

Pancreatic Tuberculosis or Tumor: A Diagnostic Dilemma

Rohit Sharma, Kavya Goel, Sufian Zaheer, Ashwin Barsagade

Abstract: *Pancreatic tuberculosis is a frequently misdiagnosed illness owing to its ambiguous presentation mimicking pancreatic carcinoma clinically as well as radiologically. Isolated pancreatic tuberculosis is an extremely rare diagnosis and few case reports or series describe this condition. This is a case report of 36 years old man who presented with abdominal pain associated with nausea for a period of one week. Preliminary biochemical analysis revealed mildly increased pancreatic enzymes with raised TLC. On CT scan, a mass lesion arising from head of pancreas with periportal and retroperitoneal lymphadenopathy causing dilatation of common bile duct and main pancreatic duct was seen which was suggestive of malignancy. Due to unavailability of endoscopic ultrasonography and remote location of our center, a decision was made by the surgical team to perform a pancreaticoduodenectomy along with partial gastrectomy, Whipple's procedure in spite of negative CA 19.9. Histopathological studies on head of pancreas, stomach, duodenum and lymph nodes were performed revealing multiple confluent epithelioid cell granulomas involving whole of pancreas, lymph nodes and pyloric end of stomach. The patient was then started on appropriate anti tubercular therapy and responded well to treatment. With this case report we hope to bring the differential of tuberculosis upwards in a case of pancreatic mass before an extensive surgery needs to take place.*

Keywords: Pancreatic tuberculosis, pancreatic tumor

1. Introduction

Tuberculosis is a major disease burden, one of the top 10 causes of deaths worldwide. It is the leading cause of death caused by any single infectious agent. While the global incidence of tuberculosis in 2019 was an estimated 10 million people, 26% of these cases were from India: the maximum of any country in the world.¹ Tuberculosis mainly affects lungs but can infect many other sites like lymph nodes, pleura, bones and joints, urogenital tract and meninges. The incidence of extra pulmonary tuberculosis is around 16% of all TB infections. However, pancreatic tuberculosis is very rare and accounts only 4.7% as per the study conducted by Auerbach et al.² No case of pancreatic tuberculosis was reported in a classical study by Bhansali where 300 cases of abdominal tuberculosis were studied.³ Recently an increase in the number of cases of pancreatic tuberculosis is seen.⁴⁻⁸ Powerful imaging tools or the provision of taking biopsies from pancreatic lesions may be the possible cause of getting this increase in the diagnosis. Most of the patients having pancreatic tuberculosis are immunocompromised. Since pancreatic tuberculosis mimics malignancy of the pancreas and is mostly misdiagnosed,⁹ an awareness on pancreatic TB needs to be spread because the treatment with ATT is highly effective and avoids any major surgical intervention that may cause harm to the patient in future.

2. Case Report

A 36 years old man was admitted to G B Pant Hospital - ANIIMS, Port Blair with complaints of pain abdomen,

nausea and loss of appetite. The pain was mild to moderate and mainly in the epigastric region, with onset one week back. There was no history of fever, cough or weight loss. Per abdominal examination was unremarkable except mild tenderness in the upper abdomen. The initial work up of the patient included CBC, LFT, KFT, Viral Markers (HIV, HBsAg and HCV) which were within normal limits except mild increase in the TLC and serum amylase and lipase, following which CA 19.9 was done which was also within normal limits. A CT scan was ordered that revealed a mass lesion arising from head of pancreas (Fig 1). It was a well-defined isodense lesion with few cystic areas within, with lobulated margins, measuring 4.6X4.1X3.6 cm. No calcifications or cysts were noted within the lesion. Main pancreatic duct (MPD) was dilated (5.5 mm) and common bile duct (CBD) measured 1.1 cm. The lesion was abutted medially by the superior mesenteric vein (SMV) and laterally by the gall bladder wall. The fat planes of the lesion with the gall bladder and SMV were maintained. On post contrast scan the lesion showed heterogenous enhancement with non-enhancing hypodense central areas within. The portal vein was normally enhancing with no filling defect seen. Multiple enlarged lymph nodes were also noted in periportal, paraaortic and aortocaval regions, largest measuring 1.6 cm X 1.5 cm in the aortocaval region. No ascites was noted in the pelvic cavity. Gall bladder was also seen distended (9 X 3.5 cm) with sludge seen in the lumen. A final diagnosis was made on CT scan which was suggestive of malignancy, head of pancreas.

