

Abdominal Tuberculosis With Pancreatic Head Involvement Mimicking Pancreatic Malignancy in a Young Man: A Case Report

Lie-zhi Wang

Taizhou University

Hao Jiang

Taizhou University

Chong Jin

Taizhou University

Yu Wen

Second Xiangya Hospital

Heng Zou

Second Xiangya Hospital

Kunpeng Wang (✉ wangkp9644@tzzxyy.com)

Department of General Surgery, Taizhou Central Hospital, (Taizhou University Hospital), Taizhou 318000, Zhejiang, China. <https://orcid.org/0000-0001-5088-2548>

Case report

Keywords: pancreatic tuberculosis, pancreatic head carcinoma, computed tomography, laparotomy, case report

Posted Date: November 20th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-111284/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background Pancreatic tuberculosis is a rare disease, even in immunocompetent hosts. Abdominal tuberculosis involving the pancreatic head and peripancreatic areas may simulate pancreatic head carcinoma.

Case presentation: We herein present the case of a 32-year-old man who was admitted to our hospital for intermittent epigastric pain and weight loss. Computed tomography scan and magnetic resonance imaging revealed a mass in the head of the pancreas. The lesion was initially diagnosed as pancreatic head carcinoma on abdominal imaging. Laparotomy confirmed the diagnosis of pancreatic tuberculosis, while the test for acid-fast bacilli was negative before operation and the patient fully recovered after six months of standard anti-tuberculosis treatment.

Conclusions: The present case is reported to emphasize the importance of including pancreatic tuberculosis in the differential diagnosis of pancreatic lesions, under the premise of safety, we recommend endoscopic ultrasound-guided fine needle aspiration biopsy for diagnosis.

Background

Abdominal tuberculosis involving the pancreas and peripancreatic lymph nodes is uncommon and its clinical manifestations include an insidious onset with non-specific constitutional symptoms, most commonly abdominal pain, anorexia, weakness, fever, weight loss and night sweats (1). Pancreatic tuberculosis is usually misdiagnosed as carcinoma of the pancreas; however, obstructive jaundice is common in pancreatic head carcinoma, but uncommon in pancreatic tuberculosis (2–4). Laboratory examinations are often non-contributory, including abnormal liver function tests, anemia, leukocytosis or elevated erythrocyte sedimentation rate (5).

The diagnosis of pancreatic tuberculosis is difficult prior to laparotomy in the majority of reported cases (6). We herein present the case of a male patient who presented with a mass in the head of the pancreas on abdominal imaging, mimicking pancreatic head cancer, who was diagnosed with pancreatic tuberculosis on laparotomy.

Case Presentation

A 32-year-old man presented with a 1-month history of intermittent epigastric pain, anorexia and weight loss of 5 kg. There was no history of expectoration, fever, or jaundice. The patient had a past medical history of chronic erosive gastritis for 1 year, for which he was administered antacid drugs discontinuously. An abdominal examination revealed mild tenderness over the epigastrium, without rebound tenderness. There was no palpable mass. No lymphadenopathy was observed. Laboratory examination at the time of admission revealed that the complete blood count, liver function tests, bilirubin and amylase levels, serum carbohydrate antigen (CA) 19 – 9, serum CA 12 – 5 and carcinoembryonic antigen (CEA) levels were all within normal limits. The findings on chest radiography

were also normal. The test for acid-fast bacilli was negative. An abdominal computed tomography (CT) scan revealed an ill-defined 35 × 30-mm mass lesion in the head of the pancreas. The mass exhibited inhomogeneous enhancement, with the portal vein encased and compressed by the mass (Fig. 1), mimicking a pancreatic head carcinoma. Magnetic resonance imaging (MRI) revealed local stenosis of the portal vein due to compression by the lesion (Fig. 2; black arrow). Stricture of the distal common bile duct was observed on magnetic resonance cholangiopancreatography (MRCP) (Fig. 2; white arrow), without apparent dilatation of the proximal common bile duct, intrahepatic bile duct, or pancreatic duct. In addition, several enlarged lymph nodes were identified in the retroperitoneum. The appearance on CT and MRI scans indicated a possible diagnosis of a pancreatic malignancy. Therefore, pancreaticoduodenectomy was recommended.

Intraoperatively, a mass was identified above the pancreatic head, comprising caseous necrotic tissue (Fig. 3). An intraoperative frozen section biopsy confirmed the diagnosis of tuberculous lymphadenitis. Histopathological examination revealed a mass composed of epithelioid cells and occasional multinucleated giant cells, exhibiting caseous necrosis (Fig. 4). The patient fully recovered after six months of standard anti-tuberculosis treatment. The final diagnosis of the presented case is pancreatic tuberculosis.

Discussion

Tuberculosis is a multisystem infectious disease that most commonly occurs in the lung. Abdominal tuberculosis is one of the most common types of extrapulmonary tuberculosis. However, abdominal tuberculosis involving the pancreas and peripancreatic lymph nodes is rare.

The clinical manifestations of pancreatic tuberculosis include a generally insidious onset with non-specific constitutional symptoms, while the most common symptoms include abdominal pain, anorexia, weakness, fever, weight loss and night sweats(1). Obstructive jaundice is a common clinical manifestation in pancreatic head carcinoma, but is uncommon in pancreatic tuberculosis (2–4). Laboratory examinations are often non-contributory, including abnormal liver function tests, anemia, leukocytosis or elevated erythrocyte sedimentation rate (5).

