

CASE REPORT

Pancreatic Tuberculosis Diagnosed with Endoscopic Ultrasound Guided Fine Needle Aspiration

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ABSTRACT

Context Isolated pancreatic tuberculosis is rare in the Western world. Its clinical presentation often mimics pancreatic malignancy and the diagnosis is usually not suspected or confirmed prior to laparotomy. Endoscopic ultrasound guided fine needle aspiration cytology has proved to be an excellent tool for the cytological diagnosis of pancreatic and peripancreatic masses. However, this technique has not been reported for diagnosing pancreatic or peripancreatic tuberculosis.

Case report We describe a 57-year-old South Asian man with pancreatic tuberculosis who presented with fever of undetermined origin and a pancreatic mass on imaging. He was successfully treated with anti-tuberculosis regimen following confirmation of his diagnosis with endoscopic ultrasound guided fine needle aspiration cytology.

Conclusions Pancreatic tuberculosis should be suspected in patients having a pancreatic mass, particularly if patient presents with fever and lived in, or traveled to, an area of endemic tuberculosis or exposed to tuberculosis. When the diagnosis is suspected, endoscopic ultrasound guided fine needle aspiration cytology of the pancreatic lesion can confirm the diagnosis and so avoid an

unnecessary explorative laparotomy or pancreatic resection.

INTRODUCTION

Tuberculosis presenting as a pancreatic mass is a rare condition in Western countries including the United States. Most reported cases are immigrants to Europe or USA from countries where tuberculosis is endemic [1]. The frequency of reports of isolated pancreatic tuberculosis in Western countries has increased in recent years [2]. We present a case of pancreatic tuberculosis to highlight the importance of including tuberculosis in the differential diagnosis of a pancreatic mass and to discuss the role of EUS guided FNA as a preferred technique in diagnosing pancreatic tuberculosis.

CASE REPORT

A 57-year-old South Asian man presented with fever of undetermined origin for 6 months associated with anorexia and 8 kg weight loss. He usually had 1-2 episodes per week of fever (38-39°C) associated with chills and profuse sweating occurring in the evenings and lasting for several hours. He denied nausea, emesis, abdominal pain, headache, sore throat, change in bowel habits, cough, shortness of breath, chest pain or

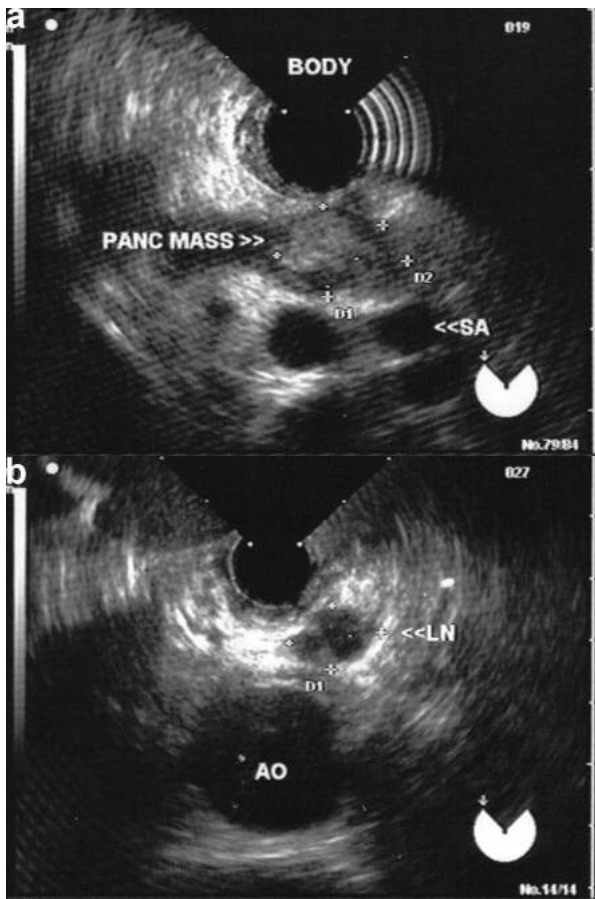


Figure 1. Endoscopic ultrasound image showing (a.) pancreatic mass and (b.) celiac axis region lymph node.

urinary dysfunction. His past medical/surgical history included coronary artery disease status post angioplasty and coronary artery bypass graft, chronic anemia for 5 years, hypercholesterolemia, remote tonsillectomy and nasal surgery. His medications were folic acid, iron, clopidogrel, metoprolol, aspirin, and atorvastatin. He was born in India and had migrated to the United States nearly 25 years ago. His last visit to India was 15 years ago. He denied tobacco or alcohol intake or exposure to person with tuberculosis.