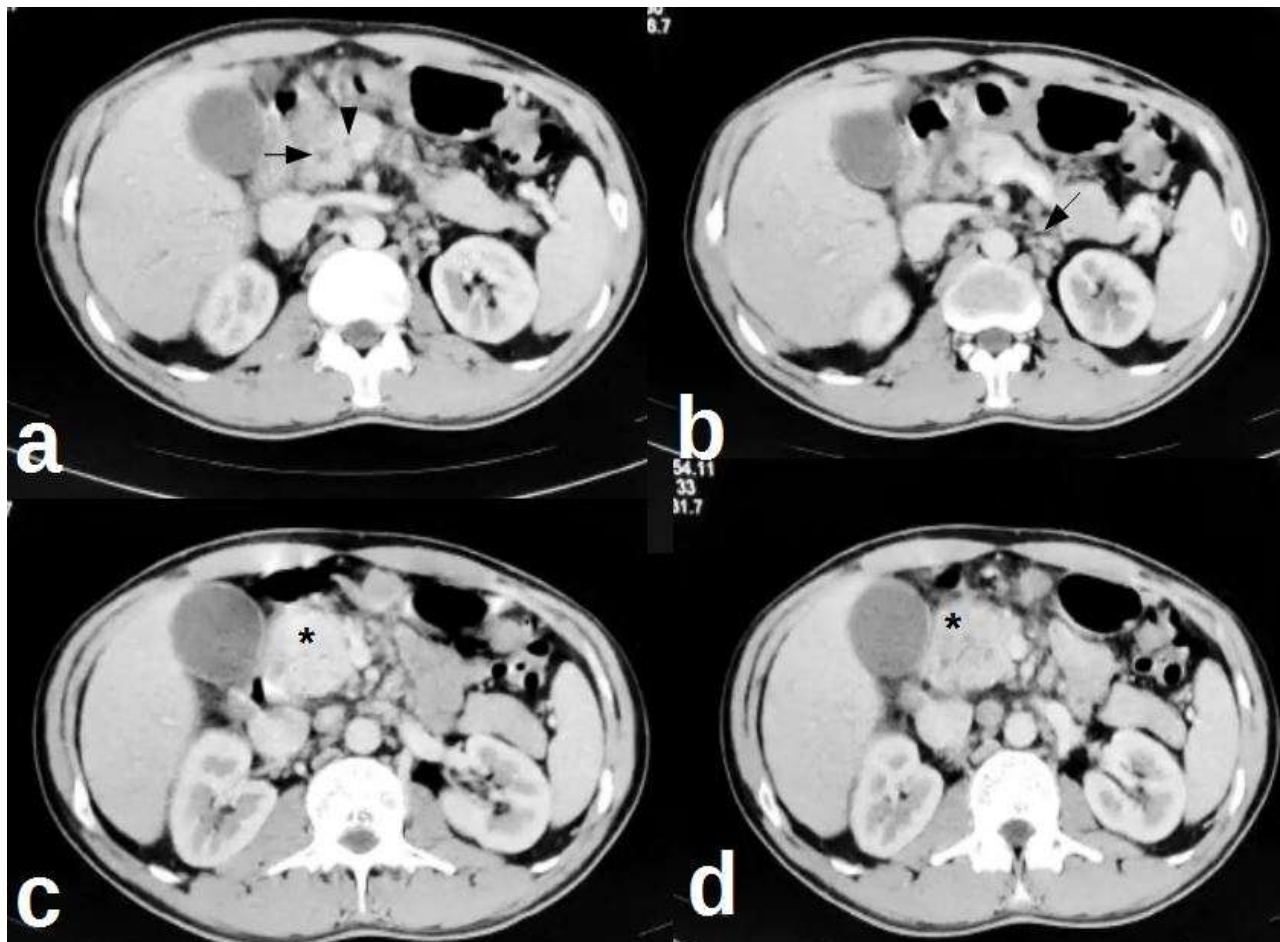


Figure 1: Axial CT scan of the abdomen shows common bile duct (arrow in A) and main pancreatic duct (arrowhead in A) dilatation. B) Image shows multiple retroperitoneal non - necrotic non - conglomerated lymph nodes. C) Well defined "mass" at region of pancreatic head. Note that the duodenum is seen medially and separate from the mass lesion. D) The lesion is predominantly solid (without any calcifications) and isodense with few linear hypodense (cystic) areas within the lesion.

Due to lack of advanced diagnostic modalities and appropriate expertise like ERCP or CT guided biopsy at this remote Island, a decision was made by the surgical team to perform Whipple's surgery on this patient i. e., pancreatoduodenectomy along with partial gastrectomy. Interaortocaval lymph nodes and gall bladder were also removed. We received a specimen of a part of stomach, head of pancreas and duodenum (Fig.2) along with aortocaval lymph nodes, gall bladder and omentum. Grossly the stomach measured 10 cm at greater curvature and 8 cm at lesser