The diagnosis of pancreatic tuberculosis is difficult prior to laparotomy in the majority of reported cases (6). Since pancreatic tuberculosis may be cured with antituberculosis therapy, it is important to make a definitive diagnosis on imaging in order to avoid unnecessary surgical interventions. Abdominal tuberculosis involving the pancreas and peripancreatic lymph nodes may mimic pancreatic carcinoma solely based on radiological findings, as in the present case. CT scan is the standard diagnostic option and was applied in the majority of the reported studies. The CT scan characteristics of pancreatic tuberculosis are non-specific, including low density, heterogeneous enhancement, peripheral enhancement, areas of central enhancement and presence of calcifications (6). A low-density mass around the pancreatic head with peripheral rim enhancement on CT, as in the present case, appears to be

characteristic of lymphadenitis (3). These findings may result from the central caseous necrosis with peripheral active inflammation of infected lymph nodes (7).

MRI may be assist in the diagnosis of pancreatic tuberculosis. On T1-weighted images, the lesions may exhibit low intensity, and on T2-weighted images they may exhibit high intensity (8, 9). Peripheral rim enhancement may also be observed on post-contrast T1-weighted images, similar to the findings on CT. In addition, dilatation of intrahepatic and extrahepatic bile ducts may occasionally be observed on MRCP (2, 3). Generally, dilatation of the common bile duct and pancreatic duct (double duct sign) on MRCP is highly suggestive of a pancreatic head malignancy. However, pancreatic duct dilatation rarely appears in pancreatic tuberculosis, even if the lesion is located centrally in the head of the pancreas.

Abdominal tuberculosis presenting as a pancreatic head mass may encase and compress the portal vein, thus causing portal hypertension and gastric varices (10). Vascular invasion of the abdominal vessels is often considered as a characteristic of a locally advanced pancreatic malignancy. However, vascular involvement cannot be used as a criterion for discriminating pancreatic tuberculosis from pancreatic malignancy, as there are several reports of vascular involvement in pancreatic tuberculosis (11, 12). Abdominal imaging of pancreatic tuberculosis may reveal solid or cystic lesions, typically in the pancreatic head. Therefore, the main differential diagnoses include mucinous/serous cystadenoma, cystic neuroendocrine tumor and pancreatic adenocarcinoma, whereas pancreatic tuberculosis mimicking pancreatic abscess has also been reported (13).

Since the diagnosis of pancreatic tuberculosis from radiological images is difficult, histological or bacteriological confirmation is recommended for establishing the diagnosis. Usual biopsy methods include percutaneous ultrasound-guided or CT-guided biopsy, endoscopic ultrasonography-guided fineneedle aspiration (EUS-FNA), and open surgical or laparoscopic biopsy. EUS-FNA has been increasingly used to confirm the diagnosis(4, 14), and was reported to be safe and effective for sampling(8, 15). However, EUS-FNA has the risk of complications or tumor dissemination in potentially resectable malignant tumors. Another drawback of EUS-FNA is the difficulty in obtaining a sufficient sample for definitive diagnosis. Last but not least, This is not a routine preoperative diagnosis method recommended by the mainstream of China. Therefore, an operation with an incisional biopsy may be a suitable alternative for diagnosing pancreatic tuberculosis, as in the present case. Cytological biopsy in pancreatic tuberculosis shows caseous necrosis, granulomatous inflammation, epithelioid histiocytes, multinucleated giant cells and lymphocytes, while acid-fast bacilli are rarely seen(10, 16). A positive culture for mycobacteria may confirm the diagnosis, but it is less sensitive and requires long incubation periods.

Conclusions

In conclusion, The diagnosis of pancreatic tuberculosis is challenging due to the rarity of the disease itself and its insidious presentation with nonspecific symptoms. Pancreatic tuberculosis should be considered in the differential diagnosis of pancreatic lesions, particularly if the patient is young,

immunocompromised, or from endemic areas. EUS-FNA is a minimally invasive method and may be a useful tool for diagnosis, avoiding unnecessary procedures such as laparoscopy or laparotomy. Once diagnosis is confirmed, standard antituberculosis therapy for at least 6 months should be administered.

Abbreviations

CA-199

serum carbohydrate antigen 199, CA-125:serum carbohydrate antigen 125, CEA:carcinoembryonic antigen, CT:Computed tomography, MRI:Magnetic resonance imaging, MRCP:magnetic resonance cholangiopancreatography, EUS-FNA:endoscopic ultrasonography-guided fine needle aspiration.

Declarations

Ethics approval and consent to participate

The study protocols were approved by the Ethical Committee of the Taizhou Central Hospital and the Second Xiangya Hospital

Consent for publication

Written informed consent was obtained from the patient for publication of this article. A copy of the written consent is available for review by the Editor of this journal.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

Zhejiang Medical and Health Science and Technology Program No.2017KY711 (publishing fee); Project of Taizhou University, No.2018PY057 (image processing); Project of Taizhou Central Hospital, No.2019KT003 (English editing)

Authors' contributions

LLW, KPW, HJ and HZ reviewed the literature and contributed to the manuscript drafting; YW and CJ collected the patient 's clinical date; LZW and KPW were responsible for the revision of the manuscript; all authors issued final approval for the version to be submitted.

Acknowledgements

We are very grateful to our colleagues from the Department of Pathology for providing the pathological pictures.

