

## A Survey Case of Pylephlebitis Associated with Diverticulitis

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### ABSTRACT

Pylephlebitis was a rare condition with high rates of morbidity and mortality. It is defined as thrombosis of the hepatic and portal veins that complicates intra-abdominal infections. However, prompt diagnosis plays a significant role in the treatment of pylephlebitis and the disorder can be diagnosed by means of ultrasound or contrast tomography, it was often missed due to nonspecific clinical presentation including fever, abdominal discomfort and fatigue. When it came to treatment, despite controversies about the use of anticoagulants, administration of antibiotics and anticoagulants was still the mainstay of treatment. In this report, we described a 67-year-old man with chief complaint of bouts of high fevers and mild abdominal tenderness located in right lower quadrant. The patient suffered from pylephlebitis secondary to cecal diverticulitis. Our patient's symptoms did not resolve with antibiotic therapy thus he had surgical resection of the infection focus and received anticoagulation. To put in a nutshell, as early diagnosis and treatment are essential steps for proper management of pylephlebitis and preventing its adverse complications, it is of high importance to keep this differential diagnosis in mind in patients with abdominal sepsis signs.

**Keywords:** Pyle phlebitis, portal vein thrombosis, abdominal infection, diverticulitis

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### INTRODUCTION

Pylephlebitis was a rare condition defined as suppurative and inflamed thrombosis of the portal vein in association with intraperitoneal septic condition that occurs with higher prevalence in males (1-3).

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The acute diverticular disease of colon was the most common cause of pylephlebitis. However, appendicitis, inflammatory bowel disease, bowel perforation, acute cholecystitis and necrotizing pancreatitis could also contribute to development of the aforementioned condition (4-7).

Since the condition was highly lethal and presents with non-specific symptoms, it was important to keep this diagnosis in mind while listing differential diagnoses in patients presenting with fever, abdominal pain, leukocytosis, anemia and abnormal liver function tests (2,8,9). Furthermore, fatigue, malaise, chills, nausea, vomiting, diarrhea, anorexia, hepatomegaly and jaundice may also be presented (2,8).

While both abdominal computed tomography (CT)

scan and abdominal ultrasonography were available modalities for diagnosis of pylephlebitis, CT scan was widely preferred due to its ability in detecting the source of abdominal infection, as well(10).

However recent promotions in antibiotic therapies, have decreased the incidence of pylephlebitis, it still bears a high rates of mortality and morbidity due to non-specific clinical presentation that delays the diagnosis (11) Consequently, it was important to have a high clinical suspicion in patients with abdominal pain since early interventions were necessary to improve the patients' survival rate.

The mainstay of treatment was application of broad spectrum antibiotics and removal of the septic focus that has initiated the process. However, some studies have reported better outcome in patients receiving combination of antibiotics and anticoagulants, there was still controversy about the role of anticoagulants(7,9,10,12).

Current report described a case of pylephlebitis secondary to cecal diverticulitis that was treated with surgical resection of the septic foci and anticoagulant therapy.

## CASE REPORT

A 65-year-old male presented to the emergency unit with chief complaint of fever and chills. He was in his usual state of health until four weeks ago when he began feeling chills and suffering high-grade fevers associated with confusion. He denied any history of alcohol, tobacco, or illicit drug use.

He had been admitted twice during past four weeks. On his last admission, despite unremarkable colonoscopy findings including two 2 and 4 millimeter polyps in sigmoid that were removed with forceps and multiple opening of diverticula in the descending colon (figure 1), a poorly defined and mildly hazy ground glass opacity in fatty tissue of right lower quadrant was detected by spiral computed tomography (CT). Based on imaging studies mentioned, he had received antibiotics (Ciprofloxacin 500 mg/ BD and Metronidazole 500 mg/TDS) for treatment of suspected diverticulitis. Furthermore, considering the association of diverticulitis and portal vein thrombosis, a magnetic resonance venography (MRV) of abdomen was performed which revealed thrombosis in the extra hepatic portal vein with extension to mesenteric vein and deflected in the upper aspect of inferior vena cava (IVC) up to junction with right atrium (figure2). Consequently, treatment with

Enoxaparin (60 mg /BD) was also administered. Unfortunately, the prescribed antibiotics only temporarily relieved the symptoms and the fever had relapsed after one week.

Upon admission to our center, the patient's vital signs were: T 39.5°C, BP 120/90mm Hg, HR100/min, RR 18/min. Moreover, his examination revealed mild tenderness on deep palpation of right lower quadrant without any guarding or rebound tenderness. There was no other significant clinical finding in clinical examination.