curvature. There was a narrowing at pyloric end of stomach with thickened wall. The pancreas measured 6 X 4 X 4 cm and showed grey white areas on cut section (Fig 3). The duodenum measured around 12 cm in length and was unremarkable on cut.

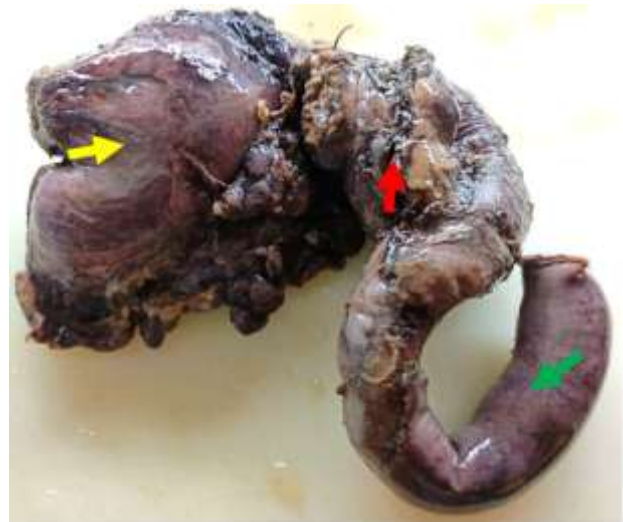


Figure 2: Gross specimen of part of stomach (yellow arrow), head of pancreas (red arrow) with duodenum (green arrow)



Figure 3: Cut surface of pancreas showing grey white areas (yellow arrow)

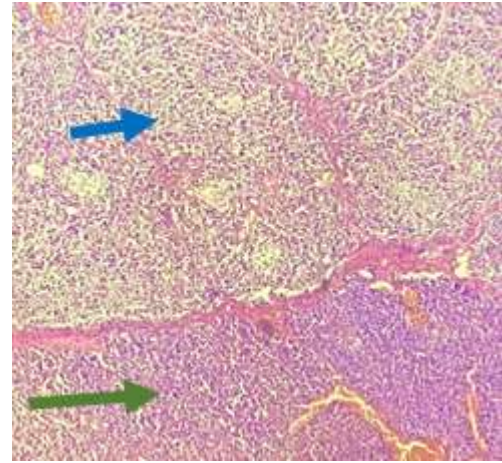


Figure 4: 4X view of section from pancreas showing normal pancreas (green arrow) and granulomatous areas (blue arrow).

Histopathological examination was performed and multiple sections examined from pancreas, stomach and duodenum. Sections from pancreas showed large areas of confluent epithelioid cell granulomas with Langhans type giant cell, caseous necrosis and extensive fibrosis (Fig 4 - 5). Sections from duodenum were unremarkable. However, sections from the narrowed pyloric end of stomach also showed presence of tubercular granulomas (Fig 6).

