Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Maxillofacial Surgery

Necrotizing Cervico-Facial Cellulitis of Dental Origin: A Case Report

Rajaa El Azzouzi[1, 2*], Oumaima Boukhlouf[1, 2], Olaya Hamidi[1, 2], Bouchra Dani[1, 2], Malik Boulaadas[1, 2]

[1]Department of Maxillofacial Surgery Hospital of Specialities Rabat, Morocco
[2]Faculty of Medicine and Pharmacy of Rabat, Mohammed V University in Rabat, Rabat, Morocco

DOI: 10.36347/sjmcr.2024.v12i02.017 | **Received:** 08.01.2023 | **Accepted:** 17.02.2024 | **Published:** 21.02.2024

***Corresponding author:** Rajaa El Azzouzi
Department of Maxillofacial Surgery Hospital of Specialities Rabat, Morocco

Abstract **Case Report**

Necrotizing cellulitis of dental origin is a serious disease with high morbidity and mortality. The observed case concerned a 57-year-old patient, with unbalanced diabetes affected by gangrenous cellulitis, following a chronic periapical infection being left untreated. The urgency of these case required the coordination of medical and surgical specialist teams, involving reanimation, drug therapy and surgical treatment. The inadequate treatment or chronic dental infections, associated with immunosuppression can lead to severe case of cellulitis. Early medico-surgical management should be carried out to prevent the onset of serious complications such as mediastinitis, septic shock, and thrombophlebitis.

Keywords: Necrotizing, Cervical, fasciitis, cellulite, Diabetes.

INTRODUCTION

Cervicofacial necrotizing cellulitis of dental origin is a serious infection that spreads along the fascial planes of the face and neck. It is life-threatening in the septicemic phase, in the absence of rapid surgical and resuscitative management.

The first signs are sometimes frustrating and may lead to a delay in diagnosis, especially in Africa where the socio-economic context is precarious [1].

Management consists of is to treat the infection medically and surgically treatment. The aim of this study is to describe, through a clinical case, the diagnostic and therapeutic difficulties encountered in the of this pathology in a developing country.

CASE REPORT

We report the case of a 57-year-old female patient with type II diabetes, who presented to the emergency department with a right jugal swelling that had been evolving for 4 days, for which oral antibiotic therapy was administered (Ciprofloxacin and metronidazole), The evolution was marked by an extension of the swelling into the cervico-facial region, centered by a 1 cm patch of necrosis, The palpation was painful and crackling, with a trismus and a purulent endobuccal fistula, all evolving in a context of fever (39.1 C) and deterioration of general condition (Figure 1).

Intraoral clinical examination revealed a poor overall oral condition with a chronic periapical infection left untreated and a painful root decay of 43. Referred to the maxillofacial surgery emergency department, a blood test was initiated, revealing diabetics ketoacidosis (Glycemia 4.5g/l), with Leukocytosis and neutrophilia, high level of C-reactive protein (CRP:220mg/l), the culture was negative because of previous treatment by antibiotics. An injected cervico-facial and thoracic CT scan was performed revealing a bilateral facial and cervical necrotizing fasciitis with right-sided predominance and presence of emphysema bullae without signs of mediastinitis (Figure 2).

Therapeutic management included reanimation measures with insulin and rehydration therapy, triple parenteral antibiotic therapy (beta-lactam antibiotics, aminoglycosides and metronidazole) and anesthetic preparation for admission to the operating room without delay. Under general anesthesia, a bilateral cervicotomy was performed, with flattening of collections and pus pockets, debridement of necrotic tissue, drainage and washing with saline diluted with polyvidone-iodine (Figure 3).

The evolution was marked by necrotic extension to the thoracic wall and cervical flaps. with

excision of necrotic tissue and cervical and thoracic wall necrosectomy were performed, as well as tracheotomy for prolonged intubation (Figure 4).

Once the local infection was deemed to be under control, and after a period of medical treatment, plastic surgery was performed to promote wound healing. A skin graft was planned using a dermatome from the anterior aspect of the thigh (Figure 5).

Moreover the patient's stay in intensive care was complicated by mechanically ventilated pneumonia in a lung previously affected with bilateral foci of atelectasis, and she died at day 30 before the skin grafting was performed.