Laboratory studies after admission revealed leukocytosis (21000cells/mL, reference range 4,500\_10,000 cells/mL) and high CRP (125mg/l, reference range: negative<10). Liver panel showed an increased AST (71 units/L, reference range: 5-40units/L) and ALT (98 units/L, reference range 5\_40 units/L). Urinalysis was unremarkable. (Table1)

An ultrasound of the abdomen revealed an end loop of 9-10 mm attached to the cecum in RLQ. Moreover, edema and wall thickness was seen in cecum and proximal colon and a collection of 43\*20\*13 mm was found in retrocecal area.

Besides, abdominopelvic CT scan (with intravenous and oral contrast) demonstrated significant wall thickness of cecum with adjacent fat stranding and collection suggestive of complicated appendicitis with abscess or phlegmon formation/diverticulitis / malignancy.

Considering the patient's condition and imaging results, surgery team was consulted to decide about the necessity of open laparotomy. Laparotomy revealed a sizeable mass in cecum and proximal part of ascending colon suggestive of malignancy or inflammation. Accordingly, right hemicolectomy was performed and pathologic results for the specimens were benign inflammatory mass.

During postoperative period, the patient's symptoms improved and his lab data normalized. Additionally, no thrombosis was detected on Doppler study of hepatic, portal, splenic and superior mesenteric veins.

## DISCUSSION

Pylephlebitis- septic thrombophlebitis of portal vein and its contributory branches- is a condition frequently associated with diverse suppurative intra-abdominal infections including diverticulitis, appendicitis, cholecystitis and pancreatitis,

Among wide variety of disorders listed as etiology of aforementioned condition, diverticulitis is

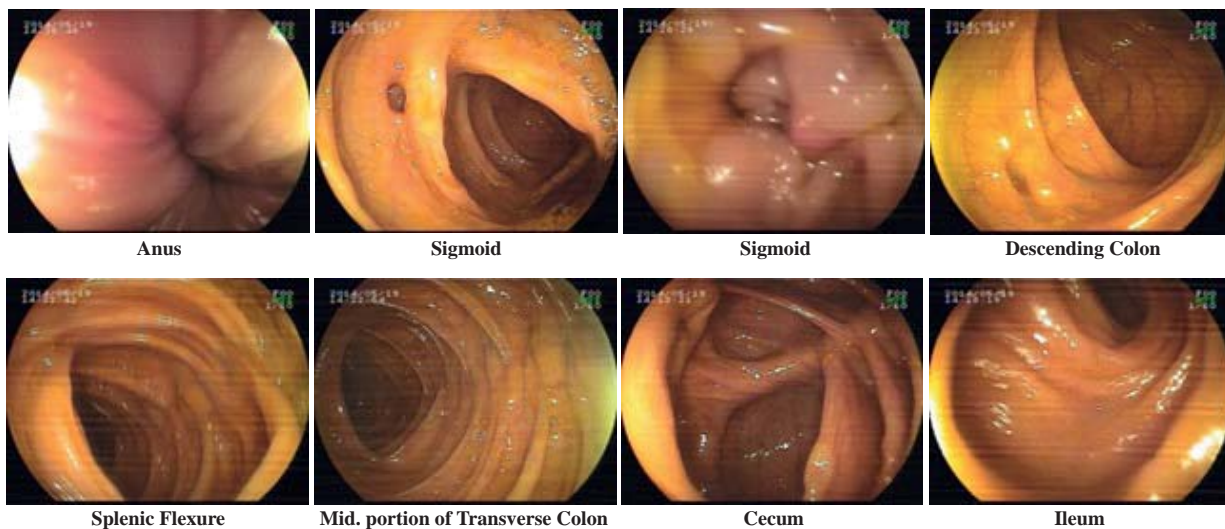


Fig.1: Colonoscopy Without any Gross Pathology

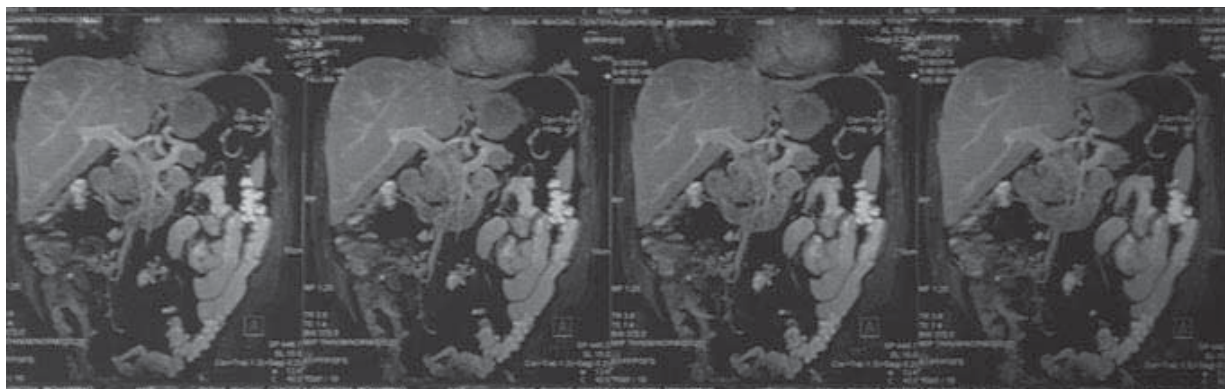


Fig.2: Magnetic Resonance Venography of the Abdomen Demonstrating Thrombosis in the Extra Hepatic Portal Vein with Extension to Mesenteric Vein.