References

1. 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(6): 1361-1364.
2. Yeoun JL, Jae YH, Su-EP, et al. Abdominal tuberculosis with periportal lymph node involvement mimicking pancreatic malignancy in an immunocompetent adolescent. *Pediatr Radiol*, 2014,44(11): 1450-1453.
3. Hiroto F, Hiroshi A, Kai Y, et al. A case of peripancreatic tuberculous lymphadenitis diagnosed by endoscopic ultrasound-guided fine-needle aspiration. *Clin J Gastroenterol*, 2014,7(1): 68-73.
4. Adrien S, Raimi K Stephanie B. Isolated pancreatic tuberculosis mimicking inoperable pancreatic cancer: A diagnostic challenge resolved by endoscopic ultrasound-guided fine-needle aspiration. *Can J Gastroenterol*, 2013, 27(8): 445-447.
5. Nagar AM, Raut AA, Morani AC, et al. Pancreatic tuberculosis: a clinical and imaging review of 32 cases. *J Comput Assist Tomogr*, 2009, 33(1): 136-141.
6. Poras C, Utsav B, Mohinder P. Pancreatic tuberculosis. *Indian J Surg*, 2015,77(6): 517-524.
7. Pereira JM, Madureira AJ, Vieira A , et al. Abdominal tuberculosis: imaging features. *Eur J Radiol*, 2005, 55(2): 173-180.
8. Kim JB, Lee SS, Kim SH, et al. Peripancreatic tuberculous lymphadenopathy masquerading as pancreatic malignancy: A single-center experience. *J Gastroenterol Hepatol*, 2014, 29(2): 409-416.
9. Nakai Y, Tsujino T, Kawabe T, et al. Pancreatic tuberculosis with a pancreaticobiliary fistula. *Dig Dis Sci*, 2007 52(5): 1225-1228.
10. Zacharia GS, Antony R, Kolassery S, et al. Isolated pancreatic tuberculosis masquerading as pancreatic cancer. *Gastroenterology Report*, 2014,2(2): 154-157.
11. Pombo F, Diaz Candamio MJ, Rodriguez E , et al. Pancreatic tuberculosis: CT findings. *Abdom Imaging*, 1998, 23(4): 394-397.
12. Rana SS, Sharma V, Sampath S, et al. Vascular invasion does not discriminate between pancreatic tuberculosis and pancreatic malignancy: a case series. *Ann Gastroenterol*, 2014, 27(4): 395-398.
13. Veerabadran P, Sasnur P, Subramanian S , et al. Pancreatic tuberculosis-abdominal tuberculosis presenting as pancreatic abscesses and colonic perforation. *World J Gastroenterol*, 2007, 13(3): 478-479.
14. Devi P, David L, Thomas K. Pancreatic Tuberculosis Mimicking Malignancy Diagnosed with Endoscopic Ultrasound-Guided Fine Needle Aspiration. *Endosc Ultrasound*, 2013, 2(1): 38-40.

15. Mallery JS, Centeno BA, Hahn PF, et al. Pancreatic tissue sampling guided by EUS, CT/US, and surgery: a comparison of sensitivity and specificity. *Gastrointest Endosc*, 2002, 56(2): 218-224.
16. Levine R, Tenner S, Steinberg W, et al. Tuberculous abscess of the pancreas. Case report and review of the literature. *Dig Dis Sci*, 1992, 37(7): 1141-1144.