Figure 1: Cervical swelling with local signs of intense inflammation and necrosis

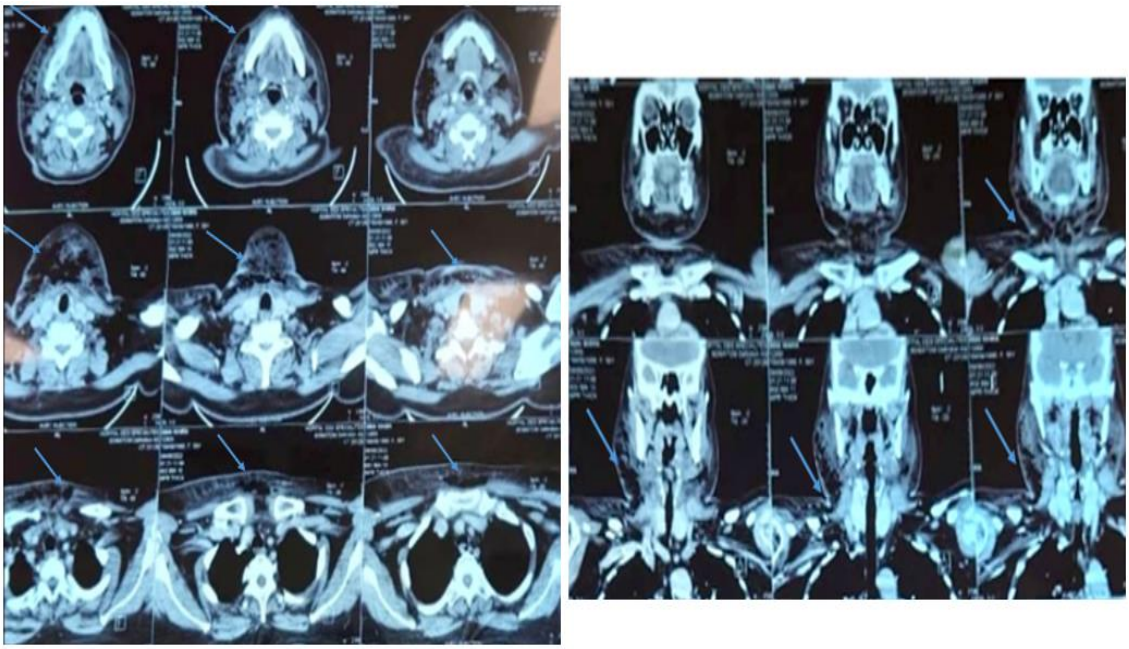

Figure 2: Cervicofacial CT scan with evidence of the collection and presence of gas involving cervico-thoracis spaces

