

Tuberculous Pancreatic Head Mass – A Radiological Dilemma

S Chandramohan, M Kangavel, J Madhusudhanan, D Madhusudhanan

Citation

S Chandramohan, M Kangavel, J Madhusudhanan, D Madhusudhanan. *Tuberculous Pancreatic Head Mass – A Radiological Dilemma*. The Internet Journal of Radiology. 2012 Volume 14 Number 1.

Abstract

A 22-year-old female was referred with obstructive jaundice. On evaluation, she was found to have a pancreatic head mass. An image-guided fine needle aspiration and cytology of the mass lesion showed epithelioid cell granulomas suggestive of tuberculosis. Tuberculosis of the pancreas is a rare entity, which can mimic carcinoma or focal pancreatitis. An accurate preoperative diagnosis needs a high index of suspicion and is possible with the availability of superior imaging tools. This can aid in avoiding the need for major surgical resection in the form of pancreaticoduodenectomy. In this article, we highlight the specific radiological features that can help us in differentiating malignancy from tuberculosis.

INTRODUCTION

Pancreatic tuberculosis is a rare entity. The incidence is increasing due to increase in the number of immunocompromised hosts and multidrug resistant tuberculous bacilli. With the advent of newer imaging modalities, these lesions are frequently diagnosed. Tuberculous lesion of the pancreas can mimic carcinoma and focal pancreatitis. Accurate diagnosis needs a high index of suspicion. Certain radiological features can help distinguish between these lesions. Also, image-guided biopsy can avoid laparotomy and major resection for achieving a diagnosis. We present a case and discuss the radiological features of pancreatic tuberculosis.

CASE HISTORY

A 22-year-old female was referred with a clinical picture of obstructive jaundice. She had right upper quadrant discomfort and history of passing dark urine and clay colored stools for the past one month. She also gave history of loss of appetite and weight loss up to 3 kilograms. Her past and personal history was unremarkable. Clinically, she was icteric and abdominal examination revealed fullness in the right upper quadrant. There was no other positive clinical finding. Liver function tests showed an elevated total bilirubin of 4.4mg/dL and direct bilirubin of 2.6mg/dL. Aminotransferase levels were normal but there was increase in alkaline phosphatase levels to 604 IU/L (normal range 40-140 IU/L).

Ultrasound examination revealed a hypoechoic lesion in the head of the pancreas (35.7 x 25.1 mm) with dilated common bile duct up to the level of pancreas (diameter 10.9mm) and intrahepatic biliary radicle dilatation. The main pancreatic duct was not dilated. Computerised Tomography of the abdomen showed an ill-defined, heterogeneously enhancing, hypodense lesion in the head of the pancreas with dilated common bile duct and distended gallbladder. The main pancreatic duct was reported to be normal. Magnetic resonance imaging of abdomen showed an ill-defined mass lesion (4.19x4.15cm) in the head of the pancreas that was nearly iso-intense to the rest of the pancreas in T2W, and hypointense in T1W images (Figure 1 and 2). It showed contrast enhancement similar to that of normal pancreas. There was no regional adenopathy and no intrapancreatic or peripancreatic fluid collection.