Figures

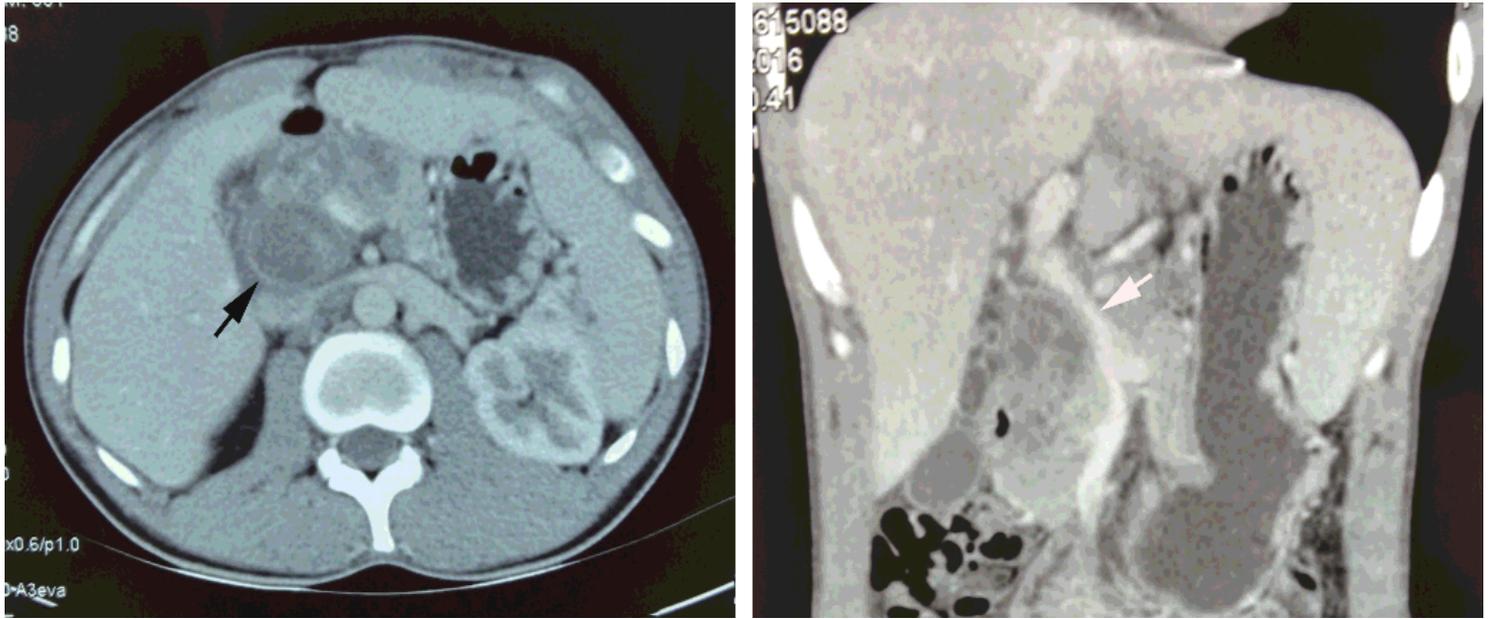


Figure 1

Contrast-enhanced computed tomography (CT) scan revealed an ill-defined mass with peripheral rim enhancement and internal low density in the head of the pancreas (left panel, black arrow). A coronal CT scan revealed that the portal vein was partially encased by the lesion (right panel, white arrow).

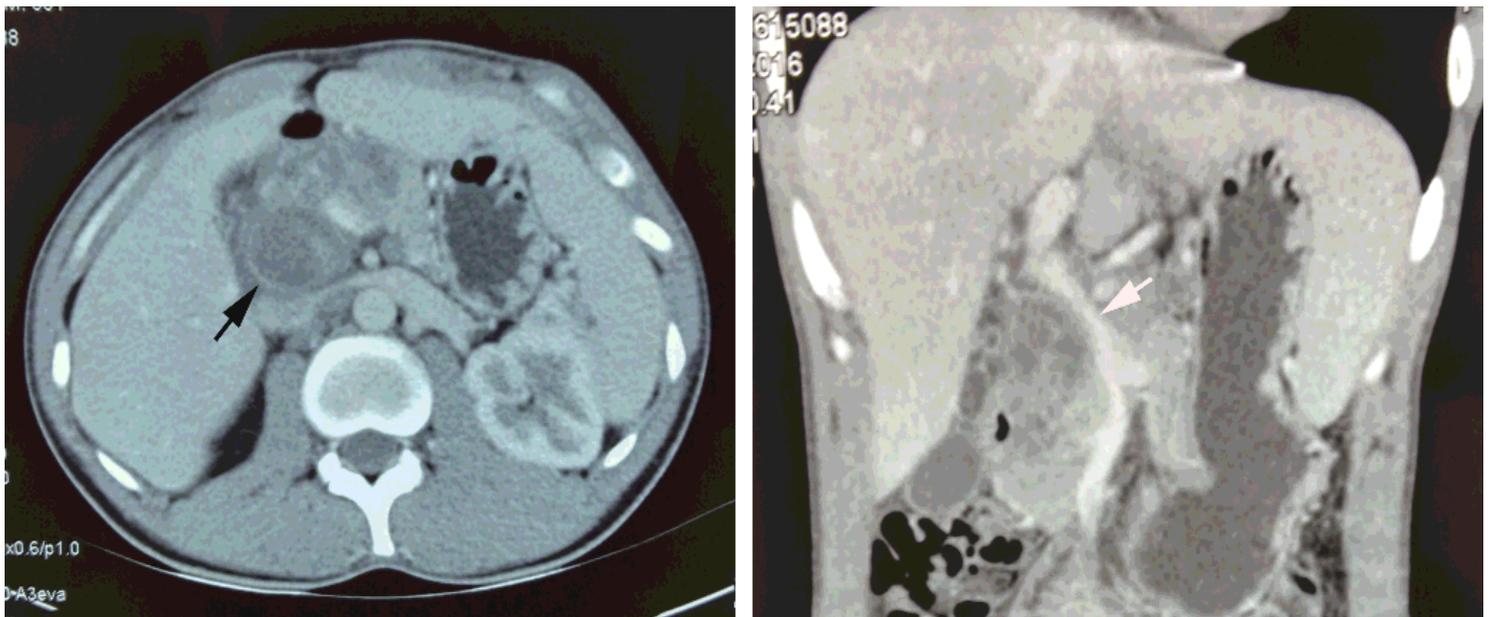


Figure 1

Contrast-enhanced computed tomography (CT) scan revealed an ill-defined mass with peripheral rim enhancement and internal low density in the head of the pancreas (left panel, black arrow). A coronal CT scan revealed that the portal vein was partially encased by the lesion (right panel, white arrow).