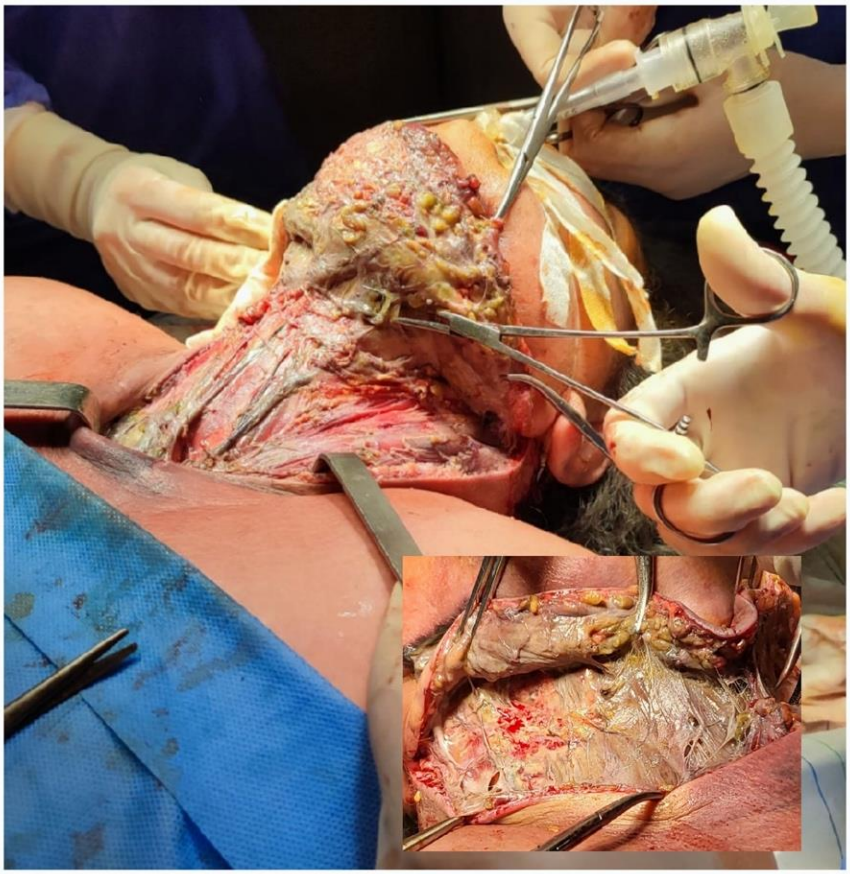

Figure 3: Cervicotomy with purulent discharge and presence of necrotic tissue

Figure 4: Excision of necrotic tissue: Cervical and thoracic wall necrosectomy

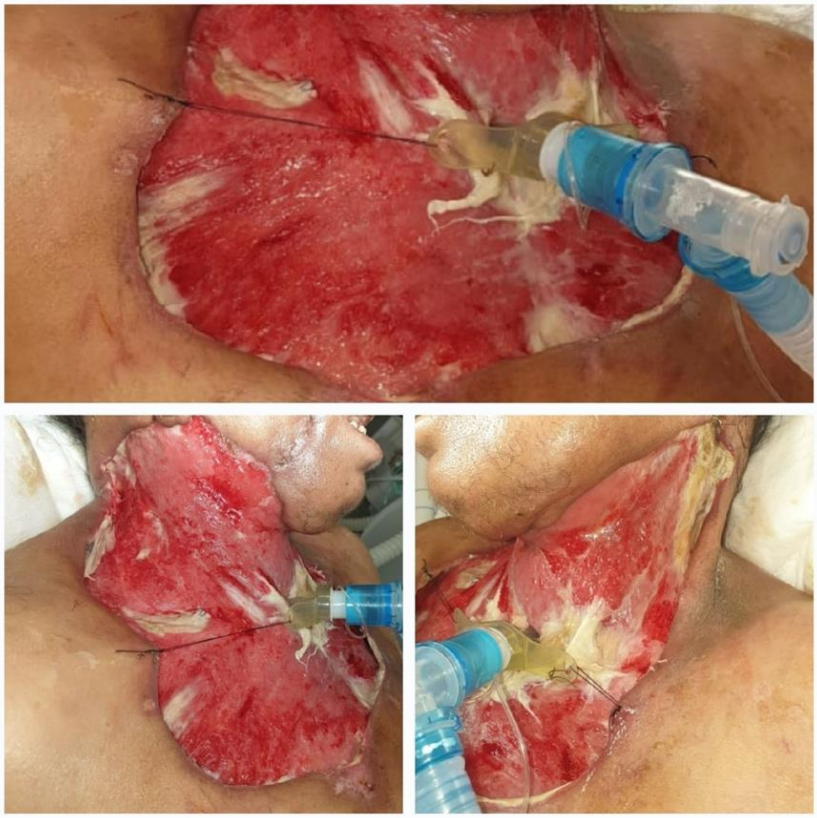

Figure 5: Images showing the evolution of wound healing

DISCUSSION

Cervical necrotizing fasciitis is a rare but serious condition with major general and regional repercussions that can lead to death in one third of the cases [2]. Requiring urgent medical and surgical management. Many serious systemic complications have been described, which include mediastinitis [3], whose prognosis is particularly unfavorable, with 44% of deaths [4].

Patients have an average age of 50. There is a slight male predominance. Odontogenic and pharyngeal origins are the most common in the literature. Considered a group A -hemolytic Streptococcus infection, more recent reports show involvement of mixed flora of aerobes such as Streptococcus and S. aureus and anaerobes such as Prevotella [5].

