

## Case report



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Siati Asmae, Boukhani Insaf, Habi Hind, Jatic Badr, Mchachi Adil, Benhmidoune Leila, Chakib Abderrahim, Rachid Rayad, El Belhadji Mohamed

**Corresponding author:** Siati Asmae, Department of Ophthalmology, Hospital August 20, UHC Ibn Rochd, Casablanca, Morocco. Salma\_moataz@hotmail.fr

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## Necrotizing orbito-palpebral fasciitis complicating dental extraction: about a case

Siati Asmae<sup>1,&</sup>, Boukhani Insaf<sup>1</sup>, Habi Hind<sup>1</sup>, Jatic Badr<sup>1</sup>, Mchachi Adil<sup>1</sup>, Benhmidoune Leila<sup>1</sup>, Chakib Abderrahim<sup>1</sup>, Rachid Rayad<sup>1</sup>, El Belhadji Mohamed<sup>1</sup>

<sup>1</sup>Department of Ophthalmology, Hospital August 20, UHC Ibn Rochd, Casablanca, Morocco

### **&Corresponding author**

Siati Asmae, Department of Ophthalmology, Hospital August 20, UHC Ibn Rochd, Casablanca, Morocco

## Abstract

*Necrotizing fasciitis is a serious, rare and rapidly progressive infectious process involving fascia and subcutaneous tissue that is life-threatening. The orbito-palpebral localization is exceptional. We report the observation of a case of necrotizing fasciitis with palpebral extension complicating preseptal orbital cellulitis despite well-managed antibiotic treatment following tooth extraction.*

## Introduction

Necrotizing fasciitis is a serious infection of the subcutaneous tissues with cutaneous gangrene and life-threatening vascular thromboses. The prognosis depends on the early diagnosis and treatment. We report a rare case complicating orbital cellulitis following tooth extraction.

## Patient and observation

A 65-year-old patient, not known to be diabetic, has had preseptal orbital cellulitis for one week requiring emergency drainage of the collection and well-managed antibiotic treatment (tri-antibiotic therapy). The evolution at day 4 of the treatment was marked by the installation of cutaneous necrosis at the internal angle of the left eye. The in-depth questioning with the family revealed the notion of dental extraction by a prosthetist 2 weeks before. The general admission examination found a hemodynamically and respiratory-stable patient who was feverish at 39°C. The ophthalmological examination found a visual acuity difficult to quantify, purulent, hot and painful eyelid edema with cutaneous necrosis of the upper eyelid of the left eye of 3.5 cm long axis, located in the region of the canthal internal and extended to the internal ½ of the upper eyelid with perilesional pus (Figure 1). Examination of the anterior segment and fundus was normal. The bioassay found neutrophil leukocytosis at 37,000/mm, CRP at 245 mg/dl and fasting glucose > 1.7 g/l 2 times. The glycated hemoglobin at 7.5%. Cranio-orbital CT showed pre- and retroseptal uncollected cellulitis (Figure 2). The patient received, in the operating room, a bacteriological specimen and a surgical trimming of the gangrenous tissue which was reaching the muscular plane. A broad-spectrum antibiotic treatment was then started associating: Amoxicillin-clavulanic acid, metronidazole and gentamycin. Bacteriological specimens revealed *Klebsiella pneumoniae*, resistant to amoxicillin and sensitive to cephalosporins, carbapenems, quinolones and aminoglycosides. The evolution was good clinically and biologically on day 3 of

treatment (Figure 3). The ophthalmologic examination performed afterwards revealed a negative light perception visual acuity, a normal intraocular pressure, a normal anterior segment and a papillary pallor at the fundus exam. A cranio-orbital MRI was requested and objectified the appearance of left pre-retroseptal cellulitis in process of resorption with thickened appearance of the pre-chiasmatic portion of the left optic nerve. Medium-term follow-up did not indicate the need for secondary skin reconstruction (Figure 4).