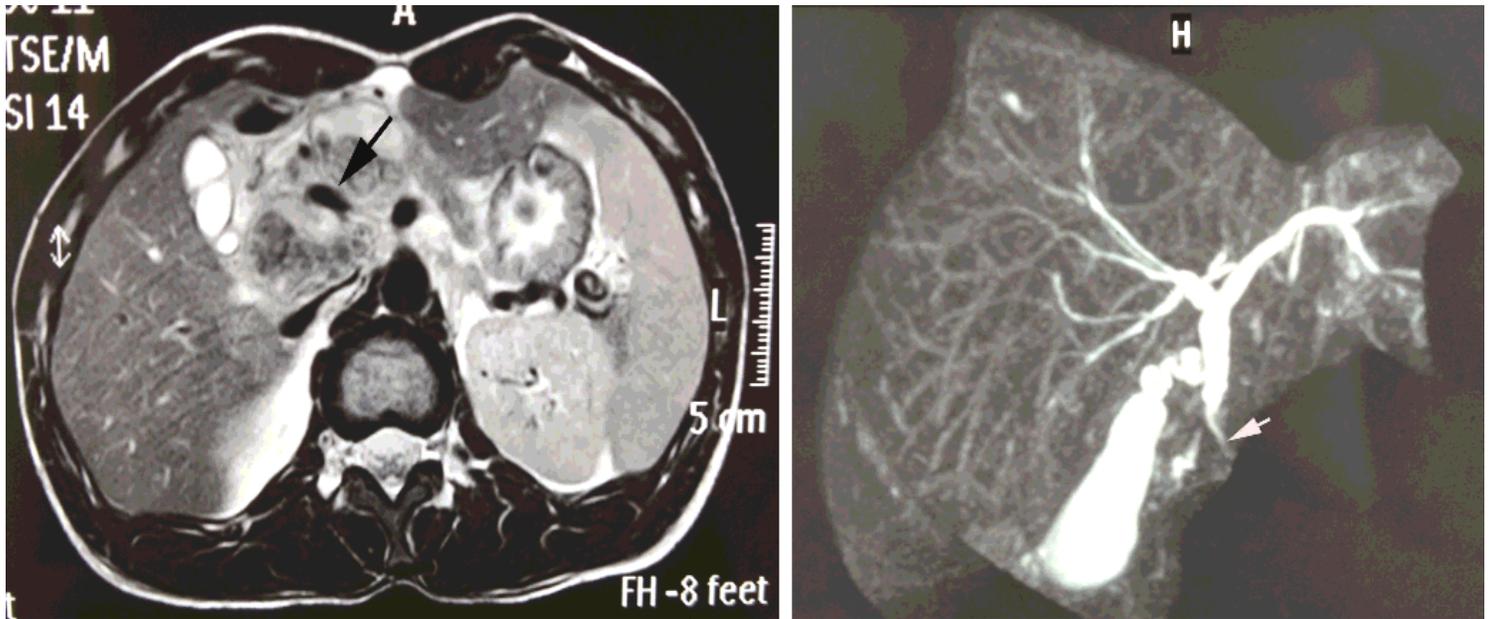


Figure 2

Magnetic resonance (MR) imaging revealed that the portal vein was locally narrowed due to compression by the mass (left panel, black arrow). MR cholangiopancreatography revealed a stricture of the distal common bile duct (right panel, white arrow).

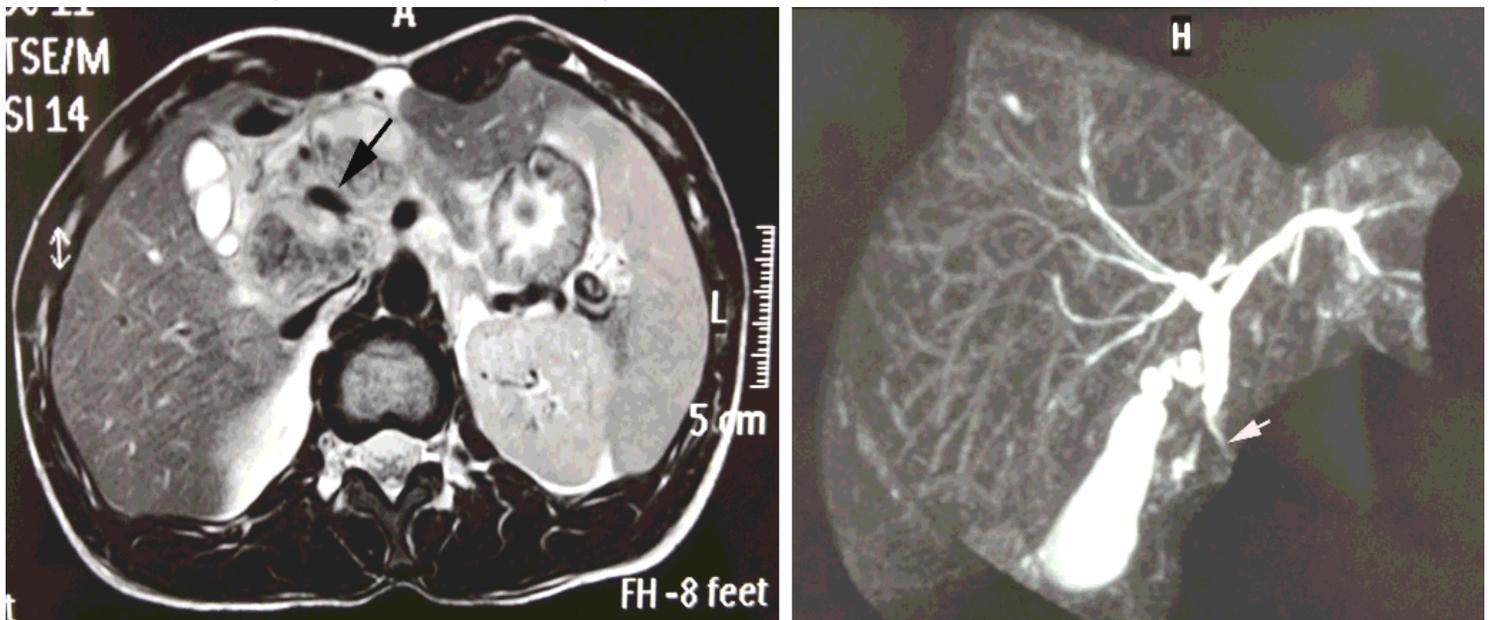


Figure 2

Magnetic resonance (MR) imaging revealed that the portal vein was locally narrowed due to compression by the mass (left panel, black arrow). MR cholangiopancreatography revealed a stricture of the distal common bile duct (right panel, white arrow).