On physical examination, he was noted to be afebrile and his other vital signs were normal. No significant findings were found on examination of his lungs, heart, abdomen, extremities, skin or nervous system. His laboratory studies results were as follows: white blood cell count 6.4/mm³ (reference range: 3.8-10.8/mm³), hemoglobin 12.8 g/dL (reference range: 13.2-17.1 g/dL), red blood cell count 4.84 million/mm³ (reference range:

4.2-5.8 million/mm³), mean corpuscular volume 82 fL (reference range: 80-100 fL), platelet count 266,000 mm⁻³ (reference range: 140,000-400,000 mm⁻³). His white blood cell differential count was normal. His peripheral smear revealed mild hypochromia. No malaria or babesia parasites were seen. His sedimentation rate was 12 mm/h (reference range: 0-20 mm/h). However, his C-reactive protein was elevated to 12 mg/L (reference range: 0-8 mg/L). Other studies including urine examination, serum chemistries, liver function tests, blood cultures were non-revealing. His chest radiograph was normal. However, several bilateral small ill-defined pulmonary parenchymal nodules were seen in lower lobes on CT of his chest and a focal low attenuation mass was also seen along the posterior margin of the pancreatic body on CT of his abdomen. The pancreatic body mass measured 2.4x1.6 cm and was not associated with ductal dilatation. The adjacent vessels were noted to be patent. In addition, a small celiac region node mass measuring 1.4 x 1.4 cm was also seen.

EUS also demonstrated a pancreatic body mass of heterogeneous echotexture and ill-defined margins (Figure 1a). In addition, celiac axis adenopathy was also seen (Figure 1b). Using the linear echoendoscope a FNA cytology was performed with 22-gauge needle from the pancreatic body mass and the celiac axis node. The cytology from the celiac node showed suggestion of granuloma; however, the cytology from the pancreatic mass was non-conclusive. Subsequently, patient underwent a diagnostic laparoscopy because of the lack of a definitive diagnosis. A nodular mass was seen within the substance of the pancreas at the junction of the head and the body of the pancreas. Biopsy was not taken because of the deeper nature of the mass within the pancreatic parenchyma. Further options were discussed with patient including explorative laparotomy, repeat FNA cytology/biopsy. He preferred repeat FNA cytology/biopsy.

A repeat EUS-guided FNA cytology from the celiac lymph node showed mixed lymphoid population, epitheloid granulomas and

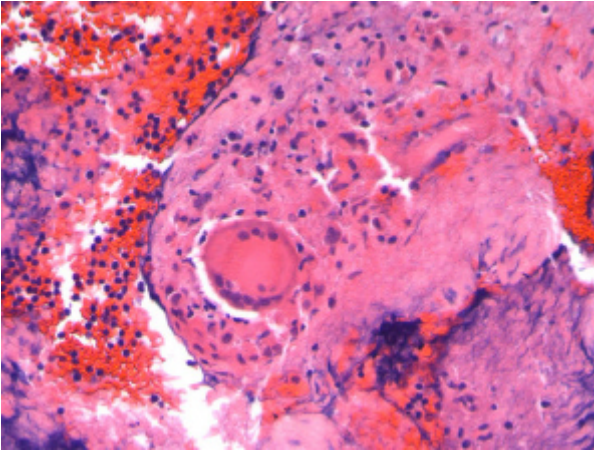


Figure 2. Photomicrograph (H&E stain x200) of celiac axis lymph node cytology showing epithelioid granuloma.

multinucleated giant cells consistent with non-necrotizing granulomatous lymphadenitis (Figure 2). The acid-fast bacilli stain was negative.

Following his last EUS-FNA, he was started on empirically anti-tuberculous therapy consisting of 4 drugs (isoniazid, rifampin, ethambutol, and pyrazinamide). His fever resolved within 4 to 6 weeks of starting anti-tuberculous therapy. Subsequently, polymerase chain reaction for *Mycobacterium tuberculosis* was found positive from the celiac lymph node cell block and his celiac lymph node culture grew *Mycobacterium tuberculosis* that was susceptible to isoniazid, rifampin, ethambutol, pyrazinamide, and streptomycin. Patient was treated with 4 drugs for 2 months and then rifampin and isoniazid were continued for another 7 months. At the end of 9 months of anti-tuberculous treatment he continues to remain afebrile and is maintaining a normal appetite and weight. He has no pulmonary or abdominal symptoms.

