

CASE REPORT

Perforated Gastric Ulcer Masquerading as Anterior Abdominal Wall Necrotizing Fasciitis

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ABSTRACT

Necrotizing fasciitis (NF) is a deadly soft tissue infection causing a significant morbidity and mortality. Abdominal and chest wall NF are unusual. We describe a 49-year-old male with anterior abdominal wall NF secondary to perforated gastric ulcer (PGU). He was admitted in septic shock presenting an abdominal wall NF with severe metabolic acidosis requiring dialysis and admission to the intensive care unit. There was a patch of gangrene with surrounding skin discoloration at lower quadrant of the abdominal wall. Local debridement was done without a preoperative computed tomography that was performed after surgery. Adequate source control was not achieved after the second surgery and the patient had worsened resulting to death. We describe this rare presentation of NF and discuss the issues learnt from this unfortunate event.

Keywords: Necrotizing fasciitis, Peptic ulcer perforation, Diagnostic imaging, Abdominal wall

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INTRODUCTION

Necrotizing fasciitis (NF) is an aggressive form of soft tissue infection. It can spread rapidly along the plane of fascia, leading to a fulminant sepsis and multi-organ failure. In the worst case scenario, inadvertent mortality can eventuate if surgical intervention is delayed. The risk factors of NF include peripheral vascular disease, liver disease, diabetes mellitus, anemia, malnourishment, old age, obesity, smoking and immunosuppression (1). NF can also be triggered by trauma, surgery or instrumentation. Lack of typical presentations and clinical signs make the diagnosis oblivious. Hence, early diagnosis and prompt surgical intervention are of paramount importance.

Any sites on the body are prone to get NF, either spontaneously or as a result of secondary infection due to other aetiologies. The extremities are most commonly affected. NF of the abdominal or chest wall is scarce. Among the few reported cases in the literature, NF was identified after upper chest and lower abdominal surgery (1,2). To date, only 15 cases of anterior abdominal wall NF secondary to perforated appendicitis have been

recorded, but there are none mentioning NF secondary to perforated gastric ulcer (PGU) (2). In the following case study, we discuss a middle-aged male with anterior abdominal wall NF secondary to PGU, and describe its distinct presentation.

CASE REPORT

A 49-year-old gentleman was admitted to our hospital with abdominal pain, fever and lethargy for duration of three days. He had hypertriglyceridemia, hypertension and chronic kidney disease not requiring dialysis. He had never had surgery before. Despite being a smoker, he did not consume alcohol and had no history of non-steroidal anti-inflammatory drugs (NSAIDs) abuse or traditional medication intake. In addition, he denied any precedent trauma, such as insect bites, or excessive scratches to the abdomen. Upon admission, he was severely septic with a blood pressure of 60/40 mmHg, a pulse rate of 130 beats per minute and a temperature of 40 degree Celsius. There was a discoloration on the lower abdominal quadrant and a patch of gangrene was evident (Figure 1). The abdomen was not distended but locally guarded. On the performance of a rectal examination, the rectum was observed to be empty. Renal profile was deranged with acute on chronic kidney disease with serum urea of 22 mmol/L and creatinine of 545 mmol/L. Serum lactate was 7.3 mmol/L. Serum blood gas indicated severe metabolic acidosis with a



Figure 1: gangrenous patches with discoloration of anterior wall of lower abdominal quadrant

pH of 6.9 and bicarbonate of 15. The patient's chest radiograph revealed no evidence of air under the diaphragm.

The patient was managed according to the surviving sepsis campaign bundle and admitted to the intensive care unit for stabilization in view of his severe acidosis. After one session of dialysis, he was posted for wound debridement. The decision was made to excise the NF as the source of sepsis since it was a salvage surgery. Intra-operatively, the NF had affected the whole lower quadrant. The rectus muscles were not impaired, but an opening in the sinus tract was noted. The decision was made not to proceed with laparotomy, as there was no fistula and the abdomen was not generally peritonitic. Consequently, the wound was left open for dressing.

However, the patient was scheduled for a computed tomography (CT) of the abdomen to look for the extension of the sinus tract. The CT revealed a pneumoperitoneum with a perforated stomach at lesser curvature which was not affecting the anterior abdominal wall (Figure 2). He was immediately posted for an urgent exploratory laparotomy. Upon entry, no extensive contamination

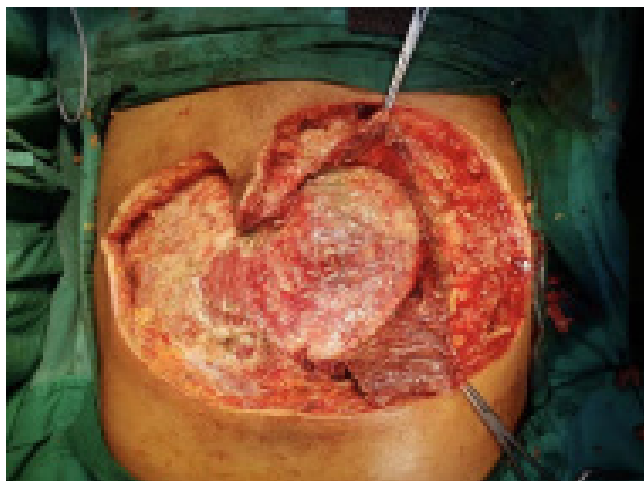


Figure 2: the abdominal wound after debridement

was observed. However, severe adhesion was noted, especially at the upper abdominal cavity making surgery difficult. As a result, it was not possible to identify the perforated site, and the decision was made to utilize a controlled drain. After surgery, the patient was sent back to the intensive care unit.