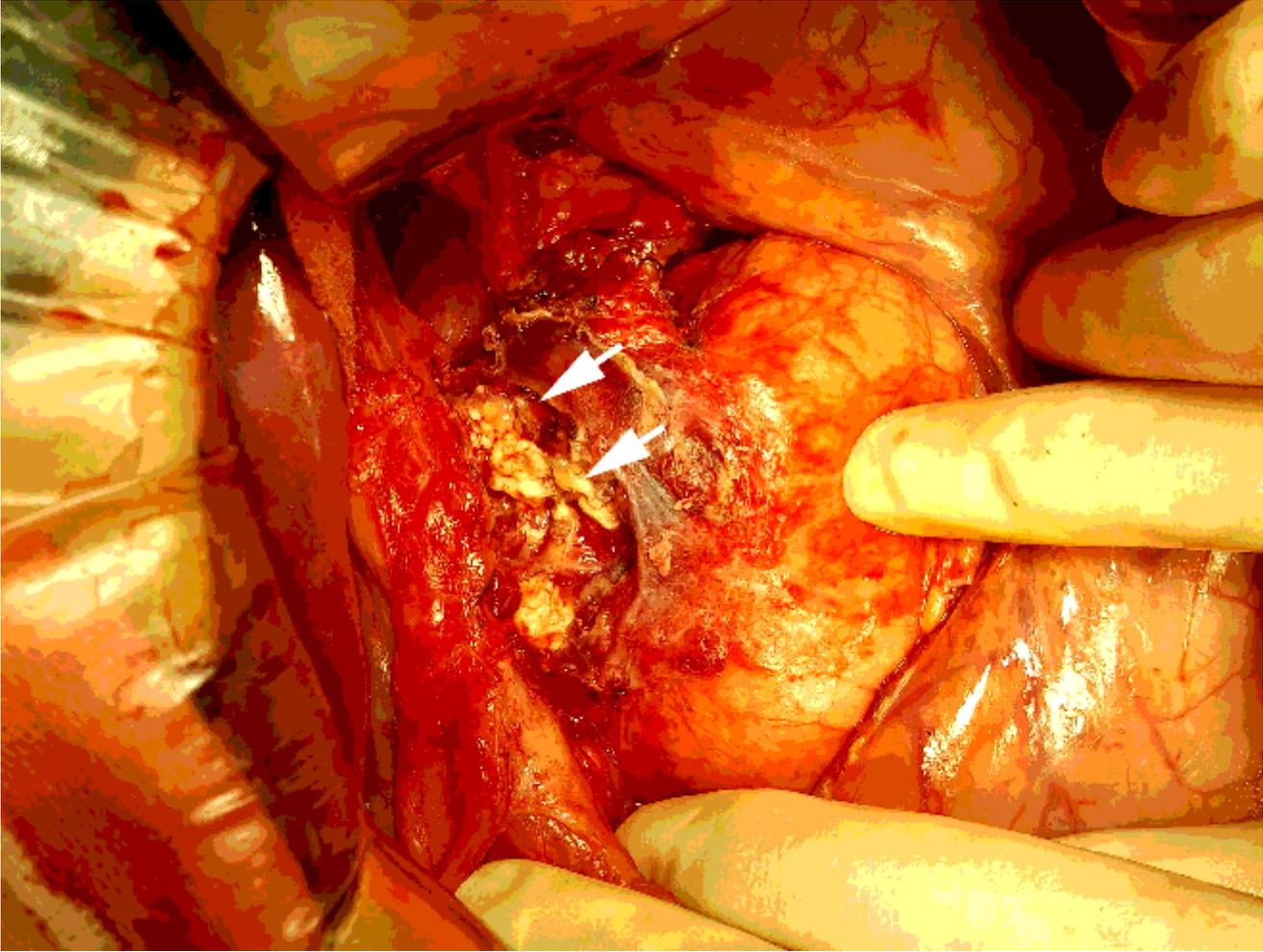


Figure 3

On laparotomy, tissue with caseous necrosis was identified above the pancreatic head (arrows).

