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Necrotizing Fasciitis After Hysterectomy : A Case Report

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Abstract
Necrotizing fasciitis is a rare dermo-hypodermal condition involving necrosis of cutaneous, subcutaneous and fascial tissues. Its occurrence in postoperative settings is an exceptional and serious phenomenon, with a life-threatening prognosis: it is a medical-surgical emergency.
The diagnosis is clinically suspected in the presence of hyperalgesic wall sepsis disproportionate to the extent of the lesions. Biological criteria are established by the LRINEC (Laboratory Risk Indicator for Necrotizing Fasciitis) score, which can help differentiate necrotizing fasciitis from severe cellulitis. Diagnosis is difficult at first, given the lack of specific signs, which worsens the prognosis, which depends on rapid medical and surgical management.
Treatment is based on extensive and aggressive trimming of necrotic tissue with drainage, combined with active and intensive resuscitation, and broad-spectrum antibiotic therapy tailored to the results of bacteriological sampling.
We report the case of a 42-year-old female patient presenting with necrotizing fasciitis of the anterolateral abdominal wall after hysterectomy.

Keywords : *Necrotizing fasciitis, abdominale walls, hysterectomy, about a case.*

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I. Introduction

Necrotizing fasciitis, or "flesh-eating disease", is a necrotizing bacterial dermo-hypodermatitis, and it was Wilson who first gave it the name necrotizing fasciitis. It is a rare condition (0.2 to 0.4 per 100,000), with a fulminant course and a mortality rate of 30-50% [1].

It affects the skin, subcutaneous tissue and superficial fascia, spreads extremely rapidly and is often accompanied by the production of endo- and exotoxins.

Histologically, the infection leads to tissue ischemia through thrombosis of the vessels passing through the fascia, culminating in skin infarction, of which necrosis is the final stage.

This is a medical-surgical emergency requiring action on two fronts: medical, with intensive resuscitation in the face of latent septic shock, and surgical, with extensive and thorough debridement of the lesions.

II. Patient and observation

Patient information : We report the case of a 42-year-old female patient with no previous pathological history of note, who underwent total interadnexal hysterectomy by laparotomy for a polymyomatous uterus complicated by menorrhagia affecting her general condition.

Clinical results: On the 3rd postoperative day, a Pfannenstiel-type skin necrosis was noted above the upper edge of the surgical wound. This necrosis extended towards the umbilicus, producing foul-smelling greyish secretions (figure 1), general condition was fair with a fever of 39° and moderate abdominal pain.

Chronology: The patient was transferred to the intensive care unit where resuscitation was initiated, a biological work-up and an abdomino-pelvic CT scan were ordered as a matter of urgency, and then to the operating room.

Diagnostic approach: Biological evaluation showed CRP 210 mg/L, hemoglobin 10.9 g/dl, moderate hyperleukocytosis 18,000 IU/L, natremia 132 mmol/L, creatinine 137 µmol, fasting venous glucose 8 mmol/L. Insulin therapy and strict blood glucose monitoring were instituted.

The abdomino-pelvic CT scan was in favour of intestinal breach peritonitis. However, emergency surgery revealed no involvement of the large peritoneal cavity, no intestinal breach and no peritoneal effusion.

Therapeutic intervention : After emergency laparotomy, we found that the subcutaneous tissues were more affected than the skin lesions would have suggested. The infection reached deep into the subaponeurotic level, and the tissues were friable, bluish and necrotic, with a greyish, foul-smelling fluid emerging from them. We performed a necrosectomy with flattening of all collections and drainage with Delbet blades (Figure 2).

We also instituted thromboembolic prevention with isocoagulant dose LMWH and compression stockings, and broad-spectrum antibiotic therapy, but no parenteral nutrition, hyperbaric oxygen therapy or immunoglobulins were used.

The necrotic lesions recurred 48 hours later (Fig. 3), and we performed a wide amputation of the entire anterolateral abdominal wall from the flanks laterally and from the lower edge of the thorax to the pubis for the craniocaudal limits (Figure 4).

The problem of visceral preservation, asepsis and hypothermia then arose: an abdominal closure was provided by three-liter sterile urine collection bags, sewn together and temporarily attached to the healthy fascia, covered with sterile drapes, all held in place by elastic restraints. This device, known as the "Bogota bag", was designed to create a temporary false wall of protection [2] (figure 5).

This device was changed daily in the operating room, then every 2 to 3 days until a plastron and scar bud were obtained (figure 6).

Follow-up and results : Our patient was referred to the plastic surgeons for a superficial dermal graft at D60 post-op, but still presented with significant ventration due to the partial absence of the parietal fascia, necessitating the permanent wearing of an abdominal belt (figure 7).

