

Case report

Necrotizing Fascitis: A Case Report

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SUMMARY

Background. Necrotizing soft tissue infections are actually the diseases with a severe outcome characterized by the progression of soft tissue inflammation with a catastrophic prognosis and the risk of major functional consequences. Only prompt diagnosis and prompt care, including prompt administration of appropriate antibiotic therapy and surgical treatment, can improve the outcome.

Case report. A female patient, aged 66 years, came due to swelling and pain in the perineum. Before admission, the pains were of low intensity, and immediately before admission, their intensity increased. An incision was made in the perineal region and the abdominal region on the left. During the preparation, we came across a necrotic tissue from which a dark-gray liquid flew that had a strong smell. From the tenth postoperative day, secondary sutures were partly placed.

Conclusion. Mortality and morbidity in this disease are high. A potential new treatment for this disease may be an antigen-inhibiting vaccine.

Keywords: necrotizing fascitis, incision, necrectomy, sepsis

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INTRODUCTION

Necrotizing soft tissue infections are actually the diseases with a severe outcome characterized by the progression of soft tissue inflammation with a catastrophic prognosis and the risk of major functional consequences (1, 2). The entry of bacteria occurs as a result of some precipitating factors, such as laceration, cut, abrasion, contusion, burn, bite (3). Necrotizing fasciitis affects about 0.4 per 100,000 people per year in the United States. In some areas of the world, it is as common as one in every 100,000

people (4). The etiology and microbiology of necrotizing fasciitis is shown in Table 1 and Table 2 involvement where the pathological process spreads towards the fascia. The propagation of the pathological process, in addition to affecting the fascia, can also affect neurovascular structures, when it can cause microthrombosis (5), arterial vasculitis, local bleeding and secondary skin infection. Rapid spread of lesions is complicated by systemic disorders. As microorganisms and toxins spread into the blood-

Table 1. Microbiology of necrotizing fasciitis (1)

Gram-positives	<i>Group A streptococcus</i>
	<i>Group AB streptococcus</i>
	<i>Enterococcus spp</i>
	<i>Coagulase-negative staphylococci</i>
	<i>Staphylococcus aureus</i>
	<i>Bacillus spp</i>
Gram-negatives	<i>Corynebacterium spp</i>
	<i>Escherichia coli</i>
	<i>Pseudomonas aeruginosa</i>
	<i>Enterobacter cloacae</i>
	<i>Klebsiella spp</i>
	<i>Proteus spp</i>
	<i>Serratia spp</i>
	<i>Acinetobacter calcoaceticus</i>
	<i>Citrobacter freundii</i>
	<i>Pasteurella multocida</i>
Anaerobes	<i>Bacteroides spp</i>
	<i>Clostridium spp</i>
	<i>Peptostreptococcus spp</i>
	<i>Prevotella spp</i>
	<i>Fusobacterium spp</i>
	<i>Veillonella spp</i>
	<i>Lactobacillus spp</i>
	<i>Propionibacterium spp</i>
Marine Vibrios	<i>Vibrio vulnificus</i>
	<i>Vibrio parahaemolyticus</i>
	<i>Vibrio damsela</i>
	<i>Vibrio alginolyticus</i>
Fungi	<i>Candida spp</i>
	<i>Aspergillus spp</i>
	<i>Rhizopus</i>

Table 2. Etiological aspects of necrotizing fasciitis (1)

Limbs and extremities	Trauma (blunt or penetrating)
	Bite (animal or insects)
	Drugs
	Subcutaneous injection (insulin e.g)
Abdominal area	Cutaneous infection (folliculitis, abscess or ulcers e.g)
	Appendicitis
	Colocutaneous fistula
	Perforated viscus
	Diverticulitis
Genital and perineal area	Renal calculus
	Bartholinitis
	Vulvar abscess
	Hysterectomy
	Episiotomy
	Caesarean
	Salpingectomy
	Coital injury
	Prostatic surgery
	Genitourinary infection
	Pilonidal abscess
	Hemorrhoidal banding
Face and neck	Rectal carcinoma
	Cervical adenitis
	Otologic infections
	Peritonsillar abscess
	Dental abscess
	Salivary gland infection

stream, patients develop the clinical picture of sepsis. Hypocalcemia may develop as a result of extensive fat necrosis. Mortality reaches 30%, with higher mortality recorded in the elderly.