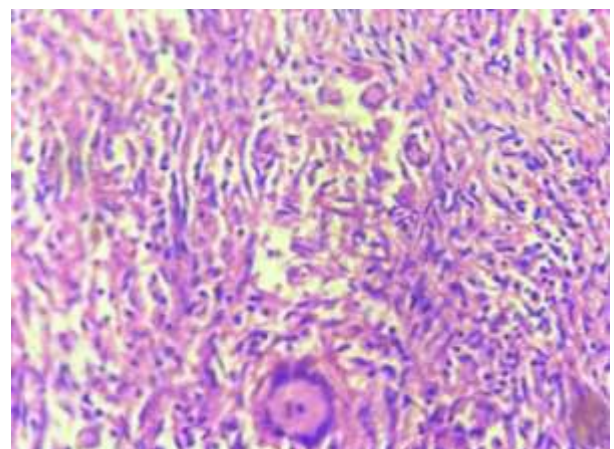


Figure 5: High power view of section from pancreas showing granulomas comprising of epithelioid cells, lymphocytes Langhans type giant cells.

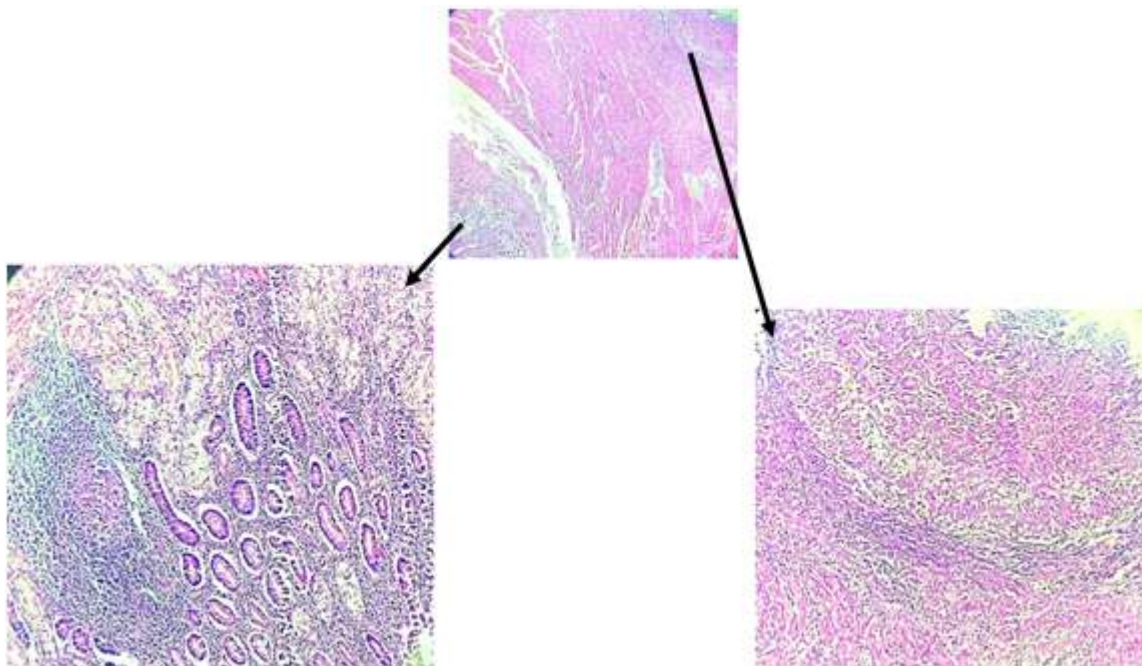


Figure 6: H & E - stained section from pyloric end of stomach showing normal mucosa with granuloma formation in the muscular layer.

