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Case Report

A presentation of facial necrotizing fasciitis with orbital involvement

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Necrotizing fasciitis is a rare, severe, life-threatening soft tissue infection. Rapid progression and systemic illness are recognized features of the condition in which a high index of suspicion is essential to prompt early diagnosis and ensure a favourable outcome. Management necessitates immediate and aggressive surgical and antimicrobial treatment. This case report describes the rare presentation of facial necrotizing fasciitis with orbital involvement that required initial and subsequent widespread surgical resection within the first 24 h of admission, including unilateral enucleation of infected orbital contents.

INTRODUCTION

Necrotiszng fasciitis is a rare, rapidly progressing and severe infection of subcutaneous soft tissue and underlying fascia [1–8]. Vasculitis and microthrombi formation with eventual intravascular coagulation and spreading necrosis are characteristic pathophysiological features of the infection and present clinically with quickly spreading erythema, severe pain, systemic toxicity and blistering of the skin. Muscle involvement may occur and typically precedes necrosis of superficial fascia, subcutaneous fat and neurovascular structures [1–4]. Group A streptococcal infection (*Streptococcus pyogenes*) with or without staphylococcal involvement is the classical causative organism, but a polymicrobial infection involving anaerobes, gram-negative bacilli and enterococci is commonly encountered. Life-saving management typically requires immediate surgical resection and high-dose IV antibiotics [1, 2]. Adjuvant hyperbaric oxygen therapy has provided additional benefit in some reported cases [5].

Necrotizing fasciitis of the head and neck, particularly involving periorbital and orbital structures, is considered rare [1–4]. Ocular involvement characterized by eye pain, periorbital swelling and reduced vision is a recognized complication of facial and periorbital necrotizing fasciitis. Clinical vigilance and aggressive immediate surgical and antibiotic management is essential to limit recognized sequele of blindness, meningitis and death [2]. Head and neck necrotizing fasciitis as a complication of tonsillitis, dental infection and trauma is recognized, with diabetes mellitus, alcohol excess and immunosuppression known risk factors [1].

CASE REPORT

A 49-year-old woman fell whilst bathing and struck her face on the bath tap faucet. She sustained a 5 cm partial thickness laceration below her left eye, arising adjacent to the medial canthus and extending to the left malar prominence. The patient promptly attended her local Accident & Emergency (A&E) department and the laceration was debrided, irrigated and sutured. Medical history included Elhers–Danlos syndrome, ischaemic heart disease and previous anaphylaxis to penicillin.

The following day she returned to A&E complaining of pain and swelling below the left eye. The eye was partially closed secondary to lower lid swelling, and eye examination was normal with no deficit in visual acuity recorded. The patient was systemically well and discharged with oral clarithromycin in view of penicillin allergy for a possible wound infection.

The following day she re-attended A&E and found to be pyrexial (38.7°), tachycardic (102/min) with evidence of

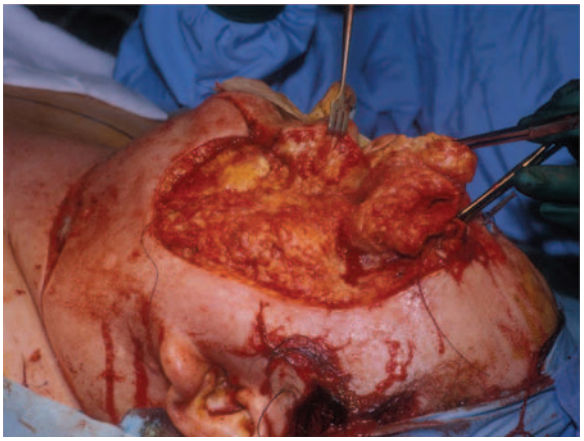

Figure 1: Peri-operative view of initial resection (published with the patient's consent).

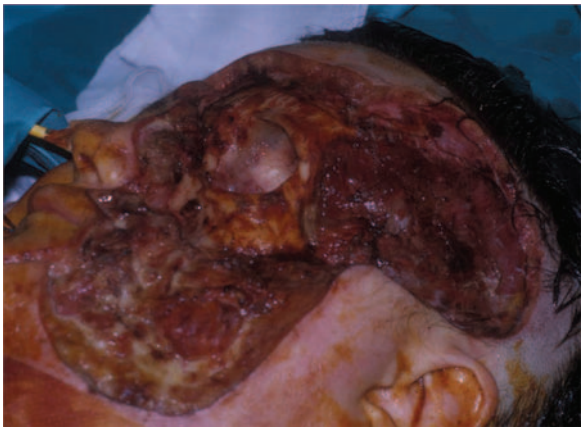

Figure 2: Immediate post-operative view of secondary resection (published with the patient's consent).

rigors and confusion. Extensive left-sided facial swelling, with complete closure of the left eye and involvement of the soft tissues of the left neck, was noted. A reduction in left visual acuity was noted. Urgent blood results identified a marked neutrophilia and raised C-reactive protein consistent with acute bacterial infection. The laceration was opened, necrotic skin edges and an absence of bleeding was recognized and severe facial necrotizing fasciitis considered a likely diagnosis.

