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Cervicofacial necrotizing fasciitis: A rare disease with a high mortality requiring early debridement for survival☆

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ABSTRACT

Purpose: To review the clinical experience, management and outcome of cervicofacial necrotizing fasciitis (CNF) in patients treated in our institution.
Methods: A retrospective review of patients with CNF from two large health care institutions completed over a 10-year period.
Results: Five patients with complete data were identified. CNF was polymicrobial in 4 and monomicrobial in one patient and occurred as a result of odontogenic infection in 3, trauma in 1, and was idiopathic in one patient. All patients were treated with extensive debridement, broad spectrum antibiotics, and reconstruction with flaps. There was one death.
Conclusions: Early diagnosis and rapid aggressive debridement are key elements for reducing mortality and optimizing the cosmetic and functional outcome in patients with CNF.

Fasceítis necrosante cervicofacial: una infección severa que requiere tratamiento quirúrgico temprano

Palabras clave:
Fasceítis necrosante
Cervicofacial
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RESUMEN

Propósito: Revisar la experiencia clínica, el manejo quirúrgico y los resultados del tratamiento de pacientes con fasceítis necrosante cervicofacial (FNC) en nuestras instituciones.
Métodos: Un estudio retrospectivo de pacientes con FNC en un periodo de 10 años en 2 instituciones académicas.
Resultados: Cinco pacientes con datos completos (clínicos, imágenes, cultivos microbiológicos, tratamiento y seguimiento) fueron identificados. La FNC resultó de una infección

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polimicrobiana en 4 pacientes y monomicrobiana en un paciente. La etiología de FNC fue odontogénica en 3 pacientes, postraumatismo en un paciente e idiopática en un paciente. Todos los pacientes fueron tratados con tratamiento quirúrgico (desbridamiento) agresivo temprano, antibióticos de amplio espectro y reconstrucción con diferentes tipos de colgajos. Se registró una mortalidad.

Conclusiones: El diagnóstico temprano y un tratamiento quirúrgico agresivo son elementos clave en reducir la mortalidad y optimizar los resultados funcionales y cosméticos en los pacientes con FNC.

Introduction

Necrotizing fasciitis (NF) is an uncommon soft tissue infection that results in the rapid and progressive necrosis of the connective tissue and muscle fascia. In more advanced stages, it involves the skin and muscle, and the mortality rate is high. Cervicofacial NF (CNF) is a rare condition that constitutes between 2.6% and 5% of all the cases of FN.[1,2] It is not common for any one center to gather significant clinical experience with CNF.

There are many historical accounts of and references to NF that date back to Hippocrates (500 BC), who reported diffuse lesions that would not heal. Pouteau and Gillespie, in 1783 and 1785, respectively, described malignant, gangrenous ulcers.[3] In 1871, Joseph Jones, who had been a Confederate surgeon in the United States Civil War, was the first to offer a precise description of NF, which he referred to as "hospital gangrene".[4] Meleney reported 20 cases of hemolytic streptococcal gangrene in 1924[5] and, in 1952, Wilson used the term necrotizing fasciitis for the first time.[6] The information on the presentation, management and results of the treatment of patients with NF in the head and neck region is limited.

Necrotizing fasciitis is classified according to 3 different types, depending on the microbiological findings. Type 1 is a polymicrobial infection produced by a combination of anaerobic and aerobic bacteria, whereas type 2 is a monomicrobial infection due mainly to group A β-hemolytic streptococcus and, less frequently, to other streptococci and staphylococci; type 3 is a monomicrobial infection caused by a marine *Vibrio* species.[7] The clinical signs of NF include swelling, erythema, pain, skin blistering and crepitus.[8] The purpose of this article is to review our experience and report the demographic data, treatment microbiological findings and reconstruction carried out in 5 patients with CNF.

Materials and methods

We carried out a retrospective review of the cases of CNF treated between December 2002 and December 2012 in the oral and maxillofacial surgery units of 2 centers (MetroHealth Medical Center [MHC] in Cleveland, Ohio, United States, and the Instituto de Medicina Tropical Alexander von Humboldt [IMT] of the Universidad Peruana Cayetano Heredia in Lima, Peru). A total of 590 moderate and severe maxillofacial infections were identified, 7 of which (1.19%) were diagnosed as CNF. At the MHC, we identified 332 infections with 4 cases (1.2%) of CNF, and the IMC reported 258 cases, including 3 (1.16%) of CNF. Moderate maxillofacial infections were considered to be those that involved one or more of the following fascial spaces: submandibular, submental, sublingual, pterygomandibular, superficial temporal and deep temporal. Severe maxillofacial infections were defined as any infection that required in-hospital management and/or threatened to compromise the lateral pharyngeal, retropharyngeal, pretracheal and danger spaces, as well as mediastinal and intracranial infections.[9]

Results

Seven patients with CNF were identified on the basis of the data provided by the centers in which the present study was conducted. Two patients were excluded because of insufficient clinical data and a lack of follow-up. All of the patients were adults of the male sex, with ages between 30 and 61 years. Three patients were black, one was mestizo and another was white. All of them presented with severe pain, erythema, swelling, necrosis and subcutaneous gas. The clinical photographs can be seen in Figs. 1 and 2.

The demographic and bacteriological data, location and type of reconstruction carried out are summarized in Table 1. Two patients had systemic comorbidities: patient no. 3 had morbid obesity and patient no. 4 had type 1 diabetes mellitus and hypertension. The only death in our case series was that of a patient involved in a traffic accident as a pedestrian, who had multiple injuries (facial and rib fractures) and an in-hospital course complicated by prolonged ventilatory support and multiple respiratory tract infections.

Figs. 3 and 4 show the defects in the 5 reported patients.

Patient no. 1 underwent reconstruction with a skin graft. In patient no. 2, an advancement flap was created. Patient no. 3 underwent supraclavicular flap creation. The defect in patient no. 4 was closed by means of an advancement flap. Patient no. 5 underwent repair with a submental artery island flap which, unfortunately, failed; the defect subsequently healed by second intention, leaving a conspicuous scar; the patient refused to undergo revision of the scar.