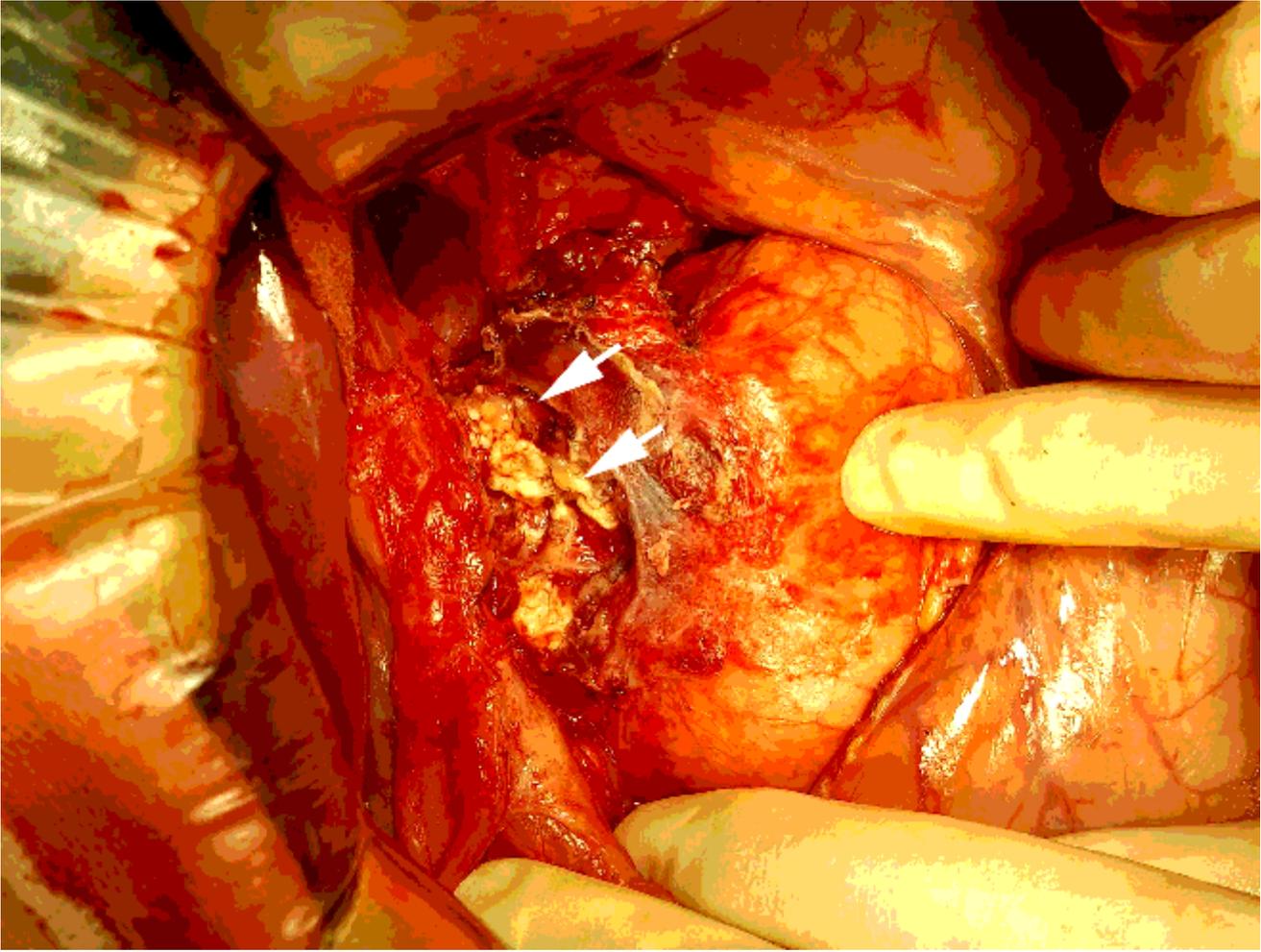


Figure 3

On laparotomy, tissue with caseous necrosis was identified above the pancreatic head (arrows).