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cluding prompt administration of appropriate antibiotic therapy and surgical treatment, can improve the outcome.

A classification (Table 3) was made based on the bacteria that initiate the entire cascade:

Table 3. Classification, clinical aspects, pathological anatomy and microbiology of necrotizing fasciitis (1)

Type	Type 1	Type 2	<i>Clostridium</i> fasciitis	<i>Clostridium myonecrosis</i>
Pain Cutaneous signs	+/++ Edema, erythema, bullae, Necrotic and ulcerated lesions	++/+++ Edema, erythema, necrotic bullae	+	+++ Pale skin, necrotic, hemorrhagic bullae, anesthesia
Systemic signs Progression	+ to +++ Moderate (3 to 14 days)	+ to +++ (Toxic shock) Very fast (Toxic shock syndrome, 1-3 days)	+	+++ Very fast (1-3 days)
Gas production	+/-	-	++	+++
Deep fascia infection	- to ++	+ to +++	-	+++
Muscular infection	-/+ (secondary)	-/+ (secondary)	-	+++
Site of entry, initiating factor	Wound, vascular lesion, surgery, local infection	Trauma, surgery, cutaneous lesion, burn, erysipelas, varicella	Wound, surgery	Non-penetrating trauma, limb crushing, IM injection, sepsis
Risk factors	Diabetes mellitus	Vascular disease	Diabetes mellitus	Immunosuppression
Microbiology	Enterobacteriaceae, Anaerobes, Streptococcus Staphylococcus	Group A Streptococcus	<i>C. perfringens</i>	<i>C. perfringens</i> <i>C. septicum</i>

- Polymicrobial (type I) NF. Type I NF stems from polymicrobial infection identified via microbiological culture. This type of infection is caused by both aerobic and anaerobic bacteria. The complex microbiological profile of offending organisms leads to gaseous infiltration of subcutaneous tissue similar to gas gangrene. Type I NF accounts for most reported cases of NF and is more prevalent in older adults with chronic diseases (6).

- Monomicrobial (type II) NF is most commonly associated with Gram-positive organisms such as group A *Streptococcus* (GAS) and methicillin-resistant *Staphylococcus aureus* (MRSA). Endotoxins released by type II NF organisms are responsible for some clinical presentations, including a toxic shock syndrome. Type II NF is not associated with a specific age group. Some patients do not have comorbidities or an obvious portal of entry that predisposes them to a severe infection (6).

We present a case of necrotizing fasciitis of the perineum that spread to the vulva and the left part of the abdomen.

CASE REPORT

A female patient, aged 66 years, came due to swelling and pain in the perineum. Before admission, the pains were of low intensity, and immediately before admission, their intensity increased.

In the objective findings, there was a swelling of the perineum with pronounced palpatory pain sensitivity.

At the surgery department where the patient was admitted, adequate preoperative preparation was done, which consisted of basic laboratory and biochemical analyses. Laboratory analyses on admission were: WBC-31.1; RBC-4.55; PLT-308. Biochemical analyses: albumin-26; protein-58; glucose-14.0;

Ca-2.88; creatinine-92; urea-7.5; CRP-227.2; SE-82. In the surgery department, an internist and an anesthesiologist were consulted on several occasions. After adequate preoperative preparation, the patient underwent operative treatment under OET anesthesia. The patient was placed in the gynecological position.

