CASE REPORT

Lemierre's syndrome variant of the gut

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SUMMARY

Infectious suppurative thrombophlebitis of the portal venous system, referred to as pylephlebitis, is a rare complication of intra-abdominal inflammatory processes. Advances in diagnostics and antibiotics have improved survival, but mortality remains remarkably high even in the most recent literature. The majority of patients have concomitant bacteraemia on presentation most commonly with typical gastrointestinal (GI) organisms. On rare occasion, patients have culture positive *Fusobacterium*, which has recently been associated with occult GI and genitourinary malignancies. Here, we describe a patient presenting with pylephlebitis and *Fusobacterium* bacteraemia who responded well to medical therapy, review pertinent literature and discuss the benefits of screening endoscopy in this patient population.

BACKGROUND

Pylephlebitis, or infectious suppurative thrombophlebitis of the portal venous system, is a rare complication of intra-abdominal infection and inflammation. An incidence of 2.7 per 100 000 has been reported; however, given its non-specific presentation and challenges in diagnosis, it is difficult to estimate accurately and is likely under-reported.¹ Historically, the most common inciting infection is appendicitis but cases of pylephlebitis secondary to diverticulitis have increased in recent years.² Previously, a uniformly fatal diagnosis identified post-mortem; survival has greatly improved with advances in cross-sectional imaging and antimicrobial therapy. Regardless, early detection remains crucial given mortality rates as high as 30%.³ In this report, we present a rare case of pylephlebitis secondary to *Fusobacterium* and review the clinical presentation, diagnosis and treatment.

CASE PRESENTATION

A healthy, 64-year-old man presented to the emergency room with 1 week of fever and intermittent left lower quadrant (LLQ) abdominal pain migrating to the epigastrium. At the onset of pain, he had several days of watery diarrhoea that resolved with the use of over-the-counter bismuth subsalicylate and non-bloody emesis that persisted. He denied recent exposure to antibiotics and had no pertinent medical, surgical or family history. On presentation, the patient was febrile and hypotensive with exam notable for moderate tenderness to palpation of the LLQ without evidence of peritonitis.

INVESTIGATIONS

Laboratory studies revealed a leukocytosis of 16.2 K/cmm (3.2–9.5 K/cmm) as well as elevated

liver-associated enzymes in a cholestatic pattern with alkaline phosphatase 234 mU/mL (43–130 mU/mL), total bilirubin 3.4 mg/dL (0.2–1.2 mg/dL), direct bilirubin 1.6 mg/dL and intact synthetic function. A right upper quadrant ultrasound (RUQUS) revealed patent vasculature and no remarkable hepatobiliary pathology. Contrast-enhanced CT of the abdomen was significant for sigmoid diverticulitis complicated by a pericolic abscess extending superiorly with adjacent inflammatory changes surrounding a large, primary thrombosis of the inferior mesenteric vein (IMV) without intraluminal air (figure 1).

DIFFERENTIAL DIAGNOSIS

The differential diagnosis for abdominal pain with associated watery diarrhoea and fever is broad, but can be narrowed based on certain historical clues. In a 64-year-old patient with this symptom pattern and reproducible tenderness in the LLQ, diverticulitis is certainly at the top of the list. This patient showed evidence of sepsis on presentation, so infectious colitis was considered, including that secondary to *Clostridium difficile*, despite the lack of recent antibiotic exposure as spontaneous infections occur in the community. With uncomplicated diverticulitis or colitis, it would be atypical to have upper gastrointestinal (GI) symptoms in the absence of other signs of ileus or perforation, which were pertinent negatives in this patient. Additionally, these would not explain the cholestatic liver injury. Pancreatitis, including gallstone pancreatitis, and complications of pancreatitis were largely ruled out with normal lipase and RUQUS without ductal dilation. Inflammatory bowel disease could have accounted for his upper and lower GI symptoms as well as his liver-associated enzyme abnormalities if presenting with primary sclerosing cholangitis, but the relative acuity of his presentation and the absence of constitutional symptoms or other extraintestinal manifestations made this less likely. Malignancy is always a concern in this age group, but his immediate presentation was more consistent with an infectious aetiology.

TREATMENT

The patient was empirically started on intravenous piperacillin/tazobactam and continuous unfractionated heparin, which was later discontinued after haematology consultation. The abscess was not amenable to surgical or percutaneous drainage given its inaccessible location. Blood cultures drawn on admission returned positive with isolation of *Fusobacterium* species in the anaerobic culture bottle. The patient was transitioned to

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Figure 1 CT abdomen/pelvis demonstrating multiple descending and sigmoid colonic diverticula with a 2.5×2.7×2.3 cm sigmoid diverticular phlegmon denoted by yellow oval and inferior mesenteric vein thrombosis demarcated by red arrow, which extends proximally to its confluence with the superior mesenteric vein and main portal vein (not visualised on the image).

intravenous ertapenem with plan for a 4-week course and repeat imaging.

