

Case Report

A case of pylephlebitis without an obvious source following gastric cancer resection

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Abstract: Background: Pylephlebitis, an extremely rare but fatal condition, is defined as septic thrombophlebitis of the portal vein. It is usually associated with intra-abdominal infection, and its clinical features are non-specific. We describe a case of pylephlebitis following gastric cancer resection while no primary intra-abdominal abscess was noted. Methods: A 69-year-old man with gastric cancer was admitted for surgery and the procedure was uneventful. On postoperative day (POD) 10, he suddenly developed a fever and presented with abdominal distention without any other complaint. Enhanced CT scanning revealed a thrombus in the left branch of the portal vein, but no intra-abdominal abscess was noted. On the 3rd day after diagnosis of pylephlebitis his conditions progressively deteriorated leading to septic shock and disturbance of consciousness. Antibiotics, anticoagulation therapy, and continuous renal replacement therapy were performed and his condition dramatically improved. Results: The patient was successfully treated and a follow-up CT scan showed complete resolution of the portal vein thrombus. Conclusion: It is important to highlight the possibility of pylephlebitis in patients with unknown sepsis, even if obvious abdominal symptoms or signs are not identified.

Keywords: Pylephlebitis, septic shock, thrombus

Introduction

Pylephlebitis is defined as septic thrombophlebitis of the portal vein and its branches, usually secondary to suppuration either in the region drained by the portal system or in structures contiguous to the portal vein. Although rare, it is a serious and potentially lethal condition [1]. Most cases are associated with intra-abdominal infections.

We present a case of pylephlebitis in a 69-year-old-man. This case is noteworthy in that obvious intra-abdominal infection focus was not clearly identified and his condition was critical due to shock and disturbance of consciousness.

Case report

A 69-year-old man with gastric cancer was admitted for surgery. He had no special condition other than gastric cancer. He underwent total gastrectomy, splenectomy, cholecystectomy, D2 lymph node dissection and Roux-en-Y

reconstruction with a pathological diagnosis of gastric cancer at the stage of T_{4b}(S_i: diaphragm) N₁M₀ and the procedure was uneventful. Postoperative prophylactic treatment with cefazolin sodium was given for two days.

On postoperative day (POD) 10, he suddenly developed a fever of 40.5°C and presented with abdominal distention, but no other abdomen symptoms or signs. Laboratory results and variations were non-specific. Sepsis was immediately suspected and empirical intravenous (IV) piperacillin/tazobactam at a dosage of 4.5 g every 6 hours was initiated after appropriate cultures of blood, urine and stool were taken. Chest X-ray was normal. A subsequent enhanced CT scan of his abdomen revealed a thrombus in the left branch of the portal vein and impaired perfusion of the left lobe of the liver (**Figure 1**), but no intra-abdominal abscess was noted. He was diagnosed with pylephlebitis in progress and anticoagulation therapy was started with intravenous unfractionated heparin to reach an activated partial thromboplastin time (APTT) 1.5 to 2.5 times the normal level.



Figure 1. Thrombosis of the left branch of the portal vein (A) and impaired perfusion of the left lobe of the liver (B).

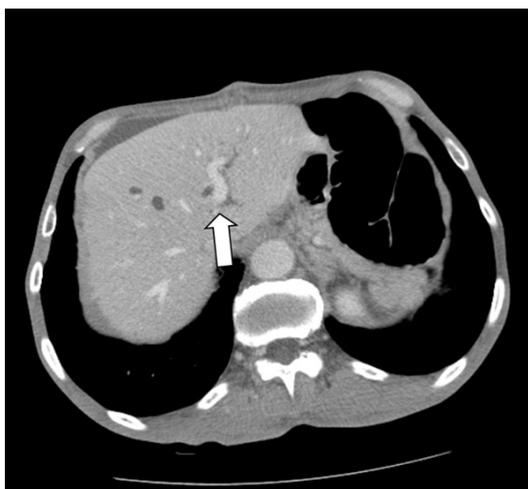


Figure 2. Resolution of the portal vein thrombus and improvement in hepatic perfusion.

On the following day, he had diarrhea and his urine output diminished by about 500 ml/24 h with an increasing trend of creatinine. On the 3rd day after the diagnosis of pylephlebitis, the patient's conditions further deteriorated and both blood and stool (specimen on POD10) culture isolates were positive for *Klebsiella pneumoniae*, which is sensitive to piperacillin/tazobactam. Systolic blood pressure dropped to 70 mmHg, and his consciousness was impaired, as evidenced by losing stool control and misunderstanding. Septic shock was confirmed and he was transferred to the ICU.