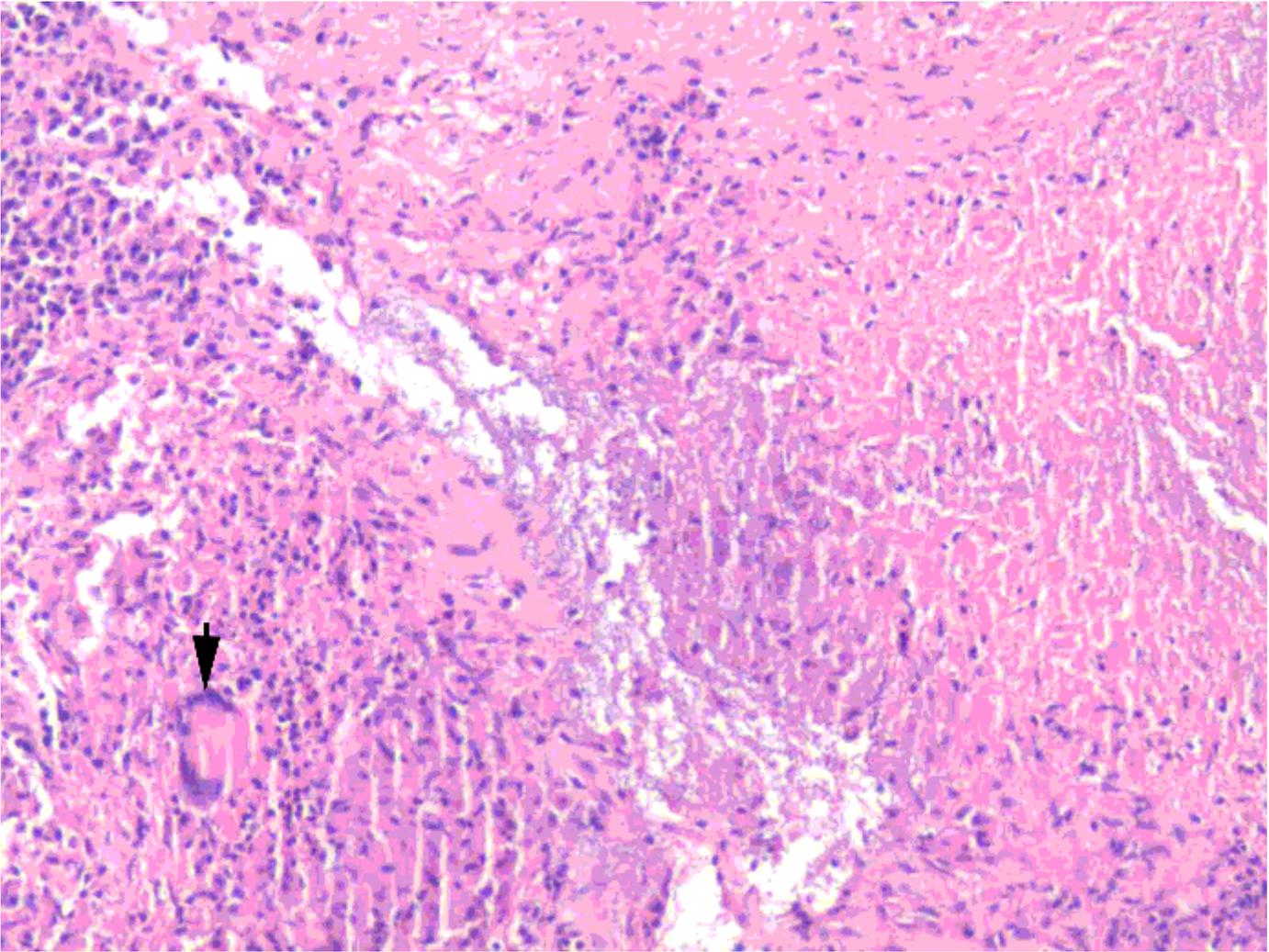


Figure 4

Pathological examination showing epithelioid granulomatous inflammation with caseous necrosis, composed of epithelioid cells and occasional multinucleated giant cells (arrow). Hematoxylin and eosin staining; magnification, x100.

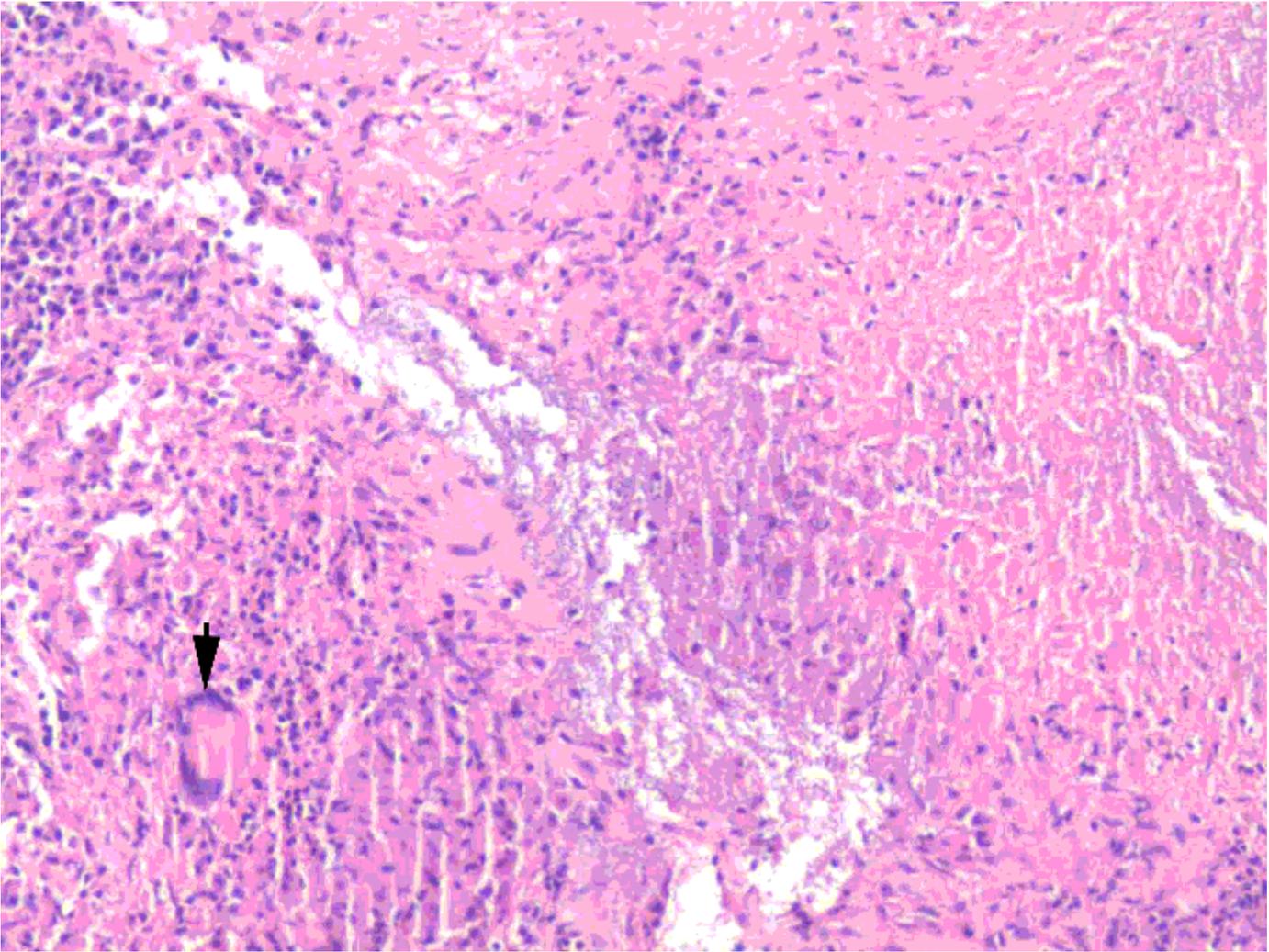


Figure 4

Pathological examination showing epithelioid granulomatous inflammation with caseous necrosis, composed of epithelioid cells and occasional multinucleated giant cells (arrow). Hematoxylin and eosin staining; magnification, x100.