The woman was admitted and underwent immediate widespread local excision of necrotic tissue extending from and including the left lower eyelid, left cheek and the soft tissues overlying the left angle of mandible and lateral aspect of upper neck (Fig. 1). Peri-operative and post-operative intravenous (IV) clindamycin and gentamicin was administered as per local protocol for severe skin sepsis and the patient was transferred to the intensive care unit (ICU) for post-operative support.

On review the following morning, the patient remained clinically septic with clear extension of necrotic tissue outwith existing surgical margins. Left eye involvement was suspected and an urgent computerized tomography (CT) scan identified tissue features in keeping with a left retro-orbital necrosis secondary to a rapidly spreading facial necrotizing fasciitis. After close liaison with several senior colleagues, the patient underwent further surgical excision of necrotic tissue affecting the left forehead, left temporal region, left upper eyelid and left commissure with concomitant exenteration of left orbital contents (Fig. 2).

Blood and tissue samples sent to the microbiology laboratory, all of which cultured a florid growth of a Group A beta-haemolytic Streptococci, confirmed the clinical suspicion of facial necrotizing fasciitis.

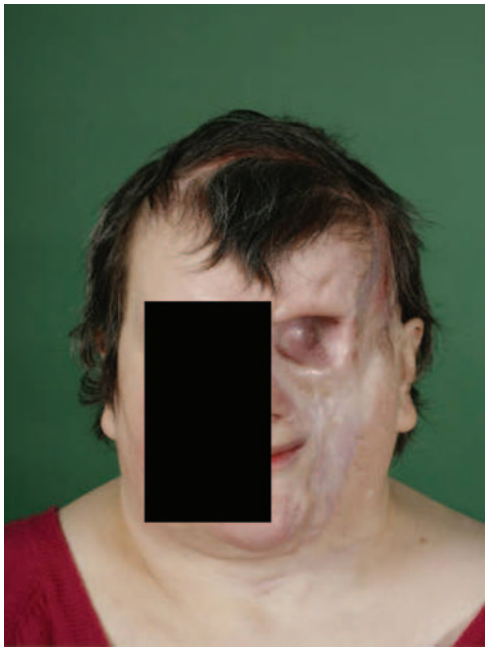

Figure 3: Eighteen months after resection (published with the patient's consent).

DISCUSSION

This case demonstrates the importance of considering rarer causes of soft tissue infections in patients presenting with cellulitis. Whereas most cases of cellulitis can be successfully managed by antibiotic therapy alone, necrotizing fasciitis must be managed more aggressively and requires extensive surgical resection in combination with high-dose IV antimicrobials [2–5].

The presentation of head and neck necrotizing fasciitis highlights key features of the disease, including rapid progression and extension beyond the apparent margin of infection, pain out of proportion with presentation, marked systemic toxicity and subcutaneous tissue necrosis.

As the spread of infection is rapid, it necessitates prompt recognition and instigation of treatment, often requiring the making of difficult surgical decisions on surgical resection

beyond an area of obvious clinical infection. This was evidenced by the need for further surgery despite initial widespread clearance. Sudden loss of visual acuity due to deep orbital involvement and resulting need for exenteration are debilitating but recognized features of periorbital necrotizing fasciitis [2]. The sudden reduction in visual acuity, eye cyanosis and discolouration present in this case are pathognomonic of ocular involvement of necrotizing fasciitis [2] and this was radiologically confirmed by features of retro-orbital tissue necrosis on CT scanning.

Following a 2-week period in ICU and surgical high dependency, the patient was transferred for 3 weeks of ward-based care and was continued on oral clindamycin throughout the duration of rehabilitation.

Initial reconstruction with a split thickness skin graft harvested from the right thigh proved unsuccessful and a second graft was required to obtain the current appearance shown in Fig. 3. Clinical concerns regarding wound healing and further graft failure, particularly in the context of abnormal collagen synthesis and structure in Ehlers–Danlos syndrome and patient reluctance for further surgery, has limited subsequent reconstructive attempts in this patient.

Conflict of interest

None declared.

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