Figure 1

Figure 1: Axial MR image showing hypointense mass in the head of pancreas

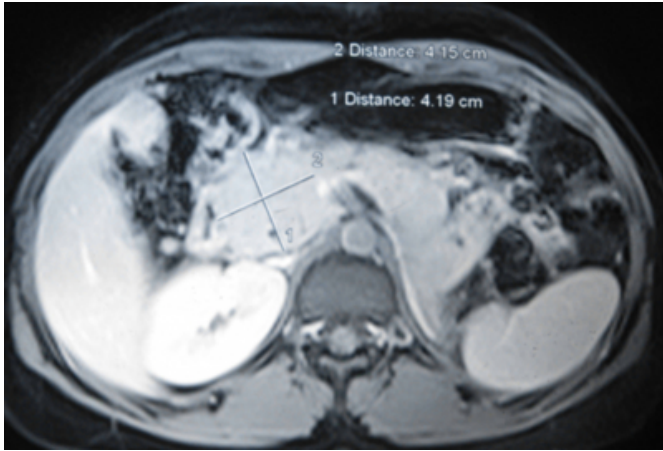
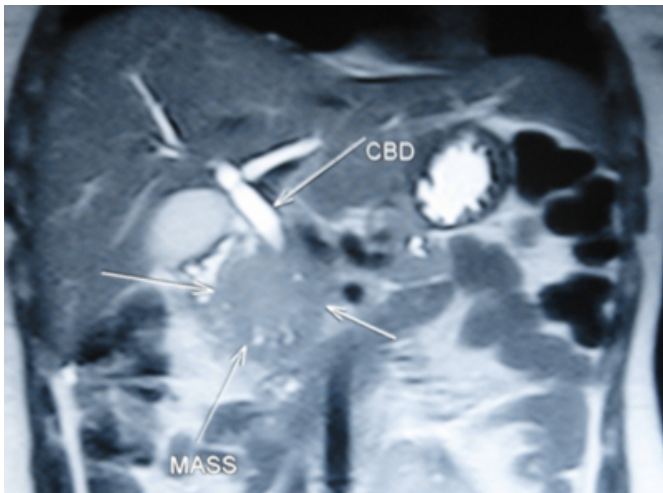


Figure 2

Figure 2: Coronal MR image showing mass in the head of pancreas with bile duct obstruction



In view of the above findings, a CT- guided FNA was done from the pancreatic mass lesion. The histological examination revealed epitheloid cell granulomata against a necrotic background with mature and reactive lymphocytes, plasma cells and neutrophils. It was reported as a necrotising granulomatous lesion suggestive of tuberculosis.

She was started on anti-tuberculous therapy with four drugs (isoniazid, rifampicin, pyrazinamide and ethambutol) in the initiation phase for 3 months. That was followed by continuation phase for a period of 6 months with inoniazid and rifampicin. She gradually improved, regained her appetite and weight. Repeat MRI of the abdomen showed complete disappearance of the pancreatic head mass (Figure 3 and 4). She is presently on regular follow-up for the past

six years and doing well.

Figure 3

Figure 3: Axial MR image showing completely resolved mass following ATT (to compare with Figure 1)

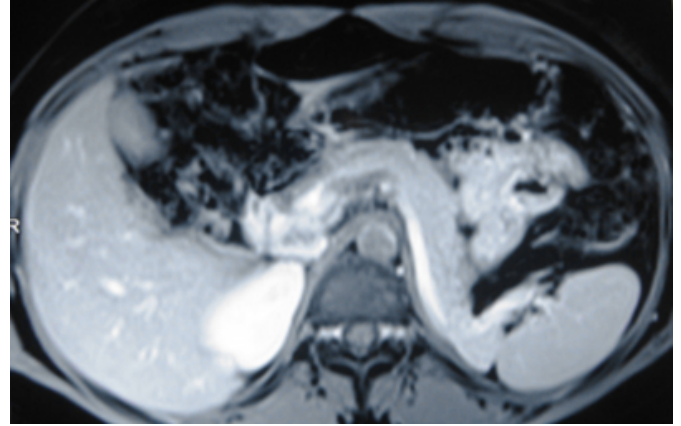
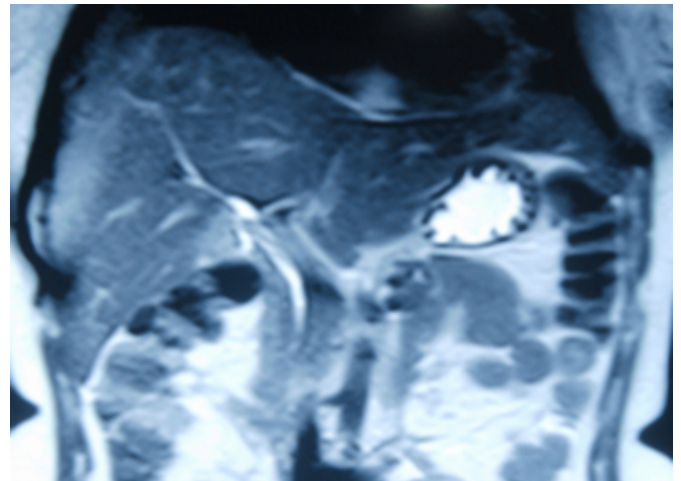