As soon as he was admitted to the ICU, his APACHE-II score was estimated as 27, SOFA as

7. Volume resuscitation, dopamine, and an antibiotics regimen with imipenem/cilastatin (0.5 g, iv, every 6 hours) plus ciprofloxacin (300 mg, iv, every 12 hours) were administered immediately, unfractionated heparin was continued and continuous renal replacement therapy was performed. The shock and disturbance of consciousness quickly resolved. Temperature and other symptoms settled, and liver enzymes and leukocytosis normalized gradually. No microorganisms were identified in a subsequent blood culture specimen. Thereafter, ciprofloxacin was used for 6 days, but imipenem/cilastatin was continued for 14 days then changed to oral levofloxacin for 1 week. On the 10th day after the diagnosis of pylephlebitis, heparin was replaced with oral warfarin (3-3.5 mg/d), dose-adjusted to maintain the international normalized ratio (INR) between 1.5 and 2.5. A follow-up CT scan taken 15 days after diagnosis of pylephlebitis (POD25) showed complete resolution of the portal vein thrombus and improvement in hepatic perfusion (**Figure 2**).

Discussion

Pylephlebitis, defined by suppurative thrombosis of the portal vein, is an uncommon sepsis. Hypercoagulability and intra-abdominal infections are the main predisposing factors [2-5].

Although this case had some risk factors of portal vein thrombosis, such as an unstable coagulation state (carcinoma, post-operation) and portal vein intervention (splenectomy, cholecystectomy and gastrectomy), it is notable that no primary intra-abdominal infectious process was demonstrated in this case. This unrecognized infectious cause is very rare and found in only 6% of pylephlebitis cases [2]. We speculate that translocation of intestinal bacteria caused pylephlebitis and were the focus of septic shock. In our case, predisposing factors for bacterial translocation are malignancy and intraoperative bowel manipulation [6]. *Klebsiella pneumoniae* (gut-associated organism) simultaneously cultured from the patient's blood and stool samples at the onset of the episode (POD10) further suggest this pathology [6, 7]. Bacterial translocation occurs in approximately 10-15% of surgical patients [6]. Portal vein thrombosis is vulnerable to infect if translocation occurs because those gut-origin bacteria always enter the portal venous system. The-

refore, pylephlebitis should be kept in mind when unrecognized sepsis is found even if there is no obvious intra-abdominal infection focus.

The diagnosis of pylephlebitis remains a challenge because the clinical features of pylephlebitis are usually non-specific and varied. In this case, fever and abdominal distention were the only complaints, and leukocytosis and abnormal liver enzymes were also non-specific. It is impossible to confirm a diagnosis of pylephlebitis only by relying on these clinical manifestations. Therefore, an enhanced CT scan was quickly performed and a thrombus in the left branch of the portal vein was revealed. However, the finding of thrombus does not necessarily indicate pylephlebitis. Portal vein thrombosis without suppuration is just bland portal vein thrombosis, and not pylephlebitis. The pus extracted by a puncture in the portal vein can confirm the diagnosis of pylephlebitis, but few doctors take this process because it is invasive. Most cases are diagnosed on the basis of thrombosis, sepsis and intra-abdominal infections [2-4]. Although no intra-abdominal inflammation was identified in this case, any other focus such as pneumonia, urinary tract infection wasn't found either even after extensive investigation. Thereafter, the diagnosis of pylephlebitis was drawn to interpret the thrombosis and sepsis, as other cases did [8, 9]. If the diagnosis was delayed, the mortality may be as high as 20-50% [1-3, 10].

Sensitive antibiotics and eradication of the underlying septic focus are the mainstay of treatment in pylephlebitis, but we didn't identify any focus. Surgical thrombectomy or thrombolysis is usually not recommended unless the patient is refractory to aggressive conservative management, as high morbidity, mortality and low efficacy have been reported [2, 4, 11].

Although the use of anticoagulation carries some risks, many experts still recommend anticoagulant should be early administered in pylephlebitis, especially in acute cases [1, 2, 4, 12]. Anticoagulant therapy is the best way to obtain portal vein recanalization and can minimize the complications of portal vein thrombosis [2, 13]. Early anticoagulation should be given for 3-6 months and if underlying thrombophilic conditions are identified, anticoagulation should be given lifelong [13].

Conclusion

Patients with unknown sepsis and at high risk of portal vein thrombosis should undergo CT scanning for early diagnosis of pylephlebitis. Timely administration of broad-spectrum antibiotics and anticoagulants are crucial for a better prognosis.

Disclosure of conflict of interest

None.

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