

Necrotizing Fasciitis as an Early Postoperative Complication of Non-perforated Non-metastatic Rectal Cancer: Case Report and a Review of the Literature

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Abstract

Background: Necrotizing fasciitis is a life-threatening condition characterized by a rapid onset and aggressive degradation of the patient's condition due to its fair prognosis. The brisk rate of necrotizing fasciitis evolution often makes diagnosing and treating it difficult, thus becoming fatal and incompatible with life.

Case report: The authors report a rare case of a 62 years old woman, who had undergone a laparoscopic anterior rectal resection intervention. The patient presented stable with no co-morbidities. She had suffered different gastrointestinal symptoms during the last 2 months such as anorexia, diarrhea, and abdominal discomfort. She had also lost 6 kg in a 2-month time period. Imaging examinations (contrast CT) detected a rectal tumor stage CT4a N1 M0. No bowel perforations were detected. The team faced no perioperative complications. Later that day, she referred to having moderated pain around the surgical wounds that developed two days later with pain and mild diffuse hematoma in the left flank. This developed into necrotizing fasciitis and despite all the efforts she had an exitus lethalis on the 9th postoperative day.

Conclusions: Necrotizing fasciitis still remains a challenge to many specialists. In the context of malignancies, it is sometimes seen as a complication of perforated colon tumors. However, cases such as this, represent a challenge to many doctors due to their insidious characteristics. That is why it is important to search further into the mechanisms of this pathology.

Keywords: necrotizing fasciitis, colorectal cancer, postoperative complication.

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Introduction

Necrotizing fasciitis is a life-threatening condition characterized by a rapid onset and aggressive degradation of the patient's condition due to its fair prognosis. The brisk rate of necrotizing fasciitis evolution often makes diagnosing and treating it difficult, thus becoming fatal and incompatible with life. As Foureira and co. mention in their article, colorectal cancer is the second leading cause of cancer death in Europe.¹ Clinical presentation is usually characterized by hemochezia, tenesmus, and change in bowel habits. There are many articles and cases reported of patients with perforated colorectal cancer who developed necrotizing fasciitis. The pathophysiological mechanisms of this complication are still unknown. What is known is that Necrotizing fasciitis is a fulminant gangrene due to synergistic polymicrobial infection with aerobic and anaerobic bacteria. It most commonly occurs after a dermal wound and its development is accelerated in immunosuppressed patients, or in cases of cancer or diabetes.²

Case report

The patient we will present is a rare case both in terms of the postoperative clinical progression and the pre-operative anamnesis. She is a 62-year-old woman who visited the general surgeon due to some unusual symptoms that had occurred lately and that had compromised the quality of her life. The patient complained of weight loss of 6 kg within a month and a half, anorexia, diarrhea and diffuse abdominal pain in the form of stiffness. She is under therapy for hypothyroidism with Letrox 50 mg, once per day and refers to not having other co-morbidities. As a result, she voluntarily performed an abdominal CT with intravenous contrast and a pelvic MRI, which both concluded to the following findings: rectal tumor stage CT4a N1 M0. Colonoscopy

reveals a big mass in the upper rectum, whose biopsy resulted Moderately Differentiated (G2) Rectal Adenocarcinoma.

Having seen all the pre-mentioned examinations, the surgeon suggested she undergoes a laparoscopic anterior rectal resection.

All pre-operative blood tests came out normal. The patient underwent the intervention of left hemicolectomy via laparoscopy. The removed part of the bowel appeared stenotic, but with intact walls and no perforations. No other pathologic findings are noticed during the operation, a drain was placed in the Douglas (rectovaginal) pouch. Postoperative biopsy reveals Moderately Differentiated (G2) Rectal Adenocarcinoma with two positive lymph nodes T3aN1Mx. The surgeon prescribed the following post-operative treatment: Ceftriaxone, flagyl, omperazol, clexane, artrosilen, apotel, cabiven, sol ringer lactate, sol glucose 5%, sol KCl 7.5% and NPO.

The patient woke up easily and with no difficulties. In the following hours she complained of slight pain in the incisions where the trocars were placed. The incisions were clean with no leakage. The consistency of the drained liquid was serohematic and the quantity was within normal values.

Later that day she only complained of pain of moderate intensity in the incisions. Her vital signs were stable and she remained afebrile.

On the first postoperative day, the patient was stable, but the intensity of the pain, located in the right hypochondrium and epigastric region, was increased. The glycemic values were elevated to 150mg/dL. She remained afebrile and was mobilized in bed. The consistency of the drain was serohematic. During the day she continued to complained of intense pain that was only temporarily controlled by analgesics.