OUTCOME AND FOLLOW-UP

The patient had significant clinical improvement with normalisation of leukocytosis and liver-associated enzymes. Interval imaging was performed after completion of antibiotic therapy

Figure 2 Four-week interval follow-up CT abdomen/pelvis showing significant improvement in sigmoid abscess denoted by yellow circle and complete resolution of inferior mesenteric vein thrombosis.

with a noted decrease in size of the pericolic abscess and complete resolution of IMV thrombophlebitis (figure 2). Colonoscopy and hypercoagulable workup were scheduled for completion in the outpatient setting.

DISCUSSION

Pylephlebitis is a rare, but deadly complication. Any primary inflammatory condition of the abdomen can lead to pylephlebitis, including recent surgery, infectious foci, pancreatitis and liver abscesses.² Clinical findings are highly variable and non-specific with fever and abdominal pain seen in the majority of cases. Leukocytosis and cholestatic liver injury are common laboratory abnormalities. Additionally, a large number of patients have positive blood cultures on presentation demonstrated by a recent retrospective review of 95 cases of pylephlebitis.⁴ Of the 76 patients in whom blood culture data were obtained, the most common finding was polymicrobial infection (44%). The most frequently isolated organisms were *Streptococcus viridans* (24%), *Escherichia coli* (21%) and *Bacteroides fragilis* (12%), which was similar to a previous review of 100 cases of pylephlebitis in patients without underlying cirrhosis.⁴ Across both studies, the incidence of *Fusobacterium* was very rare at less than 5%.^{2,4}

Intravenous antibiotic therapy is the mainstay of treatment, although there is little data guiding the choice of empiric regimens. Until culture data are available, treatment with broad-spectrum antibiotics is recommended ensuring coverage of the aforementioned organisms as well as any required source control intervention. Commonly employed effective regimens include a combination containing a third-generation cephalosporin plus metronidazole and monotherapy with either beta-lactam/beta-lactamase inhibitor or carbapenem.³ Duration of therapy is generally 4–6 weeks and reimaging is indicated if there is uncertainty of clinical improvement.

Fusobacterium is a notorious causative organism of invasive head and neck infections, specifically septic thrombophlebitis of the internal jugular vein referred to as Lemierre's syndrome. Classically, *Fusobacterium necrophorum*, a normal inhabitant of the oropharyngeal cavity, is the causative agent but multiple species of the *Fusobacterium* genus have been implicated as causes of suppurative thrombophlebitis throughout the literature.⁵ It is typically a penicillin-sensitive species, but extended spectrum beta-lactams are often used for empiric therapy due to documented treatment failures.⁶ In the setting of pylephlebitis or other primary GI infections, *Fusobacterium* is an exceedingly rare pathogen. However, disseminated *Fusobacterium* infection has recently been linked to inflammatory bowel disease, colorectal carcinoma and genitourinary malignancy.^{7,8} A prospective epidemiological study in Denmark examined 100 cases of disseminated *Fusobacterium* infections from 1998 to 2001. Of the 30 patients in whom the GI tract was the primary source of infection, 37% had underlying GI cancer.⁷ Therefore, in addition to antibiotics and age appropriate cancer screening, endoscopy should be strongly considered in all patients diagnosed with pylephlebitis and concomitant *Fusobacterium* bacteraemia after resolution of their acute illness.

The role of systemic anticoagulation in the treatment of pylephlebitis remains a significant source of controversy. Evidence is limited to retrospective literature, but overall there is a trend towards benefit from early anticoagulation due to the risk of bowel ischaemia and infarction, especially when there is involvement of a mesenteric branch.^{4,9,10} Due to conflicting studies and limited outcomes data, systemic anticoagulation

continues to be an individualised decision based on a risk and benefit assessment.

Despite advances in diagnosis and treatment, mortality rates remain high (11–30%)^{1–4 9} with sepsis as the leading cause of death. Patients with underlying immunosuppression and those experiencing complications secondary to pylephlebitis tend to have a worse prognosis.^{2 4} As in this case, early identification and prompt treatment with appropriate parenteral antibiotics are critical to patient survival.

Learning points

- ▶ High clinical suspicion is essential for timely diagnosis of pylephlebitis.
- ▶ The majority of patients have concomitant bacteraemia and should be covered with broad-spectrum antibiotics empirically.
- ▶ Systemic anticoagulation should be strongly considered if risk is low, but outcomes data are limited.
- ▶ Screening endoscopy should be offered to patients with disseminated *Fusobacterium* infection from an abdominal primary source.

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