Figure 4

Figure 4: Coronal MR image showing complete relief of bile duct obstruction after resolution of the mass (to compare with figure 2)



DISCUSSION

The first description of pancreatic tuberculosis dates back to 1944 when Auerbach reported pancreatic involvement in 4.7% of 297 military tuberculosis cases at autopsy examination[1]. Isolated pancreatic tuberculosis is even rare with only a little more than 100 cases being reported[2]. The pancreas exhibits some kind of innate resistance to tuberculosis due to local antibacterial effect of pancreatic enzymes[3].

Pancreatic tuberculosis predominantly occurs in young people in their third decade with equal incidence in men and

women [4]. There is recent increase in incidence attributed to availability of better imaging modalities, multidrug resistant bacilli and increase in immune-compromised hosts [5]. The clinical presentation can range from mild constitutional symptoms to obstructive jaundice and pancreatitis. Pathologically, tuberculosis usually occurs in the head and uncinate process of the pancreas. Similar to clinical manifestations, the radiologic findings have a variety of appearances [6].

On ultrasound examination, the echotexture of the pancreas can be altered and heterogenous [7]. There may be focal masses mimicking carcinoma, or diffuse enlargement of the organ simulating acute pancreatitis. Intrapancreatic collections are probably the most common finding at ultrasound [8]. They appear hypoechoic with fine echogenic material within. These features establish the fact that there is no single characteristic sonographic finding for this disease.

One feature that has been highlighted in previous reports is the absence of pancreatic ductal enlargement despite a mass in the head of the pancreas. Fisher et al reported displacement and stenosis of a normal appearing duct without much dilatation [9]. In a series by Nagar et al, only 3 out of 32 cases had a prominent main pancreatic duct [4]. However, dilatation of the common bile duct can be seen, as noted in our case and previous reports [10]. Another common feature reported was the presence of pancreatic and periportal lymphadenopathy. As in tuberculous nodes elsewhere, they can have central necrosis and form conglomerate masses.

As it is true in ultrasonography, computerized tomography scan also have a spectrum of manifestations, which is attributed to the nature of the pathological process itself. Ibrahim et al have observed that the most common CT presentation of pancreatic tuberculosis is a mass, which will pose difficulty in differentiation from a malignant mass [11]. Central hypo-attenuation can occur in both situations, which is due to caseation in tuberculous masses. In malignancy, it is postulated to be due to central necrosis or differential contrast enhancement.

Magnetic resonance imaging shows the above-mentioned features. The pancreatic head masses appear as hypo to iso-intense lesions on T1 W images, which show heterogenous signal on T2 W images. There can be cystic areas within the solid mass. On gadolinium-enhanced T1W fat-suppressed gradient-recalled echo images, peripheral enhancement with areas of central necrosis can be appreciated [3].

At MRCP, the main pancreatic duct has always been found to be smooth and undilated even in patients with head masses. This finding can greatly help in differentiating tuberculosis from adenocarcinoma of the pancreas in which there will be pancreatic ductal dilatation in 77% of cases, and from chronic pancreatitis, which will have ductal irregularities in almost all cases [12].

Peripancreatic vascular involvement, which is a common feature in carcinoma of the pancreas, is a rare finding in patients with tuberculous pancreatic masses [13]. In the existing literature, only three patients had been reported to have either portal or splenic vein invasion or encasement. One author reported a patient who had massive gastrointestinal bleeding from a peripancreatic artery [14].

