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CLINICAL VIGNETTE

Recurrent Abdominal Venous Stasis Masquerading as Cellulitis

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Introduction

Ascites, hepatic encephalopathy, and/or bleeding varices are hallmarks of decompensated cirrhosis. Patients with ascites are at high risk of spontaneous bacterial peritonitis (SBP). Paracentesis of any patient presenting to the hospital with ascites should be considered to diagnose SBP, although abdominal wall cellulitis is a relative contraindication to this procedure. We present a patient who appeared to have abdominal wall cellulitis, but in fact had venous stasis of his abdominal wall.

Case Presentation

A 57-year-old man with alcoholic cirrhosis (MELD-Na 28, Child-Pugh class C) and ascites presented for recurrent generalized abdominal pain and abdominal wall erythema. Notably, he underwent partial bowel resection for incarcerated hernia 3 months prior to admission and had subsequently been admitted twice for similar symptoms. On physical exam, his abdomen was distended with generalized tenderness to palpation, shifting dullness, and diffuse abdominal wall erythema (Figure 1). As in preceding admissions, he was treated empirically for SBP and cellulitis with ceftriaxone and vancomycin. Paracentesis to evaluate for SBP was initially deferred given risk of spreading infection via needle insertion and initiation of empiric therapy. He had no change in appearance nor symptoms with appropriate antibiotics for 5 days. Lack of improvement and no other infectious signs such as fever, leukocytosis, nor elevated inflammatory markers called into question the presumptive diagnosis of cellulitis and SBP.

Given his presentation course on prior admissions, antibiotics were discontinued and symptomatic paracentesis was performed on hospital day 6 with removal of 3.7 liters of fluid. The serum ascites albumin gradient was >1.1 g/dL, confirming portal hypertension as the etiology of ascites. Polymorpho-nuclear leukocytes in the ascitic fluid were not elevated, arguing against SBP. Abdominal wall erythema improved immediately post-procedure (Figure 2), with complete resolution by the following day (Figure 3). The patient noted dramatic recovery of abdominal distension and pain in comparison to days prior. After concurrent improvement in symptoms and skin changes, the patient was discharged home with plan for scheduled outpatient paracenteses as needed.

Discussion

Venous stasis is common involving the lower extremities, but rare in the abdomen. Erythema, pain, and warmth of the skin of the abdominal wall suggest cellulitis, but SBP should always be considered in a patient with ascites and abdominal pain.^{1,2} Paracentesis is required to make the diagnosis of SBP and is also indicated for patients with new-onset ascites, hospitalized patients with ascites regardless of the reason for admission, and therapeutic intervention in refractory ascites.³ Relative contraindications of paracentesis include cellulitis at the needle insertion site (as was the case in our patient), coagulopathies, fibrinolysis, large ileus or bowel distension, and extensive abdominal scarring that may be tethered to bowel.⁴ Risks and benefits must be weighed along with clinical judgment when contemplating invasive procedures.

In the setting of abdominal distension and discomfort when paracentesis is not plausible, empiric therapy with antibiotics may be appropriate if suspicion for SBP is high. However, if no improvement is evident after appropriate therapy, consideration should be given to reevaluate and explore alternative diagnoses. In our case, similar episodes without response to antibiotics that improved rapidly following fluid removal suggested that mechanical relief provided by paracentesis was the key contributing treatment rather than antibiotics. We hypothesize that the patient's baseline impaired venous outflow due to recent abdominal wall surgery was further exacerbated by recurrent pressure from ascites, resulting in decreased abdominal wall venous outflow and erythematous appearance. This clinical presentation is similar to stasis dermatitis of the lower extremities, in which dermal inflammation and valvular incompetence may be falsely interpreted as infection.

Although most research on healthcare spending and inappropriate diagnosis of cellulitis has been focused on affected lower extremities, the same conclusions may be extrapolated to any part of the body, including the abdomen. The misdiagnosis of cellulitis has been estimated to result in 50,000 to 130,000 unnecessary hospitalizations and \$195 million to \$515 million in avoidable healthcare expenditures annually.⁵ Venous stasis presents as a common mimicker of cellulitis and is often referred to as one of the pseudocellulitides. Characteristics such as erythema, pain, swelling, and warmth are commonly used to diagnose cellulitis. However, they represent generalized inflammation and are not specific to cellulitis. Without standardized criteria for the diagnosis of cellulitis, physicians must rely on clinical experience and acumen to guide decision

making. This case serves to expand our differential diagnosis for a chief complaint of abdominal pain and abdominal wall erythema in an effort to minimize future patient morbidity and unnecessary hospital days.

Figures



Figure 1: On admission



Figure 2: Hospital day 6, immediately after paracentesis



Figure 3: Hospital day 7, 20 hours after paracentesis

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