DISCUSSION

Tuberculosis of the pancreas or of the peripancreatic lymph nodes is a rare condition even in countries where tuberculosis is endemic [3]. One explanation for this low prevalence is that the pancreas is protected from being infected by *Mycobacterium tuberculosis* probably because of the presence of pancreatic enzymes, which interfere with

the seeding of *Mycobacterium tuberculosis* [3].

We conducted a MEDLINE search for English language articles from 1966 to 2004 using the MeSH terms “Tuberculosis” and “Pancreas”. In addition, the bibliographies of relevant articles were also searched. A total of 116 reports of pancreatic tuberculosis were identified [4]. Men and women are affected equally [1, 5], with a mean age of around 40 years. The most likely mechanism of spread is lymphohematogenous dissemination from an occult focus in the lungs [3, 6, 7]. The exact mechanism of pancreatic involvement by tuberculosis in our patient is unclear, however, we postulate a hematogenous spread from reactivation of an occult focus in the lungs.

The main symptoms at presentation of pancreatic tuberculosis are pain (81%), weight loss (55%), fever (36%), recurrent vomiting (19%) and jaundice (17%) [4]. Most patients have high sedimentation rate and the tuberculin test is positive in over 2/3 of cases [4]. Our patient had a strongly positive tuberculin test and a normal sedimentation rate but his C-reactive protein was elevated. A pancreatic mass mimicking pancreatic malignancy is seen in over 50% of patients [3, 5, 7]. Most common location of pancreatic mass has been reported in the head or body as in our case; however, occasionally isolated involvement of the pancreatic tail has also been described [2]. Interestingly abdominal pain is more frequent at the time of presentation with pancreatic tuberculosis than with pancreatic cancer; however, our patient’s presentation was atypical in a way since he did not have abdominal pain. The presence of fever with a pancreatic mass, as in our case, favors tuberculosis, however, non-Hodgkin’s lymphoma should also be considered in this clinical scenario. Other clinical presentations include obstructive jaundice, pancreatic abscess, secondary diabetes, massive gastrointestinal hemorrhage, acute or chronic pancreatitis, portal or splenic vein thrombosis [2, 4].

A definitive diagnosis of pancreatic tuberculosis will prevent unnecessary surgery

and in the setting of suspected malignancy will change the diagnosis to one of a treatable infection; however, a definitive diagnosis of pancreatic tuberculosis is only achieved with histological confirmation. Pancreatic tuberculosis is usually not suspected prior to laparotomy. Most patients have been diagnosed at laparotomy. However, if tuberculosis is suspected and confirmed then surgery is not necessary, making FNA cytology/biopsy a very useful test. However, only a few cases have been diagnosed by FNA cytology/biopsy [5, 8, 9, 10]. The success rate of image guided percutaneous FNA cytology or biopsy in diagnosing pancreatic tuberculosis is less than 50% [5, 8, 9, 10]. EUS-FNA cytology/biopsy has proved to be an excellent tool for the cytological diagnosis of pancreatic and peripancreatic masses [11]. A definitive cytological diagnosis is possible by EUS-FNA in 80% to 95% of cases despite failure of another biopsy technique [11]. However, to our knowledge this technique has never been used in diagnosing pancreatic or peripancreatic tuberculosis. Ours is the first report of using EUS-FNA successfully in diagnosing pancreatic tuberculosis. We preferred EUS-FNA over percutaneous approach because of poor success rate as reported in the literature with percutaneous technique and secondly because of significant impact of diagnosis on patient management.

Laparoscopy might prove to be helpful if tuberculosis is not confirmed by FNA cytology or core biopsy. Acid fast bacilli are identified only in 20-40% of cases and culture results are positive in 77% of cases even when intraoperative specimen are sent for direct smear and culture [3]. Caseating granuloma are seen in 75-100% of cases [4]. Polymerase chain reaction now offers the possibility of both a more sensitive and more rapidly available definitive diagnosis compared to microscopy and culture; however, the drug susceptibility cannot be performed from the polymerase chain reaction specimens and therefore, this test is an adjunct to standard culture techniques.

Pancreatic tuberculosis should be suspected in patients having a pancreatic mass or hypodense lymph nodes in the peripancreatic region, particularly if patient presents with fever and is young, not jaundiced, lived in, or traveled to, an area of endemic tuberculosis, exposed to tuberculosis, and if investigations show the patient is human immunodeficiency virus positive. When the diagnosis is suspected, a detailed screening for tuberculosis and EUS-FNA of the pancreatic lesion can confirm the diagnosis and so avoid an unnecessary explorative laparotomy or pancreatic resection.

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