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Case Report

Sigmoid Diverticulitis Complicated With Anterior Abdominal Wall Necrotizing Fasciitis: Rare but Potentially Lethal Occurrence

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Abstract:
Necrotizing fasciitis (NF) is a perilous infection of the soft tissue, typical for its profound impact on morbidity and mortality rates. We present a 70-year-old man with an unusual anterior abdominal wall necrotizing fasciitis secondary to perforated sigmoid diverticulitis in septic shock. He had undergone wound debridement and proximal fecal diversion for source control, followed by serial wound debridement in view of worsening sepsis and local wound inflammation. Despite multidisciplinary management in our patient with aggressive treatment strategies, he succumbed to death. This demonstrates high mortality rate in case of perforated sigmoid diverticulitis complicated with anterior abdominal wall necrotizing fasciitis.

Keywords: *Necrotizing fasciitis, Diverticulitis, Wound debridement, Sepsis*
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Introduction

Colonic diverticular disease is becoming increasingly prevalent, particularly among the elderly population (1). Thus, the incidence of its associated complications, such as abscess formation, perforation, fistulae, and hemorrhage, is expected to rise (2). Necrotizing fasciitis (NF), a severe and rapidly progressive soft tissue infection characterized by profound septicaemia, primarily affecting fascia, muscles, or adipose tissue. Anterior abdominal wall necrotizing fasciitis secondary to perforated sigmoid diverticulitis are uncommon, often with adverse outcomes, including death from septic shock (3).

Case presentation

We presented a 70-year-old man diagnosed with past history of perforated sigmoid colon diverticulitis (Hinchey 2) that was previously managed non operatively and recovered conservatively after course of antibiotics. He arrived at the emergency department, experiencing acute left iliac fossa pain, fever and constipation for 4 days. He was in septic shock during current admission; abdomen was distended with tenderness and erythema in left lower quadrant (Figure 1).

Laboratory parameters revealed that he had leucocytosis with white cell count of 40.1 x 10^3/uL, acute kidney injury with urea of 10.1 mmol/L and creatinine of 151 umol/L. Blood gas revealed severe lactic acidosis, with a pH of 7.28, HCO3 of 12.2 mmol/L, and lactate of 7.3 mmol/L. Urgent CT (computed tomography) scan of the abdomen revealed features consistent with a contained perforation of the sigmoid colon due to diverticulitis, accompanied by intraabdominal or pericolic collections and necrotizing fasciitis affecting the left anterior abdominal wall (Figure 2).

Figure 1: Erythematous abdominal skin demarcated by marker pen prior to wound debridement