considered to be the leading cause. It is hypothesized that a septic thrombosis develops as a consequence of the interface of infectious or inflammatory components with the endothelium initiates and passes to the portal vein and its branches (2-4,6,13-15).

Despite high mortality rates (30-50%) reported for septic thrombophlebitis, early diagnosis and aggressive antibiotic therapy have resulted in a lower mortality rate (25%) for this condition in recent years (2,16).

However the clinical presentation of septic thrombosis is usually non-specific. Fever and vague abdominal pain are the most prevalent in early findings. Furthermore, paraclinical evaluations

demonstrate leukocytosis and elevated liver enzymes in most cases (14,17). Moreover, *Bacteroides fragilis*, *Escherichia coli* and *Streptococcus* species are the most common detected microorganisms in septic thrombosis (3,14,15,17,18).

Imaging studies are an essential step toward diagnosis of the pylephlebitis. Despite the fact that both ultrasonography and CT scan can be applied for diagnosis of the portal vein thrombosis, CT scan is more preferred as it also provides information about the source of the infection or inflammation (4,7,12,14). In the current case, the diagnosis was made by means of a CT scan with contrast while prior ultrasonography had failed to detect any thrombosis.

**Table1: Paraclinical Data**

| CBC                       | LFT                               | Autoimmune marker: | Biochemistry                      |
|---------------------------|-----------------------------------|--------------------|-----------------------------------|
| WBC:21000/mm <sup>3</sup> | ALP: 144                          | CRP: 125 mg/dl     | Na: 136 mEq/L                     |
| PMN:87 %L:5%              | AST:71 U/L                        | ESR: 58 mm/h       | K: 4 meq/L                        |
| Hb:16.8g/dl               | ALT:98 U/L                        |                    | Urea (mg/dl): 32                  |
| HCT: 49.4%                | Bili T: 0.99 mg/dl                |                    | Creatinine (mg/dl): 1.81          |
| MCV:87.5 fL               | Bili D: 0.1mg/dl                  |                    | Lactate dehydrogenase (IU/L): 369 |
| MCH:29.7 pg               | Gamma Glutamyl Transfere: 50 IU/L |                    |                                   |
| Platelet:127000/ml        |                                   |                    |                                   |
|                           | Color                             | yellow             |                                   |
|                           | Appearance                        | turbid             |                                   |
|                           | PH                                | 5                  |                                   |
|                           | Specific gravity                  | 1.025              |                                   |
| Urine analysis:           | Proteins                          | negative           |                                   |
|                           | Blood                             | negative           |                                   |
|                           | WBC/hpf*                          | 1-2                |                                   |
|                           | RBC/ hpf                          | rare               |                                   |
|                           | Cast/hpf                          | not seen           |                                   |

\*: high power field

The mainstay of treatment for the septic thrombophlebitis includes fluid resuscitation, broad-spectrum antibiotic therapy and surgical intervention when necessary (4,7,8,14).

However, it is suggested that use of anticoagulants may stop the consequential bowel ischemia and infarction and its administration has been recommended for patients suffering from extensive and progressive septic thrombophlebitis, persistent fever and surgical resections due to ischemia, there are still controversies about the role of anticoagulants because of limited supporting evidence (2,4,7,14).

On the one hand, studies performed by Plemmons et al., Kanellopoulou et al. and Baril et al., have reported better outcomes in patients being treated with both antibiotics and anticoagulants (10,12,16). On the other hand, in a study conducted by Singh et al. there is not significant impact on outcome regarding

administration of anticoagulants (19). Currently, many authors believe that heparin treatment is necessary for preventing the thrombosis progression (4,20,21). In the present case, the patient was treated with anticoagulants, which seemed to be beneficial but more studies are required to definitely determine its efficacy.

To summarize, physicians should suspect pylephlebitis diagnosis in individuals presenting with fever and dull abdominal pain since early diagnosis and treatment of pylephlebitis is crucial regarding the high mortality rates associated with delayed diagnosis and treatments this condition.

#### CONFLICT OF INTEREST

The authors declare no conflict of interest related to this work.

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