evident from the literature that the diagnosis of pancreatic tuberculosis is usually not suspected prior to laparotomy. Most patients have been diagnosed at laparotomy. Only 6 out of 73 cases reported so far have been diagnosed by FNA cytology/biopsy. To the best of our knowledge, the present case is the 7th case diagnosed by FNAC, thereby obviating the need for major surgery with its accompanying morbidity. Exploratory laparotomy may be required in technically difficult cases due to risk of injury to the vessels in the vicinity of the mass [21]. The response to anti-tubercular therapy is very favourable [21]. The lesions are found to have subsided on follow-up. There may be a role for imaging guided drainage in cases that present as an abscess. The role of resection (e.g. pancreatoduodenectomy) is very limited [21]. Prognosis is good, with only 4 of the 73 cases reported in the literature having succumbed to their illness.

In conclusion, we would like to emphasize that tuberculosis should be considered in the differential diagnosis of pancreatic masses, particularly in young patients who are not icteric and who come from an area in which tuberculosis is endemic. To avoid unnecessary laparotomy, CT/US guided percutaneous aspiration cytology/biopsy and culture of tissue for mycobacteria should be done in a patient with pancreatic mass, especially in a region where pulmonary and abdominal tuberculosis is common.

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**Keywords** Bacterial Infections; Biopsy, Needle; Drug Therapy; Gram-Positive Bacterial Infections; Mycobacterium Infections; Pancreatitis; Tuberculosis

**Abbreviations** FNAC: fine needle aspiration cytology

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