

An Unusual Case with Gas under Diaphragm

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Abstract

We present an unusual case of free gas under diaphragm where a middle aged male presented with acute lower abdominal pain, edema, erythema and crepitus of scrotum and anterior abdominal wall. Clinically, he was diagnosed as a case of ruptured appendix with necrotizing fasciitis. Plain x-ray abdomen showed free gas under diaphragm. Exploratory laparotomy was performed. Surprisingly at laparotomy, no intra-abdominal pathology was found but there was spreading fasciitis and myonecrosis of anterior abdominal wall and scrotum with crepitus and foul smelling pus. A thorough debridement of necrosed area was done. Patient was managed postoperatively in ICU on assisted ventilation.

Key words: Necrotizing fasciitis, Scrotal reconstruction, Soft tissue reconstruction

Introduction

Necrotizing fasciitis (NF) is an aggressive soft tissue infection that involves the deep fascia and is characterized by the extensive deterioration of the surrounding tissue.¹ In the perianal and genital regions it is referred to as Fournier's gangrene constituting a clinical entity with the gangrene of the abdominal wall.² Many of the infections are found in immunologically healthy people, but persons revealing a compromised wound healing are endangered additionally, e.g., diabetes. In the majority of the microbiological analyses, streptococci alone or a mixture with mainly anaerobic bacteria may be detected.³ Shortly after the onset of the disease, patients become colonized with their own aerobic and anaerobic microflora from the gastrointestinal and/or urogenital tracts. Early diagnosis with aggressive multidisciplinary treatment is mandatory.⁴

Few cases of free gas under diaphragm reported in the literature with necrotizing fasciitis of abdominal wall secondary to colonic or ileal perforation but none without an intrabdominal pathology which makes our case very rare and unique.

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Case Report

A 50 year-old well-built male police officer by profession presented in A&E with complaints of left sided scrotal swelling, difficulty in micturition and gradually increasing right sided abdominal pain for the past 8 days. He also had H/O high grade fever for past 5 days. On examination, pale looking male with pulse of 110/ min, BP of 100/60mm/hg and 101⁰F temperature. His abdomen was distended, tense and tender with crepitus more on the right side of abdomen. Bowel sounds were absent. His left scrotum was swollen, tender with erythema and raised temperature. Overlying skin of abdomen and scrotum was erythematous. Per rectal examination was unremarkable. So a clinical diagnosis of necrotizing fasciitis of anterior abdominal wall was made.

His investigations showed Hb: 12.8g/dl, TLC: 10100/m³, Platelet count:780000/m³, Blood Urea:216mg/dl, Creatinine:4.7mg/dl, Bilirubin:1.2 mg/dl and rest of LFTs were normal. X ray plain abdomen showed streak of gas under right hemidiaphragm as shown in Figure 1 with mildly distended small bowel loops. Ultrasonography showed severe renal parenchymal disease.



Figure 1: Showing area of necrosis

With the above history and investigations, a diagnosis of necrotizing fasciitis of lower anterior abdominal wall with perforated appendix was made. His exploratory laparotomy was performed which revealed neat and clean peritoneal cavity with no intra-abdominal pathology. There was foul smelling pus and myonecrosis of anterior abdominal wall. Left scrotum was laid open exposing the testicle which

looked viable. Pus from the wound was drained and left open. Abdominal cavity was closed but necrosed muscles were debrided and fascial planes were left open with corrugated drain in the wound (Figure 2).

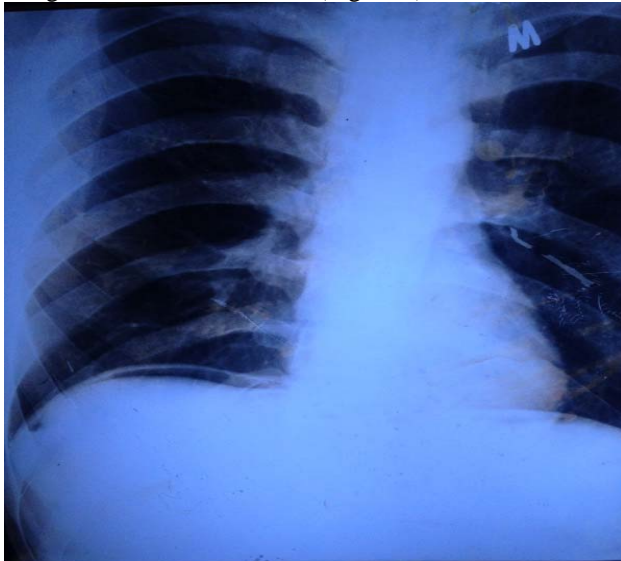


Figure 2: Showing gas under diaphragm.

Patient was put on Meropenem and metronidazole and his strict input out-put and glycemic control with insulin was monitored. Daily dressing change with local debridement of the wound was done. Wound condition however improved but patient went into renal shutdown and DIC. Patient had a stormy postoperative period in ICU and died on 12th post op day due to septicemia.

Discussion

Necrotizing fasciitis is a life-threatening form of soft tissue infection. It can occur in association with gas gangrene as a part of generalized tissue necrosis or as a separate clinical entity. Two types of necrotizing fasciitis, types I and II, are recognized. Type I necrotizing fasciitis occurs in patients who have diabetes mellitus or severe peripheral vascular disease, or both; it is usually caused by mixed aerobic and anaerobic bacteria.⁵ Although the risk for an individual diabetic patient is low, this type of deep soft tissue infection is the most common form of necrotizing fasciitis in the general population, because the total number of people who have diabetes is large.⁶

Type II necrotizing fasciitis, formerly called streptococcal gangrene, is caused by group A streptococci. Since the mid-

1980s, this disease has been recognized with increasing frequency in many parts of the world, at a current annual incidence of 5–10 cases per 100,000. Before the availability of antibiotics, necrotizing fasciitis with gas gangrene was usually fatal. Since then, mortality rates from gas gangrene caused by *C. perfringens* have improved, owing to aggressive antibiotic therapy, aggressive surgical therapy employing better surgical techniques, and hyperbaric oxygen therapy. The most important factors in determining outcome, reducing the need for amputations and preventing shock have been early recognition and aggressive treatment. The mortality and morbidity of group A streptococcal necrotizing fasciitis has evolved differently. In the pre-antibiotic era this infection carried a mortality rate of about 25% when treated with surgery (such as 'bear claw' fasciotomies) alone. In modern times, mortality due to group A streptococcal necrotizing fasciitis has not decreased and continues to range from 30% to 70% despite antibiotics, appropriate surgical debridement and critical care.^{7,8} So far in literature several cases of Fournier and Meleney's gangrene have been reported but none so far with gas in peritoneal cavity with no intrabdominal pathology has been reported.

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