An incision was made in the perineal region and the abdominal region on the left. During the preparation, a necrotic tissue was observed, from which a dark-gray liquid flew, having a strong odor.

On that occasion, the necrotic tissue was removed to a healthy one. Paravulvar left and supravulvar incisions made. Also, from the region of the abdomen on the left, there was a flow of content that smelled. Incisional wounds were not sutured but left open for better dressing and drainage. A swab was taken from the wound and sent for seeding. The following bacteria were identified: *Acinetobacter sp.*, *Escherichia Coli*. Also, blood was taken for blood culture and *Corynebacterium sp.* was identified in the obtained results.



Figure 1. Daily wound care



Figure 2. Abdominal region, secondary sutures



Figure 3. Abdominal region, left paravulvar and supravulvar incision



Figure 4. Reconstruction of the anterior abdominal wall



Figure 5. Left supravulvar and paravulvar suture



Figure 6. Suture of the perineum on the right; the left wound is left for drainage

After the surgery, the patient was transferred to the intensive care unit for further monitoring. In the intensive care unit, the patient had cardiorespiratory insufficiency and was intubated for four days, after which they extubated her as she was hemodynamically and cardiorespiratory stable. In the ward, she was treated with antibiotics (four types), rehydration solutions, multivitamin therapy, internal therapy, and albumins. The incisional wounds on the abdomen were partially closed with secondary sutures on the tenth postoperative day (Figure 1, 2, 3). Seven days later, other secondary sutures were placed on the vulva, abdominal and perineal wounds, with the left side of the perineum left unsutured to allow drainage in case of serous fluid accumulation (Figure 4, 5, 6).

DISCUSSION

The paper presents a very specific case of the evolution of necrotizing fasciitis, which is an illustration of a rare disease. Despite antibiotic therapy and surgical intervention, mortality and morbidity

from necrotizing fasciitis remain high. Early detection of the process of necrosis can improve the outcome of this life-threatening disease. Early surgical debridement reduces mortality among patients with this disease (7). New potential treatments for this disease may be new antibiotics and super-antigen-targeted therapy, such as neutralization and inhibition of super-antigen production by streptococci. Although there are no definitive data to date to support the use of intravenous immunoglobulin (IVIG) in all cases of sepsis, there are strong indications that certain defined septic subgroups, such as group A streptococcal toxic shock syndrome, will benefit from its use (8). A distinction should be made between necrotizing fasciitis and fulminant purpura, as these are the two destructive processes that affect the skin and soft tissues (9).

CONCLUSION

Mortality and morbidity in this disease are high. A potential new treatment for this disease may be an antigen-inhibiting vaccine.

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Nekrotizirajući fascitis: prikaz slučaja

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SAŽETAK

Uvod. Nekrotizirajuće infekcije mekog tkiva zapravo su bolesti sa teškim ishodom koje karakteriše progresija zapaljenja mekog tkiva sa katastrofalnom prognozom i rizikom od velikih funkcionalnih posledica. Samo brza dijagnoza i brza nega, uključujući trenutnu primenu odgovarajuće antibiotske terapije i hirurškog lečenja, mogu poboljšati ishod.

Prikaz slučaja. Bolesnica stara 66 godina ženskog pola, dolazi zbog otoka i bolova u perineumu. Pre prijema, bolovi su bili slabog intenziteta, a neposredno pre prijema, jakog intenziteta. U perinealnoj regiji i regiji abdomena levo napravljen je rez. Prilikom preparacije nailazimo na nekrotično tkivo iz kojeg se sliva tamnosiva tečnost koja jako zaudara. Od desetog postoperativnog dana plasirani su sekundarni šavovi, mestimično.

Zaključak. Mortalitet i morbiditet kod ove bolesti su veliki. Potencijalni novi tretman u lečenju ove bolesti može biti vakcina za inhibiciju antigena.

Ključne reči: nekrotizirajući fascitis, incizija, nekrektomija, sepsa