3. Discussion

Tuberculosis, nowadays, has a high morbidity and is one of the leading causes of death from infectious diseases worldwide according to the World Health Organization (WHO) ¹⁰. We all know that the primary site of tuberculosis is respiratory system with the lung being the predominant locus; however, extrapulmonary tuberculosis also exists and gastrointestinal tract is the sixth most common site of extrapulmonary tuberculosis. The incidence is higher in immunocompromised patients such as those infected with HIV virus¹¹. The route of infecting gastrointestinal site is oral route or blood - borne infection. Most common sites for gastrointestinal tuberculosis are intestine, colon and abdominal cavity. Pancreas, per se, is very rarely involved by tubercular bacilli. The head of pancreas is most commonly involved in pancreatic tuberculosis¹².

The manifestations of pancreatic TB are very diverse. The patient may come with the complaints of abdominal discomfort and pain along with nausea and vomiting. Patient may also present with obstructive jaundice, loss of appetite, fever and sometimes an abdominal mass ^{13 - 15}. In our case report, patient presented with abdominal pain mainly in the epigastric region with nausea and loss of appetite. The first thing came to the mind of the surgeon was malignancy after reading the findings of CT scan i.e., a mass arising from head of pancreas. The findings during surgery also showed a pancreatic mass with multiple lymph nodes. Histopathological findings however showed numerous epithelioid cell granulomas with Langhans type of multinucleated giant cells and caseous necrosis. Based on the histopathology, a final diagnosis of pancreatic tuberculosis was made.

Making a correct diagnosis of pancreatic TB preoperatively is difficult. Radiological findings also emphasized more on pancreatic malignancy. There are no distinctive morphological features on radiology that could differentiate between pancreatic malignancy and pancreatic TB¹⁶. It is assumed that the reason of this misdiagnosis is the high and similar densities of abdominal organs and the overlapping of the organs. Fluid and gas in the abdominal cavity could also influence the diagnosis. Previously lesser cases were reported of pancreatic tuberculosis; hence it was never considered as a differential diagnosis of pancreatic mass. However due to advancement in the world of diagnostics, there has been an increase in the number of reported cases, therefore we should consider pancreatic TB as one of the differentials in such scenario.

Cytological examination of the material obtained from USG guided fine needle aspiration should be considered as the investigation of choice to differentiate between any benign or malignant mass¹⁷. Pathological confirmation should always be considered as the gold standard in establishing any ultimate diagnosis before surgery. Epithelioid cell granuloma with caseous necrosis is the characteristic feature of Tuberculosis caused by *Mtb*¹⁸. Granuloma has two parts, the central part which is composed caseous necrosis¹⁹ and the peripheral part which consists of epithelioid cells, macrophages, multinucleated giant cells and lymphocyte ²⁰. Pancreas is full of enzymes like amylases, lipases and

deoxyribonucleases which have antimycobacterial activity ²¹ which is the reason why pancreatic tuberculosis is rare and occurs mainly in immunocompromised individuals.

4. Conclusion

Pancreatic tuberculosis is very rare and can be misdiagnosed as pancreatic malignancy both clinically and radiologically. Each patient presenting with a pancreatic mass may not have a malignancy. This report concludes that the gold standard for differentiation between malignancy and tuberculosis of the pancreas remains histocytopathological examination. A high index of suspicion for tuberculosis should be kept for patients presenting with dubious complaints and in the absence of positive immunological markers to prevent patient morbidity and providing a correct diagnosis and appropriate treatment. This case report hopes to highlight an increased incidence of diagnosis of pancreatic tuberculosis and to urge histocytopathological examination of pancreatic masses before any extensive surgery.