From its initial origin, the infection tends to spread in different deep anatomical spaces, which are compartmentalized by cervicofacial fascias and fibrous or aponeurotic lamina, which can limit its infectious spread. The propagation can take place directly through any "weak areas", by necrosis of fascia, or indirectly through septic thrombophlebitis.

Classic immunosuppression risk factors such as diabetes, neoplasia, Non-steroidal anti-inflammatory drugs NSAIDs or corticosteroids are frequently incriminated. Clinical diagnosis is difficult, with a systematic delay in diagnosis, since the patient has already consulted us with the same symptoms.

Clinical examination may reveal local erythema or edema, often discreet, accompanied by persistent dental pain. This is followed by the sensation of a mass linked to the development of an oro-pharyngeal abscess, which will give rise to a compression syndrome of dyspnea and dysphagia, often accompanied by an altered general condition. The neck then becomes edematous, tense and painful. The presence of crepitations indicates gas production by anaerobic germs. Examination should look for signs of extension. Dysphagia and laryngeal dyspnea are signs of an impact on the aerodigestive tract. The general state of health may be preserved for a long time, but may suddenly deteriorate [6]. In the absence of early and effective medical or surgical treatment, the infection may spread to the mediastinum by diffusion along the neck sheaths in over 20% of cases [6]. The different diffusion routes are the pre-tracheal space, the retro-pharyngeal space and the perivascular space [7]. Additional radiographic examinations, especially cervicofacial CT, are essential for the management of this severe form of cellulitis.

Surgical management consists of a uni or bilateral cervicotomy in the majority of cases. As the various skin layers are opened, samples are taken and sent for bacteriology and anatomopathology (tumor etiology).

The aim of the operation is to excise and flatten the lesions. If necessary, the mediastinum is drained. Blades and drains are left in place. Thoracotomy is now very rare in cases of necrotizing cervical fasciitis, and thoracic drainage via a cervical approach has become the first-line treatment. The cervicotomy is never closed immediately. A tracheotomy is performed to ensure prolonged intubation and avoid the possibility of passage through the upper airway in the event of accidental extubation. Tracheostomy also allows sedation to be discontinued between dressings, whenever the patient's condition makes this possible. This is combined with local treatments, including cleaning of drains and Delbet® blades with betadine and/or dilute hydrogen peroxide, and rinsing with saline solution. Between dressings, sedation is discontinued as soon as possible and multimodal analgesia is introduced. Usually the regimen begins with a triple therapy associating a beta-lactamic, an aminoglycoside and clindamycin or metronidazole. In reported series, the most widely used medications were amoxicillin/clavulanate [8], penicillin [8, 9], imipenem [10], aminoglycosides [8, 11], clindamycin [8, 12] and metronidazole, associated to daily washes through the surgical wound continued for 14 days intravenously and adapted according to the results of swabs and 21 days in case of mediastinitis. Anaerobic germs are covered even if they are not found on the samples.

Anticoagulation is always carried out with unfractionated heparin at an effective dose as soon as the patient returns from surgery, and all the usual resuscitation and nutritional strategies are applied to these patients.

Complications arising in the ICU are linked to longer length of stay and longer duration of mechanical ventilation, and include secondary infections (ventilator-associated pneumonia, urinary tract infection, catheter infection). In the event of an unfavorable evolution, the first examination is an injected cervico-thoracic CT scan. If the evolution requires thoracotomy, given the extent of mediastinal lesions, thoracic surgeons are called in. Early mobilization and compression stockings prevent the high risk of thrombosis, and physiotherapy helps limit functional sequelae. Recently, in a series using adjunctive therapy with hyperbaric oxygen, a decrease in hospital stay was reported, although randomized trials are needed to prove efficacy [13].

CONCLUSION

Infection of dental origin require a proper assessment by specialized personnel otherwise it could trigger to serious complication as necrotizing fasciitis that can lead to death, in the absence of an early diagnosis, prompt surgical drainage and appropriate medical treatment in a multidisciplinary support.

Conflicts of Interest: No

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