



## Case report

# An exceptional thoracolumbar and hypogastric necrotizing fasciitis of dental origin with favourable prognosis: Case report

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## ABSTRACT

Thoracolumbar and hypogastric necrotizing fasciitis (TLHNF) due to dental abscess is exceptional case. We report a case using the SCARE guidelines 2020, with the aim of raising awareness of this condition and adding knowledge to the field of surgery. A 32-year-old male farmer with no particular history of pathology presented with cellulitis of dental origin (CDO). History revealed a dental pain for 3 weeks with an auto medication. The therapy resulted with a dental abscess. Our investigation revealed a major asthenia with good parameters. There was an extensive oedema; hot, painful and fluctuating with a snowy crepitus sensation and a normal skin appearance. The patient presented a mouth opening limitation at 1.5 cm with poor oral hygiene and a flow of endobuccal fetid pus. A finding of a thoracolumbar and hypogastric necrotizing fasciitis of dental origin was made. Surgical management consisted of iterative extensive debridement and necrosectomy of the entire necrotic surface under a sedation and analgesia. A skin section obtained from the anterior side of the thigh was used to perform a graft following sufficient wound budding and after eradicating the infection. The evolution was uneventful with the resumption of an oral diet and the achievement of complete healing. Prognosis was good one year later. For any dental abscess medical practitioners should absolutely perform a general clinical examination. Apart from resuscitation and appropriate antibiotic therapy, multidisciplinary competence is needed.

## 1. Introduction

Cellulitis of dental origin (CDO) is a polymicrobial infection of soft and fat tissue next to the mandible and maxilla [1,2]. Large diffusion of dental abscess is rare, but when occurred, there is an extensive skin necrosis down to the mediastinum [3–7]. This necrotizing fasciitis of dental origin is a critical and rapidly progressive infection of the skin and soft tissue associated with a high mortality rate [8]. The treatment and management of this condition is a big challenge [9]. However, we report an exceptional case of thoracolumbar and hypogastric necrotizing fasciitis (TLHNF) due to dental abscess using the SCARE guidelines 2020 [10]; with the aim of raising awareness of this condition and adding knowledge to the field of surgery.

## 2. Patient information

The patient was a 32-year-old male single farmer from the far north region of Cameroon, right handed with a BMI of 22.87 kg/m<sup>2</sup> (Height: 1.75 m, Weight: 70 kg). The patient was brought to the hospital on a motorcycle with a complaint of a large painful oedema of the maxilla, cervical, left hemi thorax, lumbar and hypogastric regions (Fig. 1). He was incapacitated and could not move on his own. There was no particular past medical and surgical history. History revealed a dental pain for 3 weeks with auto medication of an association of Diclofenac/Paracetamol. The patient was not a smoker and did not drink nor use recreational drug. He had no family support and was in poor financial condition.

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**Fig. 1.** Oedema of the maxilla, cervical, thoracic, lumbar and hypogastric regions.

### 3. Clinical findings

Our investigation revealed a major asthenia with good parameters: blood pressure: 131/51 mmHg; heart rate: 87 beats per minute; oxygen saturation (SpO<sub>2</sub>): 96 %. There was an extensive oedema; hot, painful and fluctuating with a snowy crepitus sensation and a normal skin appearance (Fig. 1). The patient presented a mouth opening limitation at 1.5 cm with poor oral hygiene. There was a flow of endobuccal fetid pus also visible through the previous inferior maxillary incision. Despite the presence of trismus, we observed dental caries of 24, 25 and 26.

### 4. Timeline

Prior to patient presentation, patient endured one week of dental pain followed by auto medication with an association of Diclofenac/Paracétamol. A week later, there was a resulting dental abscess that was incised at a local health center and was treated with antibiotic therapy of Amoxicillin and Cloxacillin. A week following the incision, the patient condition had worsened and he presented to the hospital with a thoracolumbar and hypogastric necrotizing fasciitis.

### 5. Diagnosis assessment and interpretation

Blood count revealed hyperleukocytosis (24000 elements/ml) with neutrophilic polynuclear cells (86.8 %), normochromic normocytic anaemia at 11.2 g/dL. Ultrasound of soft tissues showed left latissimus dorsi cellulitis with heterogeneous collection of intramuscular fluid in the left trapezius and latissimus dorsi muscles and the left thoracolumbar fascia associated with left para thoracic subcutaneous emphysema. Abdominal ultrasound showed uncollected cellulitis in the hypogastrium. The chest X-ray was normal. A finding of TLHNF of dental origin was made.

### 6. Intervention

On admission day, the patient was kept on absolute diet for 6 h prior operation, and was given an administration of 3000 cm<sup>3</sup> of 0.09 % saline infusion. Diuresis was maintained throughout the pre-operative period, during which all parameters were good. The surgical intervention was made in two steps: a) the patient was in lateral decubitus under a sedation and analgesia. The left hand of the patient was in abduction and placed on a support bracket under the armpit, while another support bracket placed ventrally maintained the pelvis (Fig. 1). After daubing and rigorous aseptis, debridement and necrosectomy of the entire necrotic surface was performed; drainage of the collection of pus and an abundant toilet was made using a mixture of 0.09 % saline solution and yellow Betadine\* solution (Fig. 2). Afterward, a dressing was made on the entire debrided surface. b) The patient was next put in dorsal



**Fig. 2.** Thoracolumbar region after necrosectomy.

decubitus and teeth 24, 25 and 26, which were all snags, were extracted. The intervening team consisted of a senior maxillofacial surgeon with skills in dermatology, plastic and general surgeries, and a dental surgeon, an operating assistant nurse, an anaesthetist nurse, an assistant nurse. The setting of the operation room was very modest with an anaesthetic apparatus and an operating table. The surgery took place in the regional hospital in the far north region of Cameroon.