## Discussion

Necrotizing fasciitis is an exceptional infectious pathology with local and general dark prognosis. The process essentially affects the extremities, the abdomen, the back, the genital and perianal regions in patients of all ages, with no predilection for sex or race [1-2]. The orbito-palpebral localization is rare: Only 104 cases are listed from 1950 to 2010 in a recent review of the literature [3]. This is probably due to the richness of the vascularization of this region allowing a better diffusion of the antibiotics. Generally, necrotizing fasciitis is due to hemolytic  $\beta$ -Streptococcus group A alone in 50% of cases or associated with *Staphylococcus Aureus* in 18% [3]. Diabetes (our case), arteriosclerosis, alcoholism, immunosuppression, and the use of nonsteroidal anti-inflammatory drugs are the main predisposing factors [3,4]. In almost a third of cases no obvious cause is found [1,3]. It is often preceded by even minor trauma [5-7], surgery, especially after dacryorhinocystostomy [1,2,4] or blepharoplasty [8], and more rarely by upper airway infection, sting insect or tooth extraction [4] as in our patient.

The infection evolves very rapidly within 48 to 72 hours with onset of inflammatory edema and then a change in skin color that becomes purplish blue. The orbital pain, present at the beginning, disappears as soon as the necrosis is established by destruction of the nerve cells [9]. The marking of the edges of the erythema every 1 to 2 hours can

be useful to monitor the progression of the condition as it spreads rapidly along the fascial planes: cutaneous necrosis develops on the 4<sup>th</sup>-5<sup>th</sup> day with underlying suppuration between the 8<sup>th</sup> and the 10<sup>th</sup> day [1,3,4]. Isolation of the germ in question is done on the collection of pus by cutaneous puncture or sometimes on blood cultures. Vascular thromboses with chorio-retinal ischemia and blindness are also reported [10]. The differential diagnosis is mainly with erysipelas, gas gangrene and palpebral charcoal. Computed tomography (CT) or magnetic resonance imaging (MRI) can help to better understand the extent of the infection and help plan the surgical procedure. However, it must be emphasized that the diagnosis is clinical and that the treatment should not be delayed for reasons of biological or radiological investigations [9]. Therapeutic management combines intensive resuscitation and parenteral antibiotic therapy with wide coverage (gram +, gram - and anaerobic), pending the isolation of the germ [1,3]. Surgical debridement of necrotic tissue should be immediately associated to limit the spread of the infectious process, reduce microbial burden and facilitate the action of intravenous antibiotic therapy [1,3,4].

This debridement should preserve the underlying muscle and the edge of the eyelids to simplify subsequent reconstructive surgery that may be necessary to prevent complications including ectropion and exposure keratitis [7]. In limited eyelid cases without significant associated morbidity, conservative treatment without debridement with self-demarcation and close-monitoring antibiotic coverage can be performed [2,4]. The usefulness of hyperbaric oxygen therapy remains controversial [2]. Secondary palpebral reconstructions are often required to repair the extensive destruction of cutaneous and subcutaneous tissues [1,6]. Despite a well-conducted treatment, severe toxic shock with multi-organ failure is likely to occur that can lead to patient death in 10-70% [3]. Necrotizing fasciitis, affecting the scalp and the upper part of the face, has a better prognosis than other

locations, with a mortality of 12.5% [2]. No cases of death directly related to necrotizing fasciitis limited to the eyelid have been reported, although morbidity is important. Septic shock also appears to be less common with necrotizing fasciitis affecting only the eyelids, unlike other localizations including orbital. Orbital, paranasal, extracranial and endocranial complications remain exceptional and are a vital emergency [11]. Orbital involvement is associated with 1 to 2% mortality and an incidence of 3 to 11% of definitive sequelae [11,12]. The prognosis is intimately linked to the precocity of the therapeutic management, and to the local extension of the infection [2,3].

## Conclusion

Through our observation, we underline the importance of the early diagnosis and the speed of the therapeutic management which must associate resuscitation, parenteral antibiotic therapy and emergency surgical treatment of the necrotic zones.

## Competing interests

The authors declare no competing interests.

## Authors' contributions

All the authors participated in the care of the patient and the writing of the manuscript. All authors have read and approved the final version of the manuscript.

## Figures

**Figure 1:** cutaneous necrosis of the upper lid with perilesional pus

**Figure 2:** CT scan showing pre and retro septal uncollected orbital cellulitis

**Figure 3:** clinical evolution at the third day of treatment

**Figure 4:** evolution at 2 months follow up

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**Figure 1:** cutaneous necrosis of the upper lid with perilesional pus



**Figure 2:** CT scan showing pre and retro septal uncollected orbital cellulitis



**Figure 3:** clinical evolution at the third day of treatment



**Figure 4:** evolution at 2 months follow up