References

- [1] WHO: Global Tuberculosis Report 2020. Geneva: World Health Organization 2020.
- [2] Auerbach O. Acute generalized miliary tuberculosis. *Am J Pathol* 1944; 20: 121– 136.
- [3] Bhansali SK. Abdominal tuberculosis. *Am J Gastroenterol*.1977; 67: 324–7.
- [4] Singhai P, Gadhadh R, Joshi S, et al. Isolated pancreatic tuberculosis in an immunocompetent host. *J Assoc Physicians India* 2017; 65: 98– 100.
- [5] Sun PJ, Lin Y, Cui XJ. Isolated pancreatic tuberculosis with elevated CA 19-9 levels masquerading as a malignancy: a rare case report and literature review. *Medicine (Baltimore)* 2018; 97: e13858– e13858.
- [6] Irfan M, Thiavalappil F, Nagaraj J, et al. Tuberculous pancreatitis complicated by ruptured splenic artery pseudoaneurysm. *Monaldi Arch Chest Dis* 2013; 79: 134– 135.
- [7] Falkowski AL, Graber J, Haack HG, et al. Isolated pancreatic tuberculosis: a case report and radiological comparison with cystic pancreatic lesions. *J Radiol Case Rep* 2013; 7: 1– 11.
- [8] Ali M, Shaikat A, Al-Suwaidi Z, et al. Tuberculosis of pancreas, the first case reported from Qatar. *Int J Mycobacteriol* 2019; 8: 101– 103.
- [9] Sharma V, Rana SS, Kumar A, et al. Pancreatic tuberculosis. *J Gastroenterol Hepatol* 2016; 31: 310– 318.
- [10] WHO: Global Tuberculosis Report 2015. Geneva: World Health Organization 2015.
- [11] M. P. Sharma and V. Bhatia, "Abdominal tuberculosis, ". *Indian J Med Res*, pp.120–305, 2004.
- [12] G. S. Zacharia, R. Antony, S. Kolassery, and T. M. Ramachandran, "Isolated pancreatic tuberculosis masquerading as pancreatic cancer, " *Gastroenterology Report*, vol.2, no.2, pp.154–157, 2014.
- [13] O. Hellara, F. Noomène, and O. Toumi, "A pseudotumoral presentation of pancreatic tuberculosis, " *Journal of Visceral Surgery*, vol.149, no.4, pp. e282–e283, 2012.

- [14] F. Ozkan, E. Bulbuloglu, M. F. Inci, H. Sayar, H. Kahraman, and M. Yuksel, "Isolated pancreatic tuberculosis mimicking malignancy and causing obstructive jaundice, " *Journal of Gastrointestinal Cancer*, vol.44, no.1, pp.118–120, 2013.
- [15] Y. Yang, "Pancreatic tuberculosis mimicking pancreatic carcinoma during anti - tuberculosis therapy: A case report, " *World Journal of Clinical Cases*, vol.2, no.5, p.167, 2014.
- [16] V. Sharma, S. S. Rana, A. Kumar, and D. K. Bhasin, "Pancreatic tuberculosis, " *Journal of Gastroenterology and Hepatology (Australia)*, vol.31, no.2, pp.310–318, 2016.
- [17] S. S. Rana, D. K. Bhasin, R. Srinivasan, S. Sampath, B. R. Mittal, and K. Singh, "Distinctive Endoscopic Ultrasound Features of Isolated Pancreatic Tuberculosis and Requirements for Biliary Stenting, " *Clinical Gastroenterology and Hepatology*, vol.10, no.3, pp.323–325, 2012.
- [18] S. Mukhopadhyay, C. F. Farver, L. T. Vaszar et al., "Causes of pulmonary granulomas: A retrospective study of 500 cases from seven countries," *Journal of Clinical Pathology*, vol.65, no.1, pp.51–57, 2012.
- [19] Y. Eishi, M. Suga, I. Ishige et al., "Quantitative analysis of mycobacterial and propionibacterial DNA in lymph nodes of Japanese and European patients with sarcoidosis, " *Journal of Clinical Microbiology*, vol.40, no.1, pp.198–204, 2002.
- [20] W. M. C. Timmermans, J. A. M. van Laar, and P. M. van Hagen, "Immunopathogenesis of granulomas in chronic autoinflammatory diseases," *Clinical & Translational Immunology*, vol.5, e118 pages, 2016.
- [21] C. Franco - Paredes, M. Leonard, R. Jurado, H. M. Blumberg, and R. M. Smith, "Tuberculosis of the pancreas: Report of two cases and review of the literature, " *American Journal of the Medical Sciences*, vol.323, no.1, pp.54–58, 2002.