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Necrotizing Fasciitis Treated with Antibiotic and Surgical Debridement in order to avoid the Symptoms - A Case Report

Abstract

Necrotizing fasciitis, which has recently been the object of public attention due to the apparent emergence and growing virulence of the causative agent, is not a new disease. From 1960 only 38 cases have been reported in the scientific literature and none of them was in Spain. Of the 38 cases, 12 have been described on forehead and periorbital region. In the present article, necrotizing fasciitis is reviewed and a comment made on its classification and causative agents. Finally, the importance of performing a wide surgical debridement of the necrotic tissue is underlined. In order to delimit this debridement, image diagnostic techniques, mainly Nuclear Magnetic Resonance (NMR), were used. The patient, a 60-year-old diabetic male was brought to casualty due to a head injury, presenting a massive, rapidly progressive periorbital oedema. After antibiotic treatment with a wide surgical debridement and cosmetic treatment, the patient is still alive.

Keywords: Necrotizing fasciitis; Antibiotic treatment; Surgical debridement

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Necrotizing fasciitis is an infectious disease of subcutaneous soft tissues, primarily superficial fascia and, often, deep fascia. There is an increased incidence in diabetics, alcoholics, and patients suffering from Atherosclerosis [Necrotizing Fasciitis is usually the result of skin lesions that permit fungal and bacterial colonization. This pathology occurs more frequently in the inferior extremities, perineum and abdominal wall. It rarely occurs on the face, but when it does appear the periorbital region is that most often affected. Necrotizing Fasciitis presents with pain, and a purple discolouration of the affected skin, followed by anaesthesia, due to the thrombosis of the small vessels, which supply the sensitive nerves of the area [1]. A black eschar is commonly seen. Necrotizing fasciitis encompasses two bacteriologic entities [2].

Type I is produced by anaerobic species in combination with one or more facultative anaerobic species and members of the enterobacteriaceae family. Type II is produced by group A streptococci either alone or in combination with other species (staphylococcus being the most common).

Case Report

A 60-year-old man, with non-insulin-dependent diabetes mellitus transferred to the emergency room with an open wound in the

left temporal region and an important periorbital haematoma as a consequence of a road traffic accident.

Computerised tomography (CT) scan revealed a subcutaneous haematoma in the left front temporal zone. Twelve days later, the patient presented widespread cellulitis in the temporal zone within which necrotic foci were becoming confluent. Gram-stains were performed from areas with frank exudates.

The neurosurgical department was consulted and a diagnosis of Necrotizing fasciitis type I was made based on positive wound cultures for Acinetobacter anitratus, Proteus mirabilis and E. coli, which were reported sensitive to amoxicillin clavulanic acid and Tienamicina. Subsequent Magnetic Resonance Imagining (MRI) revealed an increase in gadolinium capture in the temporal and periorbital left regions, confirming inflammation. It may have seemed to have been successfully debrided; microscopic remnants leading to clinical worsening may also exist. The patient showed no signs of systemic sepsis. Unfortunately the necrotic process continued to spread. In the following days, the patient presented exophthalmos and blindness in the left eye and 25 days after admission, enucleation of the left eye was performed. Following stabilisation of the necrosis, the defect was covered with a partial skin graft harvested from the thigh to cover the periosteum of the facial bones (Figures 1-3).

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Figure 1 MRI with increase of gadolinium enhancement in the temporal and left periorbital regions, which is a well-know sign of inflammation.



Discussion

We assume that closure of communication with the exterior of the contaminated area reduces the spread of the disease to both fascial layers. This does not occur in cases of cellulitis where the perpendicular fibrous tracts of the superficial fascia stop the spread of the disease. Following colonisation of the soft tissues and a diagnosis of necrotising fasciitis, clinical exploration is indicated as the first line of action. When fasciitis is still in its initial stages, the fascia can be dissected with extreme ease, something which is not the case in an ordinary cellulitis [1]. Following early debridement a CT [3], or MRI or ultrasound scan is ideally performed in order to determine the depth of any gas



Figure 3Patient after enucleation of the left eye and skin graft
harvested upon the periosteum of the skull.

present, together with the extent of any inflammatory exudate. Gram-stain smears of the exudate are performed to exclude the presence of Gram-positive bacilli which may overshadow the diagnosis. The definitive diagnosis may be established by means of frozen biopsy [1]. The aetiological diagnosis depends upon the results of cultures of the pus from the upper fascia. The differential diagnosis includes any of the inflammatory pathologies and/or necrosis of the skin and adjacent tissues reflected in **Table 1**. At the outset, it is very important for differential diagnosis to take into consideration necrotizing cellulitis, fasciitis or myositis, particularly where necrotic areas are not obvious or are small. Prompt action at this stage results in the highest success rates of tissue healing ad integrum.

Immediate surgical debridement is indicated. This includes the skin and subcutaneous tissues beyond the area of involvement until normal fascia is found. A second-look procedure is indicated 24 hours later [4]. Combinations of ampicillin, gentamicin and clindamycin (or metronidazole) [1] are indicated prior to confirmatory bacteriology.

Conclusion

Due to the profound physical and psychological repercussions of necrotizing fasciitis, it is necessary to consider the differential diagnosis in order to avoid the high morbidity and mortality rates, which can potentially result from inadequate treatment, particularly in cellulitis of the face and neck, which are unusual sites for the disease. Early diagnosis leads to early intervention (medical management - antibiotics, surgery if needed) for good outcomes.

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Table 1 Diferential diagnosis of necrotizing fasciitis.

Inflammatory pathology	Differential diagnosis	Comments
Erysipelas	lymphatic involvement and "peau d'orange	It can extend more deeply, producing cellulitis, abscesses or even necrotizing fasciitis. This is treated using antibiotics.
Anaerobic cellulitis	lymphatic involvement and "peau d'orange"	It can extend more deeply, producing necrotizing fasciitis. This is treated using antibiotics.
Non-clostridial anaerobic cellulitis	More superficial lesion determined by biopsy	The treatment is the same except for the smaller margin of debridement.
Clostridial anaerobic cellulitis	More gas and more superficial lesion than Necrotizing Fasciitis	More serious than the one above but with the same treatment.
Pyomyositis (tropical pyomiositis)	Intramuscular abscess observed by CT, MRI or ultrasound.	It is uncommon in developed countries. It never results in skin necrosis.
Group A streptococcal necrotizing myositis (peracute streptococcal pyomyositis, spontaneous streptococcal gangrenous myositis)	Intramuscular swelling observed by CT, MRI or ultrasound. The affected muscle can be observed during debridement.	It never gets to produce skin necrosis.
Gas gangrene (clostridial myonecrosis)	With less erythema than NF.Intramuscular swelling observed by CT, MRI or ultrasound. The affected muscle can be observed during debridement.	3

NF=Necrotizing Fasciitis; CT=Computed Tomography; MRI=Magnetic Resonance Imaging

References

- 1 Swartz MN (1995) Skin and soft tissues infections in Mandell, Douglas and Bennett's Principles and practice of infectious diseases (Fourth Edition) New York: Churchill Livingstone 925.
- 2 Giuliano A, Lewis F Jr (1997) Necrotizing fasciitis. Annals Surgery 134-152.
- 3 Yamaoka M, Uematsu K, Yasuda K (1994) Early evaluation of necrotizing fasciitis. Journal of cranio-maxillofacial surgery 22: 268-271.
- 4 Sudarsky LA, Laschinger Jc, Coppa GF, Spencer FC (1987) Improved results from a standardized approach in treating patients with necrotizing fasciitis. Ann Surg 206: 661