After radiological suspicion of a tuberculous pancreatic head mass, definitive proof can be obtained by image-guided fine needle aspiration of the lesion. Sanjay et al highlighted the role of FNAC in preoperative diagnosis and observed that in the majority of previously reported cases histological diagnosis was obtained by laparotomy and biopsy [15].

CONCLUSION

To conclude, we observe that tuberculous pancreatic head mass is a rare entity and can mimic pancreatic cancer and focal pancreatitis. The radiological features and guided procedure have helped us in reaching the correct diagnosis and appropriate medical management, and hence avoiding a major surgical procedure in the form of pancreaticoduodenectomy.

References

1. Auerbach O. Acute generalized miliary tuberculosis. *Am J Pathol.* 1944;20:121-136
2. Xia F, Poon RT, Wang SG, et al. Tuberculosis of pancreas and peripancreatic lymph nodes in immunocompetent patients: experience from China. *World J Gastroenterol.* 2003;9:1361-1364
3. Backer DAI, Morteale KJ, Bomans P, et al. Tuberculosis of the pancreas: MR features. *Am J Roentgenol.* 2005;184:50-54.
4. Nagar AM, Raut AA, Morani AC, et al. Pancreatic tuberculosis: A clinical and imaging review of 32 cases. *J Comput Assist Tomogr* 2009;33: 136-141
5. Tetezi JP, Pisegna JR, Barkin JS. Tuberculous pancreatic abscess as a manifestation of AIDS. *Am J Gastroenterol.* 1989;84:581-582.
6. Levine R, Tenner S, Steinberg W, et al. Tuberculous abscess of the pancreas. Case report and review of literature. *Dig Dis Sci.* 1992;37:141-144.
7. Desai DC, Swaroop VS, Mohandas KM, et al. Tuberculosis of the pancreas. Report of three cases. *Am J Gastroenterol.* 1991;86:761-763.
8. Lundstedt C, Nyman R, Brismar J, et al. Imaging of tuberculosis. II. Abdominal manifestations in 112 patients.

Acta Radiol. 1996;37: 489-495

9. Fischer G, Spengler U, Nuebrand M, et al. Isolated tuberculosis of the pancreas masquerading as a pancreatic mass. *Am J Gastroenterol.* 1995;90:2227-2230

10. Pombo E, Diaz Candamio MJ, Rodriguez E, et al. Pancreatic tuberculosis. CT findings. *Abdom Imaging.* 1998;23:394-397.

11. Ibrahim GF, Al-Nakshabandi NA. Pancreatic tuberculosis: role of multidetector computed tomography. *Can Assoc Radiol J.* 2011 Nov;62(4):260-4. Epub 2010 Jun 4.

12. Fulcher AS, Turner MA. MR pancreatography: a useful tool for evaluating pancreatic disorders. *Radiographics*

1999;19:5-24

13. Evans JD, Hamanaka Y, Olliff SP, et al. Tuberculosis of the pancreas presenting as metastatic pancreatic carcinoma. A case report and review of the literature. *Dig Surg* 2000;17:183–187.

14. Levine R, Tenner S, Steinberg W, et al. Tuberculous abscess of the pancreas. Case report and review of literature. *Dig Dis Sci.* 1992;37:141-144.

15. Sanjay DC, Atul S, Ladbans K, et al. Fine needle aspiration diagnosis of isolated pancreatic tuberculosis. A case report and review of literature. *J Pancreas (online).* 2003;4:158-162.

Author Information

SM Chandramohan, M.S., M.Ch. FACS.

Professor and Head, Department of Surgical Gastroenterology, Center of Excellence for Upper GI Surgery, Madras Medical College and Rajiv Gandhi Government General Hospital

M Kangavel, DNB, MRCS.

Senior Resident, Department of Surgical Gastroenterology, Government Royapettah Hospital

J Madhusudhanan, M.S.

Senior Resident, Department of Surgical Gastroenterology, Center of Excellence for Upper GI Surgery, Madras Medical College and Rajiv Gandhi Government General Hospital

D Madhusudhanan, M.S.

Senior Resident, Department of Surgical Gastroenterology, Government Royapettah Hospital