Case Report

DOI: 10.4274/haseki.galenos.2025.36349
Med Bull Haseki 2025;63:46-48

A Rare Complication of Perforated Appendicitis in an Adult: Septic Thrombophlebitis of the Portal Vein

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Abstract

Septic thrombophlebitis of the portal vein (STPV) is an extremely rare but potentially fatal complication of acute appendicitis. Patients often present with fever and abdominal pain. In patients presenting with these symptoms, deterioration in liver function tests and right upper quadrant pain should be taken into consideration when evaluating thrombophlebitis. It is thought that the infective process originating from the areas drained by the portal vein plays a role in the etiology of STPV. In this case, we aimed to present the imaging findings of STPV, a rare complication of perforated appendicitis, and to raise awareness of the diagnostic approach.

Keywords: Portal vein, thrombophlebitis, appendicitis, phlebitis

Introduction

Septic thrombophlebitis, first described by Osler (1) in 1882, is a condition that may develop due to intra-abdominal suppurative foci and can cause high mortality and morbidity. Studies have reported annual incidence rates between 2 and 4/100,000 (2). Although diverticulitis most commonly contributes to the etiology, appendicitis also plays a significant role. The presence of a single pathogen in pathogen isolation is more common than the occurrence of polymicrobial infections. In addition, coagulation factor deficiency, malignancy, or HIV infection, which can cause hypercoagulation, may contribute to the development of septic thrombophlebitis of the portal vein (STPV) (3).

Case Report

A 46-year-old male patient with no additional disease presented with a complaint of chronic abdominal pain. On physical examination, there was guarding and rebound in the right lower quadrant of the abdomen. The patient's laboratory findings showed deterioration in liver function tests (LFT) and an increase in acute phase reactants. The ultrasound (US) examination revealed increased echogenicity and a heterogeneous appearance in the fatty planes in the right lower quadrant. The appendix could not be evaluated due to its retrocecal location. A Doppler US examination revealed a thrombosed appearance in the lumens of the superior mesenteric vein (SMV), portal vein, and left portal branch. On the computed tomography (CT) examination, a heterogeneous area with peripheral contrast enhancement was observed in the right lower quadrant of the abdomen, in the appendiceal area, which was evaluated as an abscess (Figure 1). Additionally, a contrast material-filling defect compatible with thrombosis was observed, extending from the SMV to the portal vein and the left portal branch (Figures 2, 3). The findings were consistent with STPV secondary to abscess formation caused by perforated appendicitis. The patient was started on broad-spectrum antibiotic treatment and surgery was planned. After the appendectomy, the patient received antibiotic therapy. *Streptococcus* was detected in the blood culture. The patient was discharged after clinical and laboratory findings improved. After discharge, the patient did not attend any follow-up visits. The materials for this case report were obtained in May 2021, and informed consent was obtained from the patient.

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Received: 21.02.2025 **Accepted:** 08.04.2025 **Publication Date:** 29.04.2025

Cite this article as: Isik MI, Cuce F, Tasar M. A Rare complication of perforated appendicitis in an adult: septic thrombophlebitis of the portal vein. Med Bull Haseki. 2025;63:46-48

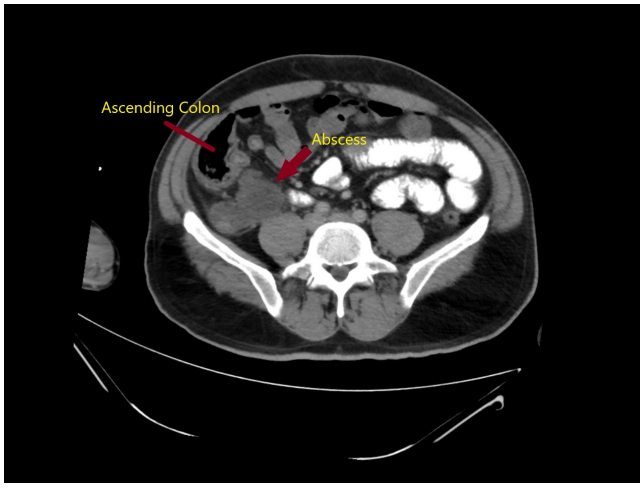

Figure 1. In the axial plane CT image with oral-IV contrast, an appendiceal abscess is observed, showing peripheral contrast enhancement and accompanied by heterogeneous fatty tissues (red arrow)
CT: Computed tomography