Unfortunately, the patient's general condition did not improve after the second surgery. He became critically ill with disseminated intravascular coagulation, worsening metabolic acidosis and increasing inotropic support. He eventually succumbed two days after the operation.

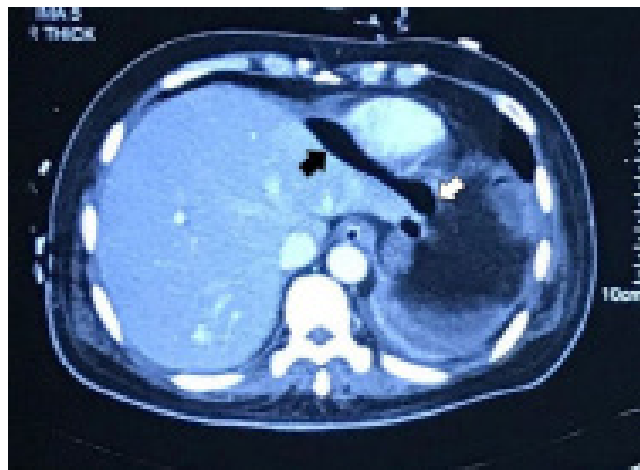


Figure 3: CT of abdomen in axial view revealed pneumoperitoneum (black arrow), caused by perforated gastric ulcer at anterior gastric wall (white arrow)

DISCUSSION

Necrotizing fasciitis is a dreaded and life-threatening condition, caused by "flesh-eating" organisms. The diagnosis in general is obvious, but it can be occult and enigmatic. In 1843, Edward Crisp stated that "the symptoms are so typical, I hardly believe that it is possible that anyone can fail in making a diagnosis" of PGU (3). This shows how straightforward it is to make such diagnosis.

Lack of awareness and the failure of medical personnel to recognize the specific symptoms of NF have typically resulted in delays to the initiation of treatment resulting in a mortality rate of up to 36% (4). Generally, the deceased succumb to bacteremia, septic shock or multi-organ failure (4). Patients with NF are typically septic and unwell. Further complicating matters, the initial presentation can mimic cellulitis. However, the unbearable pain typically reported, suggests a diagnosis more complex than a simple case of cellulitis. NF can manifest itself as swelling, erythema, localized tenderness, and even bullae formation. At a more advanced stage, patients may present with gangrenous skin, as in our patient. The features of bullae, crepitus and gangrenous skin are pathognomonic of NF.

Abdominal and chest wall NF are very unusual. NF

secondary to perforated appendicitis has been described in the literature before, but not a single paper has indicated PGU. Peptic ulcer disease (PUD) with perforations can be complicated and is associated with high morbidity and even mortality if left untreated. NSAIDs abuse, corticosteroid consumption, *Helicobacter pylori* infection, physiological stress, smoking (especially among young males), and a previous history of PUD are among the risk factors for PGU (3). The triad of sudden onset abdominal pain, tachycardia and abdominal rigidity is the hallmark of PGU. However, in our case study, we had difficulty in reaching a diagnosis due the atypical presentation of PGU.

On rare occasions, the diagnostic ambiguity of PGU can be overcome by doing a CT scan, as its diagnostic accuracy can be as high as 98% (3). In managing PGU, the use of aggressive fluid resuscitation, intravenous broad spectrum antibiotics, opioid-based analgesia, proton pump inhibitors, nasogastric tubes, urinary catheters and surgical source control are paramount. Exploratory laparotomy, cavity washout and omental patch repair remain the gold standard treatments. The steps in resuscitation and treatment are identical to those used for NF. However, wound debridement of NF is extremely important and should be undertaken immediately.

Looking back, with such a distinct presentation of PGU mimicking NF of the anterior abdominal wall, a preoperative CT scan would have had a huge impact on the patient's chances of survival. Immediate exploration and sepsis control could have been undertaken. Instead of putting him through two episodes of surgery and the consequent stress, a single operation may only have been needed. Therefore, such preoperative action could reduce the risk of morbidity and mortality in future.

CONCLUSION

NF secondary to PGU is extremely rare. Preoperative imaging via CT scan can act as a helpful diagnostic tool in the initial stages. Although NF has a high mortality rate, early and immediate resuscitation as well as prompt surgical intervention can reduce the risk of a negative outcome.

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