

# Pediatric Pancreatic Lymphadenitis Tuberculosis Causing Inferior Vena Cava Thrombosis in Syria

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## Abstract

**Background:** Pancreatic tuberculosis (TB) is very rare, mostly due to the antibacterial effects of the pancreatic enzymes. The association of thrombosis and tuberculosis has been reported but that of inferior vena cava (IVC) thrombosis and pancreatic tuberculosis is extremely rare and has only been reported once. **Case presentation:** A case of pancreatic Tuberculosis and IVC thrombosis presented with constitutional symptoms. Ultrasonography and computerized tomography showed a lesion in the head of the pancreas and a large lymph mass. Magnetic resonance imaging (MRI) of (IVC) showed thrombosis in the IVC. Histological examination revealed necrotizing granulomas after a laparotomy. The patient received antituberculosis chemotherapy and low molecular weight heparin. **Conclusion:** Pancreatic TB is a challenge to diagnose especially in Resource-poor countries, which might lead to delay in treatment and worse complications.

## Keywords

Pancreas, Tuberculosis, Thrombosis, Inferior Vena Cava, Case Report

## 1. Introduction

Tuberculosis is a widespread disease, which is encountered in developing countries that still hold a great burden on public health. Pancreatic and peripancreatic TB is an exceedingly uncommon disease [1], but recently there is an increase in reports of pancreatic TB presenting as a hypoechoic mass on ultrasonography and imaging mimicking malignancy [2].

The exact pathogenesis is not proved yet but theories include Millitary TB, Hematogenous spread from the lungs, or in rare occasions from direct spread from neighboring lymph nodes [2]. The clinical presentation varies widely as there are no specific findings to point at the diagnosis [2]. Most cases are diagnosed after tissue biopsy or exploratory laparotomy, which makes the diagnosis even more challenging in resource-poor hospitals like in Syria.

The association of Tb and thrombosis of inferior vena cava (IVC) is extremely rare and has been only reported once [3]. Here we present a case of Pancreatic TB with IVC diagnosed after a laparotomy.

## 2. Case Presentation

A 9-year-old boy without significant history was admitted to the pediatric hospital for fatigue, weakness, unmeasured weight loss, night sweats, loss of appetite, generalized abdominal pain, and vomiting. Physical examination revealed a pale jaundiced child, and swollen occipital, submandibular and inguinal lymph nodes which move easily, there was also abdominal distension and 39.5C fever.

The laboratory test detected low mean corpuscular volume (MCV) anemia with hemoglobin: 7.4 g/dl, WBC count of 19,000/mm<sup>3</sup> with 78% of the cells being mature neutrophils, chronic reactive protein (CRP) was 99.5 mg/l. Liver enzymes were: Gamma Glutamyl Transpeptidase (GGT) 1104 U/L, Aspartate Aminotransferase (AST) 262.9 U/L, and Alanine Aminotransferase (ALT) 314.0 U/L. Total Bilirubin (TB) 3.2 mg/dl and Direct Bilirubin (DB) 2.5 mg/dl. Tuberculin skin test (Mantoux tuberculin test) was negative.

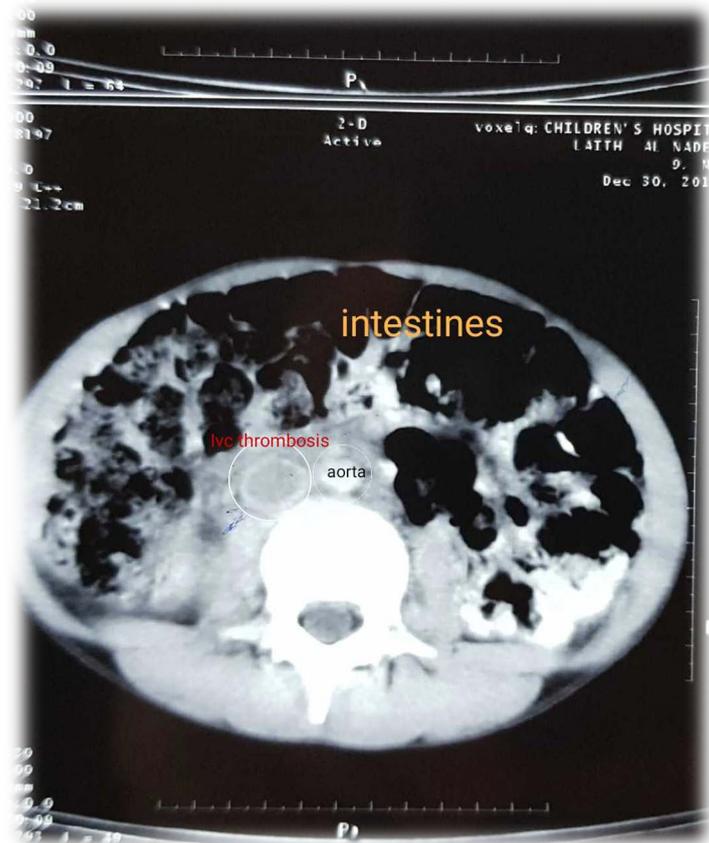
Labs are summarized in (Table 1).