Second postoperative day, the patient remained afebrile. The other vital signs are within normal values. She complains of a strong pain in the upper abdomen. All the other systems remained stable.

An abdominal US was done and no pathological findings were detected, except a distended gallbladder containing sludge and microstones.

A MRCP was done in order to check for any possible damages in the pancreas since it was one the intervention's working sites. The results came out normal, suspecting only a mild cholecysto-pancreatitis.

During the day the abdominal pain continued and it could not be dominated by the analgesics. Leucopenia (1.5×10^3) and a high CRP (28) were noticed. In the evening hypotension and oliguria were noticed. Hence, the patient was sent to the ICU.

She was by that time afebrile, but slightly tachycardic (Fc= 114 bpm)

Third postoperative day, despite the patient remaining stable and conscious. A mild ecchymosis appeared in the left flank with pain localized in this region. The ecchymosis evolved during the late hours of the night. Since pancreatitis was suspected and this ecchymosis resembling Grey Turner sign, abdominal CT scan was ordered, resulting in normal intraabdominal findings with no anastomotic leak and no abdominal or lumbar collections. Because of low perfusion and hypotension noradrenaline is started and the patient treated as a toxic shock. Later during the night, patient was intubated due to respiratory insufficiency.

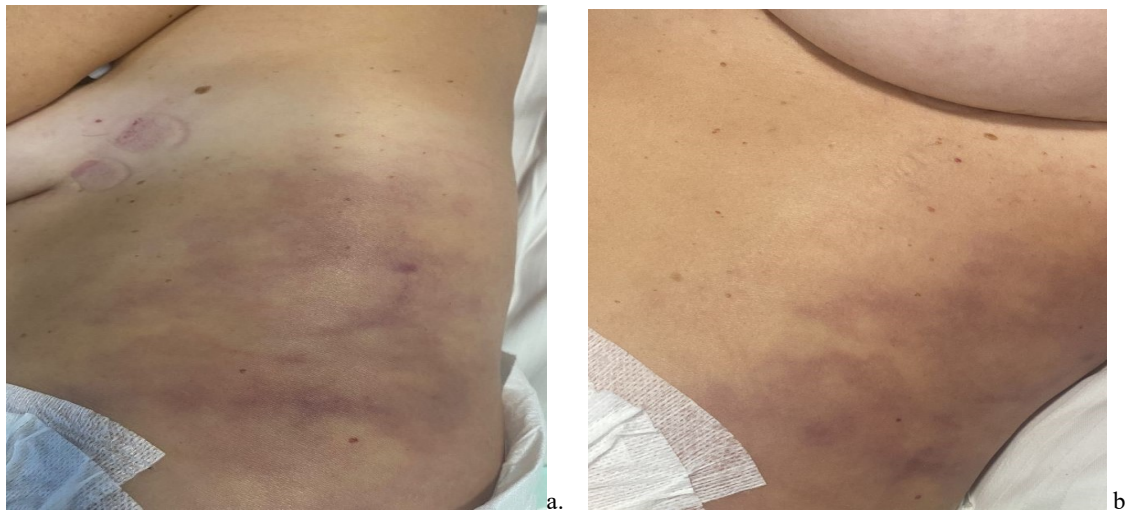


Figure 1 a and b. Illustration of ecchymosis on third day post operation

Fourth postoperative day, in the early morning hours, the hematoma had progressed having occupied all of her left flank down to the left thigh. The skin appeared ischemic with bullae with serous fluid. The patient's overall condition was quite severe and under a septic shock.



Figure 2. Illustration of fourth day of ecchymosis post operation

After wide consultations the patient was retaken in the operative room for a second look. No anastomotic leaks or intraabdominal collections/infections were found. Cholecystectomy and protective ileostomy were performed. Antibiotic therapy was changed to Meropenem, Levofloxacin and Clindamycin.

Fifth postoperative day, the patient continues to be in severe conditions. The lesion on the left flank has evolved to a clear necrotizing fasciitis. Wide drainage incisions down to the vital healthy tissues were performed, revealing small amount of smelly purulent discharge. Microbial cultures are taken, resulting in polymicrobial infection with E Coli, P. Aeruginosa and Enterococcus faecium.



Figure 3 a and b. Illustration of fifth day of ecchymosis post operation

The patient was put under Prismaflex treatment for the septic shock and toxemia and intravenous immunoglobulins were given.

On following days, the patients wound was treated locally several times a day and antibiotics were changed according to antibiogram. The supportive treatment in the ICU was changed continuously according to patient conditions. Nevertheless, the patient enters MOF stage, the local condition progresses to gangrene expanding to perineal area and to the right side and the patient dies on the ninth postoperative day.