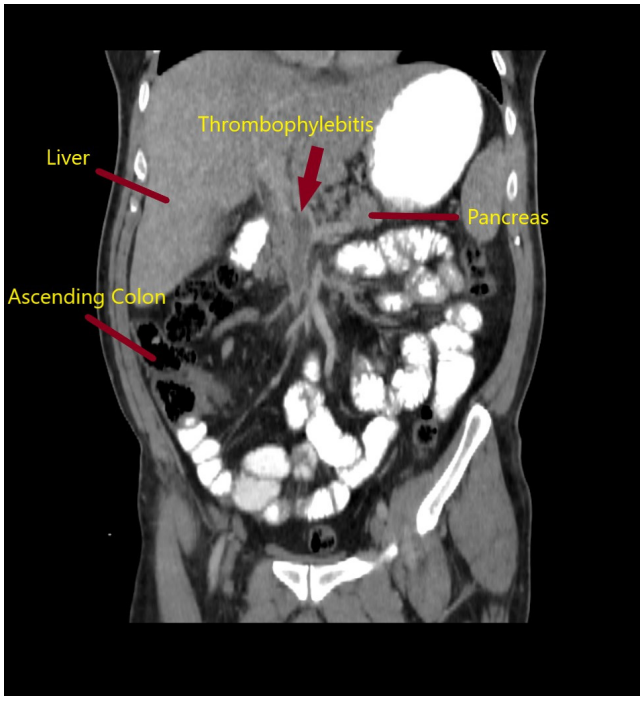

Figure 2. In the coronal plane CT image with oral-IV contrast, a hypoattenuating thrombus extending from the SMV to the portal vein is observed (red arrow)
CT: Computed tomography, SMV: Superior mesenteric vein

Discussion

Septic thrombophlebitis of the portal vein, also known as septic thrombophlebitis or pylephlebitis, is a complication in which diagnosis is crucial because it can be asymptomatic and cause life-threatening consequences.

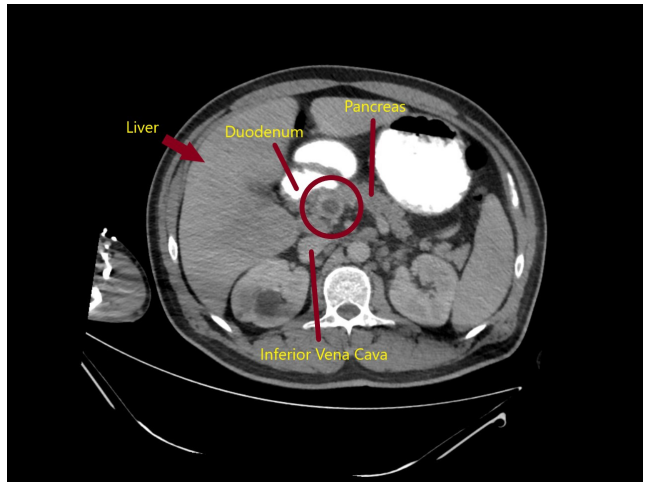

Figure 3. In the axial plane CT image with oral-IV contrast, a central luminally located, hypoattenuating thrombus causing a filling defect in the portal vein is observed (red circle)
CT: Computed tomography

It often develops following an intra-abdominal infection that is drained by the portal vein and its branches. Clinical findings and symptoms vary depending on the location and severity of involvement. It may be asymptomatic or present with symptoms such as fever, nausea, vomiting, and right upper quadrant pain. In addition, leukocytosis, deterioration in LFTs, and an increase in acute phase reactants are prominent findings in laboratory tests (3,4). In our case, similar to the literature, right upper quadrant pain, an increase in acute-phase reactants, and leukocytosis were present. The most common focus of infection has been reported as diverticulitis. Appendicitis is more common in patients with an earlier average age of involvement, and diverticulitis is more common in older patients (3). The most frequently isolated pathogens are *Escherichia coli, Proteus mirabilis*, *Bacteroides fragilis,* and *aerobic streptococci* (3,5). In our case, the response to antibiotic therapy was favorable, and pathogen isolation was not deemed necessary.

Different diagnostic modalities can be used in the radiological evaluation of STPV. Filling defects in the portal vein and its branches can be seen on Doppler US examination. Computed tomography examination is preferred because of its high resolution, ability to determine the primary source of infection, and capacity to evaluate portal venous anatomy. On CT examination, the primary source of infection may appear as heterogeneity in fatty tissues and enlarged lymph nodes. if an abscess is suspected, air-fluid levels, fluid-fluid levels, and peripheral heterogeneous contrast enhancement are noteworthy findings (2,3). Gas and filling defects may be seen in the portal vein and its branches. The presence of gas in the

portal vein may be the first radiological finding (6). To evaluate the portal system under optimal conditions on CT examination, the images must be obtained using the appropriate protocol and in the portal venous phase (3).

Mortality rates of up to 19% have been reported in the literature, but they are decreasing due to modern diagnostic techniques and early and effective initiation of broad-spectrum antibiotics. Treatment focuses on broad-spectrum antibiotics and eliminating the source of infection (3,5).

In conclusion, STPV is an important complication due to its rarity, severe course, and potential for fatality. As observed in this study, when clinical findings and patient complaints are present, imaging of regions distant from the source of infection should be prioritized. Since it is a rare complication and requires imaging of distant areas, it can be easily overlooked. With radiologists' familiarity with the diagnostic findings, early diagnosis can be made, and effective and rapid treatment can be initiated.

Ethics

Informed Consent: Written informed consent was obtained from the patient for publication of this case and any accompanying images.

Footnotes

Authorship Contributions

Surgical and Medical Practices: M.T., Concept: M.I.I., M.T., Design: M.I.I., M.T., Data Collection or Processing: M.I.I., M.T., Analysis or Interpretation: M.I.I., F.C., M.T., Literature Search: M.I.I., F.C., Writing: M.I.I., F.C.

Conflict of Interest: No conflicts of interest were declared by the authors.

Financial Disclosure: This study received no financial support.

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