Abdominal ultrasound revealed bile duct expansion of 5 cm at the hepatic hilum, hypo-echoic and heterogeneous mass measuring 5 cm in the head of the pancreas, and pancreatic duct measuring 2.5 mm with a large amount of fluid in the pelvis, lymph nodes enlargement at the hepatic hilum measuring 3 cm.

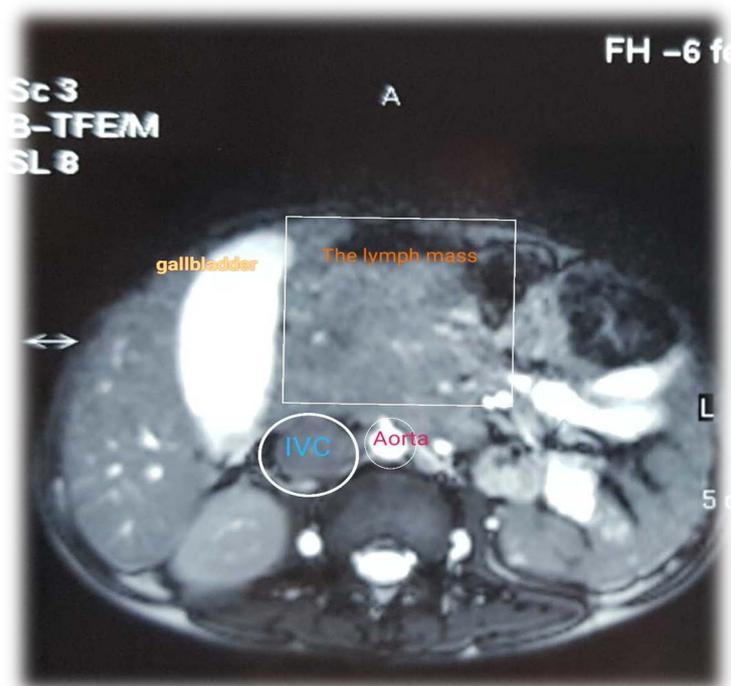
The patient underwent computed tomography of the abdomen, which revealed signs of thrombosis in (IVC) (Figure 1). Moreover, magnetic resonance imaging (MRI) of the abdomen showed a large lymph mass surrounding the superior mesenteric artery extending to the liver hilum and pancreatic head (Figure 2), next

**Table 1.** Summarize the patient's labs.

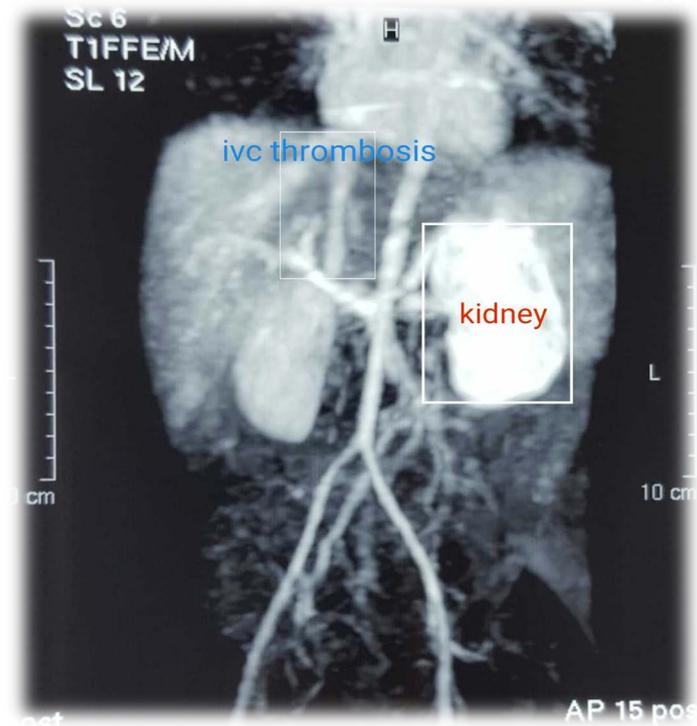
WBC (White Blood cell count)	19,000 /mm <sup>3</sup>
Neutrophils	78%
Chronic Reactive Protein (CRP)	99 Mg/L
Aspartate Amino Transferase (AST)	262 IU/L
Alanine Amino Transferase (ALT)	314 IU/L
Gamma Glutamyl Transpeptidase (GGT)	1104 IU/L
Total Bilirubin (TB)	3.2 mg/dl
Direct Bilirubin (DB)	2.5 mg/dl



**Figure 1.** CT scan of the abdomen shows signs of thrombosis in the IVC.



**Figure 2.** MRI of the abdomen shows a large lymph mass extending to the liver hilum and pancreatic head.



**Figure 3.** MR angiography of the IVC shows thrombosis in the IVC starts above the renal vein and down to the pelvis.

we did magnetic resonance angiography of inferior vena cava (IVC) which showed thrombosis in the IVC starting above renal vein and down to the pelvis (**Figure 3**).