Figure 4. Illustration of six day of ecchymosis post operation

Discussion

Our case is part of a few case reports currently present in the literature of NF developing in a patient with non-perforated, non-metastatic colorectal cancer. The patient also had no known comorbidities or conditions that could have favor NF development. NF in this patient developed in a “virgin” area, without any wound or portal entry in proximity, suggesting a hematogenous route of translocation and inoculation.

Mos of the reported cases describe NF developed on the background of perforated colorectal cancer and chemotherapy, who decompensate early during their course of treatment.¹⁻⁶ It is a subset of the aggressive skin and soft tissue infections (SSTIs) that cause necrosis of the muscle fascia and subcutaneous tissues. This infection typically travels along the fascial plane, which has a poor blood supply, leaving the overlying tissues initially unaffected, potentially delaying diagnosis and surgical intervention. The infectious process can rapidly spread causing infection of the fascia, peri-fascial planes, and cause a secondary infection of the overlying and underlying skin, soft tissue, and muscle, being a potentially life-threatening infection.^{7,8}

A number of factors have been found to increase the risk of developing the condition, such as malignancy, alcoholism, malnutrition, diabetes, chronic hepatitis, male sex, old age, smoking and alcohol consumption.⁹ Owing to the variable presentation, it is often initially missed, leading to lengthy delays in diagnosis and treatment, which have been estimated at being as high as 76% even with surgical debridement.¹⁰

Clinical presentation usually consists of pain, swelling and fever on history and tenderness, erythema of the involved site on physical examination. Presence of crepitus, skin necrosis, bullae and sensory deficits over the involved area are supportive to diagnosis, however their presence are typically seen later in the course or may be

indicative of a rapidly developing fulminant infection.¹¹ Pain over the involved site is typically out of proportion during the early stages of illness and often without a precipitating cause, making early diagnosis of NF challenging.¹² It is not until they develop skin changes and palpable crepitus that the diagnosis becomes clear, but this can often take days, by which time septic shock is often taking effect.

	Stigt <i>et al.</i>	Hodgins <i>et al.</i>	Pauline <i>et al.</i>	Misiakos <i>et al.</i>	Arifi <i>et al.</i>	Kiralj <i>et al.</i>	Jabbour <i>et al.</i>	Wang <i>et al.</i>	Total
Country	Netherlands	Northern Ireland	France	Greece	Kosovo	Serbia	Qatar	Taiwan	8
Time frame of study	2003-2013	2007-2012	2008-2013	2005-2015	2005-2010	2008-2012	2000-2013	2004-2011	2000-2015
Date of publication	2016	2015	2016	2017	2013	2015	2016	2013	2013-2017
Number of patients	58	46	67	62	22	216	331	115	917
Signs and symptoms (%)									
Erythema	89.7	-	78	69.4	72	56		80	69.6
Warmth	-	-	30	-	-	-		-	29.9
Pain or tenderness	-	95.7	76	90.3	82	84.7	68	73	76.9
Swelling	93.1	-	78	46	89	84.7	78	80	79
Bullae	24.1	17.4	39	22.6	-	75.9	-	22	44.5
Crepitus	-	6.5	6	9.7	-	2.3	-	6	4.9
Skin necrosis	-	56.5	9	46.8	-	14.4	-	-	23.5

Table 1 Signs of Necrotizing fasciitis according to literature review

As group A Streptococcus is the most commonly isolated organism, patients often deteriorate rapidly with a toxic shocklike presentation. NF can be classified according to microbiological subtype: (a) Type I: polymicrobial which represents presence of anaerobic and aerobic flora. Most common anaerobic flora encountered Bacteroides, Peptostreptococcus, Clostridium, Enterobacteriaceae family (E Coli, Enterobacter, Proteus) and anaerobic streptococci. (b) Type II: monomicrobial most commonly caused by group A streptococcus and clostridium. Our patient grew several organisms and had a fulminant, rapid development of septic shock. Unfortunately, despite aggressive therapy mortality remains high at approximately 40%, and nearly 80% if sepsis is present on initial presentation.¹³ The overall mortality varies from 50%–70%.¹⁴

Conclusion

Necrotizing fasciitis still remains a challenge to many specialists. In the context of malignancies, it is sometimes seen as a complication of perforated colon tumors. However, cases such as this, represent a challenge to many doctors due to their insidious characteristics. That is why it is important to search further into the mechanisms of this pathology. Irrespective of the source early empirical antibiotic therapy and surgical debridement remains the mainstay treatment of NF. Unfortunately, despite aggressive therapy mortality remains high at approximately up to 80% if sepsis is present on initial presentation, however the overall mortality still remains up to 70%.

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