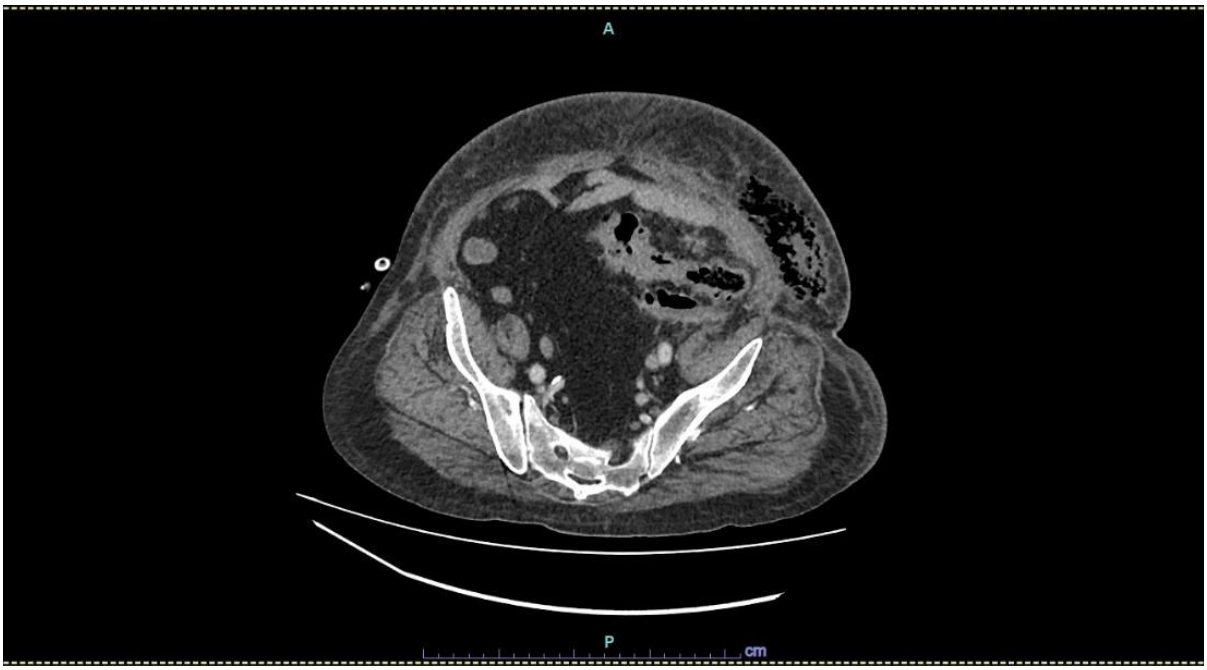

Figure 2: CT scan of the abdomen shows subcutaneous fat streakiness up to fascia level suggestive of anterior abdominal wall necrotizing fasciitis

After adequate resuscitation in intensive care unit (ICU), the patient underwent wound debridement of the affected abdominal wall and the creation of a proximal loop transverse colostomy. Intraoperatively, the skin was erythematous with necrotic tissue extending down to the subcutaneous layer, with foul-smelling dishwater fluid drained.

Patient was managed in ICU for critical care monitoring and continued resuscitation. He required serial debridement in view of spreading wound infection (Figure 3). Pus culture from the initial surgery came out as Escherichia coli which was sensitive to Cefepime. Reassessment CT scan of the abdomen reveals no signs of necrotizing fasciitis recurrence or the presence of any collections. Nonetheless, the patient's condition worsens due to hospital-acquired pneumonia, with culture results from the endotracheal tube indicating Multidrug-Resistant Acinetobacter. Regrettably, the patient succumbs to death.

Figure 3: Anterior abdominal wall after the first (A), second (B), and third (C) wound debridement

Discussion

This case presented several significant points for discussion. We observed that following an episode of diverticulitis accompanied by an abscess, with overall recurrence rate of 61%. In the subgroup of patients who underwent CT-guided drainage, the recurrence rate rose to 71%. Furthermore, 42% of individuals experienced more than one recurrent episode, with 46% of these subsequent occurrences proving to be more severe than the initial episode. Moreover, 63% of recurrences were complicated by the presence of abscesses, fistulas, strictures, or peritonitis (2). These findings resemble our unfortunate patient, who had prior episode of diverticulitis, in which his recurrent presentation was in severe form as septic shock.

Necrotizing fasciitis is characterized by its rapid progression and significant mortality and morbidity rates, necessitating prompt debridement and source control. However, necrotizing fasciitis affecting the anterior abdominal wall as sequalae of perforated diverticulitis are rare. While there were numerous documented cases of perforated diverticulitis impacting parts of the body (4, 5, 6), a similar case to our patient reported a spontaneous colocutaneous fistula secondary to diverticular disease, resulting in perfo-

ration and presenting as necrotizing fasciitis of the anterior abdominal wall (6).

The approach to necrotizing fasciitis of the anterior abdominal wall involves early identification, prompt and thorough surgical debridement, administration of broad-spectrum antibiotics, and intensive care management (7, 8). Aggressive surgical debridement aims to eliminate the source of infection as comprehensively as possible, followed by meticulous wound care and vigilant monitoring for the potential need for additional debridement. Combination of antibiotics with broad-spectrum coverage against both anaerobic (such as Clindamycin) and aerobic organisms, including gram-positive (like Penicillin G or extended-spectrum Penicillin, Imipenem, and Teicoplanin) and gram-negative bacteria (such as Aminoglycosides, Cephalosporins, or Carbapenems), can be beneficial in treatment, as often NF is contributed by polymicrobial infections.

Conclusion

Anterior abdominal necrotizing fasciitis resulting from perforated sigmoid diverticulitis represents a rare and potentially life-threatening complication. Given the critical nature of the condition, timely recognition and decisive action, including aggressive surgical debridement and appropriate antibiotic therapy, are paramount for achieving successful outcomes in the management of necrotizing fasciitis (NF). The significance of teamwork cannot be overstated, as a multidisciplinary approach involving various healthcare professionals is essential for optimizing patient care and treatment outcomes. Despite the concerted efforts, unfortunately, the patient succumbed to worsening sepsis, underscoring the aggressive nature and challenges associated with this devastating condition.

Informed Consent: Informed consent was provided by the patient participant.

Conflict of Interest: The authors declared they do not have anything to disclose regarding conflict of interest with respect to this manuscript.

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