Due to the lack of resources, we couldn't do CT guided biopsy, so the patient underwent an exploratory laparotomy and we took biopsies from the head, the body of the pancreas, and mesenteric lymph nodes. Microscopically, there were necrotizing granulomas consistent with TB in the body of the pancreas, nonspecific pancreatitis, and granulomatous lymphadenitis compatible with TB in mesenteric lymph nodes. TB treatment was started in addition to low molecular weight heparin (Clexane). The patient was discharged safely on anti TB medications for six months with follow-up in the clinic, unfortunately, due to the ongoing crisis in Syria back then we lost the follow-up with the patient.

### 3. Discussion

TB continues to load a huge burden on health in the middle east with an incidence of 115 per 1,000,000 [4]. Abdominal Tuberculosis is the most common extra-pulmonary manifestation that includes a variety of intraabdominal organs like intestines, gastroduodenal, liver, biliary tract, spleen, and pancreas [5].

Pancreatic TB with or without lymph node involvement is a rare phenomenon, as it accounts only for 4.7% of all locations [1]. This rare occurrence of pancreatic TB is mostly attributed to the antibacterial effects of pancreatic lipases, and deoxyribonucleases [2].

Pancreatic TB presents with a variety of symptoms such as anorexia, weight loss, night sweat, fever, and obstructive jaundice [2] [5]. The vague presentation can cause confusion as it can mimic the classic scenario of cancer [2]. In a study from Bangladesh, five of the 60 patients who had unresectable pancreatic cancer and underwent further evaluation for pancreatic malignancy were found to have pancreatic tuberculosis [5]. The differential diagnosis may also include pancreatic cystic neoplasms, chronic pancreatitis, and autoimmune pancreatitis [5].

In general, the diagnosis of pancreatic TB requires a high degree of suspicion but being in an endemic area of TB like Syria usually puts TB in the differential diagnosis. The first step in approaching our patient was to do an abdominal ultrasound that revealed a hypoechoic lesion which is the most common finding in pancreatic TB [5], next we did a computed tomography of the chest and abdomen that showed beside the pancreatic lesion a large lymph mass surrounding the superior mesenteric artery extending to the liver hilum and pancreatic head. Although there are no definitive features of pancreatic TB on CT scan [5], This presence of peripancreatic adenopathy made us think more of a TB origin of this lesion, therefore the patient underwent a laparotomy and the histological examination of the pancreatic lesion and the lymph nodes showed necrotizing granulomas. The presence of granulomas is the most common histological finding in TB, on the other hand, the presence of positive AFB and culture was relatively low, and the use of RT-PCR was not yet well established to exclude TB [5], thus we initiated a trial of antituberculosis therapy, and the patient responded clinically which supported our diagnosis.

An association between Tb and thrombosis was established before, for example, In the MEDENOX study, patients with TB were found to have a greater risk of venous thromboembolism, with an odds ratio of 1.62 [6]. Moreover, Several case reports mentioned an association between TB and venous thrombosis [7] [8]. In one retrospective analysis of TB patients in Seoul from 2000 to 2015, there was a higher incidence of thromboembolism than the general population, and the vast majority were associated with Pulmonary Tb [9]. However, that of pancreatic TB and inferior vena cava thrombosis is extraordinary and has been only reported once [3].

The exact mechanism of thrombosis and TB has not yet been established, one hypothesis suggests the role of proinflammatory cytokines (interleukin 1, interleukin 6, tumor necrosis factor  $\alpha$ ) [10], another hypothesis says that thrombosis originate from local factors like compression from neighboring adenopathy [11] another mechanism suggests that inflammation caused by TB in the lower respiratory system leads to fibrin deposition that causes a hypercoagulation state that may persist for 2 weeks.

#### 4. Conclusion

Pancreatic TB is a very rare disease that opposes a big challenge to diagnose especially in Resource-poor countries, which might lead to delay in treatment and

worse complications. The association between TB and thromboembolism has been established and requires more attention regarding prophylactic anticoagulation.

## Declarations

## Ethics Approval and Consent to Participate

The authors declared that there was consent approval to participate

## Consent for Publication

Written informed consent was obtained from the patient's guardian for publication of this case report and any accompanying images

## Availability of Data and Material

Available.

## Authors' Contributions

M.K.A, R.Y, B.S, M.A, L.K contributed equally read and approved the manuscript.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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## Abbreviations

TB: Tuberculosis

CT scan: Computed tomography scan

MRI: Magnetic resonance imaging

IVC: Inferior vena cava.