The patient's perspective : The patient was receptive to our explanation of the nature of her illness, although initially when the misdiagnosis of a digestive breach was made she believed it to be medical malpractice, but changed her opinion once the diagnosis had been rectified, was cooperative and participated in the care provided by the medical team.

Informed consent : The patient gave her consent but asked to remain anonymous.

III. Discussion

Necrotizing fasciitis is a rare and extremely serious condition. It is a bacterial infection caused mainly by group A beta-hemolytic streptococcus and Clostridium perfringens, but other germs may also be involved. In our patient, the germ found was group B beta-hemolytic streptococcus.

Risk factors vary, but the main risk factor is local, i.e. disruption of the skin barrier (surgery, wounds, bites, etc.). Other risk factors include obesity, diabetes, immunosuppression and alcoholism. But sometimes, as in our patient's case, the literature reports cases of necrotizing fasciitis after hysterectomy without any risk factors [3].

Pathophysiologically, necrotizing fasciitis causes tissue ischemia through thrombosis of the small hypodermal vessels due to the action of bacterial toxins. This necrosis is superinfected by anaerobic micro-organisms producing gas which accumulates in the subcutaneous tissues, leading to gangrene which progresses at a rate of 2 to 3 cm/hour [4].

Clinical signs are not very specific. Gallup et al. proposed a triad of diagnostic symptoms: pain, edema and signs of septic shock [5]. Pain is the main symptom; it is intense and inconsistent with the extent of local lesions. At an advanced stage, pain disappears due to the destruction of nerve fibers. The patient's general condition is altered, with high fever in 80-90% of cases [6] and septic shock in 50%. Locally, the tissues are red, warm and edematous, suggesting severe hyperalgesic cellulitis. The skin is indurated, cardboard-like, greyish-blue with ill-defined margins, then cyanosis rapidly sets in, followed by the appearance of bullae, ulcerations, crackling and foul-smelling gangrene.

There are no biological markers of necrotizing ease, but signs of sepsis: hyperleukocytosis, elevated C-reactive protein, hyponatremia. Wong developed a biological score: the LRINEC score [7] (Table I), which has a positive predictive value for making the diagnosis, assessing the severity of sepsis and determining the indication for surgery. Our patient had a score of 9 (very high risk).

CT scans may show infiltration of subcutaneous fat and thickening of peripheral fascia. The most characteristic sign, but not always found, is the presence of gas bubbles in the necrotic fascia. MRI is more sensitive, and a thickening of the deep fascia greater than 3 mm should be sought. However, this sign is not pathognomonic, as it may also be present in non-necrotizing infections. Imaging is particularly useful in post-surgical forms, in search of a deep (abdomino-pelvic) origin of the infection [8].

It is a surgical emergency, and a 24-hour delay in treatment can increase mortality by 35% to 40% [9]. Debridement must be extensive, involving extensive excision of necrotic tissues: skin, superficial fascia, muscles, down to healthy, well-vascularized tissues, with flattening, evacuation of collections and drainage using several blades. The extent of excision is generally underestimated preoperatively, and often results in large defects that cannot be closed. Broad-spectrum antibiotic therapy is required, effective against both aerobic and anaerobic bacteria, and adapted according to bacteriological results. Hyperbaric oxygen therapy may also be used, particularly in patients with anaerobic microorganisms. Mortality is around 30-50%, and prognostic factors include age, comorbidities, anti-inflammatory drugs, alcoholism, delayed diagnosis and late or inadequate treatment [1].

Functional and aesthetic sequelae depend on the extent of damage and surgical debridement, and are frequent, requiring reconstruction surgery.

IV. Conclusion

Necrotizing fasciitis is a life-threatening medical-surgical emergency, due to the rapid evolution of necrosis. Prognosis depends on rapid diagnosis and management, which must be multidisciplinary, combining intensive care and extensive, debridement surgery. Recovery can be achieved at the cost of significant aesthetic and functional sequelae.

Conflicts of interest

The authors declare no conflicts of interest.

Table I : Score LRINEC (Laboratory Risk Indicator for Necrotizing Fasciitis)

Variable	Values	Score
CRP	< 150 mg/L	0
	≥ 150 mg/L	4
Leukocytes	< 15 G	0
	15-25 g/L	1
	> 25 g/L	2
Hemoglobin	> 13,5 g/dl	0
	11-13,5 g/dl	1
	< 11g/dl	2
Natraemia	≥ 135 mmol/L	0
	< 135 mmol/L	2
Creatinine	141 ≤ µmol	0
	141 > µmol	2
Blood glucose	≤ 10 mmol/L	0
	> 10 mmol/L	2

Total

- **Less than 6:** low risk
- **Low risk 6-8:** intermediate risk
- **Above 8:** high risk

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