### 7. Follow up and outcomes

The follow up was carried out as in-patient and lasted for four months. The evolution was uneventful with the resumption of an oral diet. Postprandial brushing and mouth washes with diluted green Betadine\* were introduced. Initial dressing under sedation and analgesia was done thrice a week for two weeks and was followed up with daily routine dressing on patient bed for the rest of the hospitalisation. Dakin\* and hydrogen peroxide were used for the treatment, while pure honey dressing was used for a good cleaning of the wound. After eradicating the infection and obtaining sufficient wound budding, a skin section obtained from the anterior side of the thigh was used to perform a graft (Fig. 3); the achievement of complete healing was obtained (Fig. 4). The patient received a daily administration of 3000 cm<sup>3</sup> of 0.09 % saline infusion. Diuresis was maintained throughout the postoperative period, and the follow up treatment consisted of triple antibiotic therapy based on Ceftriaxone (1 g × 2/d), injectable Metronidazole (500 mg × 3/d), and Gentamycin (160 mg/d); then the combination Piperacillin (2 g/d)/Tazobactam (2 g/d) replacing Ceftriaxone. Analgesia was managed by administering injectable Tramadol (100 mg × 3/d) and injectable Paracetamol (1 g × 4/d). Hydrocortisone was administered postoperatively at a dose of 100 mg × 3/d for 3 days. The prognosis was good one year later.

### 8. Discussion

The necrotizing fasciitis of dental origin is known for a high mortality rate [8]. Moreover, the thoracolumbar and hypogastric necrotizing fasciitis due to dental abscess is an exceptional case not reported in the literature. This complex case is difficult in its diagnosis and management, especially in the context of regional hospital with poor technical facilities. Interestingly the intervention was completed with a very good prognosis and patient satisfaction. It worth mentioning the multidisciplinary know how of the senior surgeon that had a positive bearing on this outcome.

Our intervention has various limitations which constitute an important part of the weakness. The limited technical platform and the lack of qualified personnel are considerable weak points. In addition, there was no pus sampling for culture and antibiogram; the antibiotic



Fig. 3. The grafts at the thoracolumbar region.



Fig. 4. Complete healing of the wound on the neck, the thoracolumbar region and the hypogastricium.

therapy was empirical; also the mode of anesthesia used was not classical. Although the prognosis was good, cosmetic sequelae obscured the outcome somewhat. The absence of universal health coverage impacted the management of the patient.

In general, for any poorly tolerated cellulitis, for which an intervention must be carried out urgently, is considered serious. The circumstances of occurrence in our observation are consistent with the natural history of CDO, which includes the absence of comorbidity, odontalgia, an apparent state of good health, and the taking of self-prescribed nonsteroidal anti-inflammatory drugs (NSAIDs) which is a predictor of severity. Indeed, it seems that the mechanism of aggravation is linked to a major reduction in pain, masking the signs of progression, or to a role favouring infection by reduced immunity [1,11]. In this case, the age of our patient is close to the mean age of onset of CDO found in the literature [1,12]. Extension of the infection with cervical infiltration is associated with general signs such as septic shock, and this is fatal without prompt treatment [13,14]. Although the infection was disseminated, there was an absence of septic shock, and the general state of the patient was little altered; which could be explained by the treatment taken before the consultation, in particular the double antibiotic therapy. The clinical presentation of CDO is commonly related to the seat of dental caries [1,15]. If the infection is located on the posterior teeth, a moderate trismus may be present; which was the case in our patient whose teeth 24, 25 and 26 were decayed. Cellulitis starting at the mandibular region, diffuses towards the upper respiratory and digestive tracts and in depth, and downward to the mediastinum below. During CDO, mediastinal involvement is explained by the anatomical continuity

of the cervico-facial and mediastinal cellulo-fatty lodges. These compartments first communicate with each other, in particular via the paratonsillar space, then with the large anatomical spaces of detachment which extend from the base of the skull to the mediastinum. When cellulitis starts from a dental decay on the upper arch, it usually diffuses towards the facial bone and the pterygo-maxillary region, before reaching the subtemporal fossa [1,15]. These diffusion modes differ with our case. Concerning the diffusion of the cellulitis towards the dorsal region as seen in our patient, we think that it may be due to a gradual extension of the infection; and the inappropriate antibiotic therapy taking prior to consultation. More interestingly, the chest X-ray was normal, confirming the non-involvement of the mediastinum.

Routinely, bacteriological samples are usually not taken when draining ordinary collected cellulitis, because the germs found in the vast majority of cases are ordinary saprophyte germs from the oral cavity, systematically sensitive to antibiotics [1]. However, it is important to take samples in the event of: - gangrenous cellulitis, where a brownish and malodorous pus indicate the dominant presence of anaerobic germs; - iterative collection drainage, resistant to well-conducted conventional treatment; - specific conditions (immunosuppression, recurrent cellulitis, history of irradiation of the oral cavity) [1]. Unfortunately, the absence of bacteriological samples is a weak point in our intervention. Nevertheless, the choice of the triple combination of antibiotics was based on knowledge of the usual oral flora and indirect signs of the presence of anaerobes such as subcutaneous crackles and foul odour. In these clinical situations, it is not uncommon for the microbial flora to be mixed and polymorphic [16]. Usually sequelae,

whether functional or aesthetic, are frequent in the treatment of cellulitis [17]. In our case, we observed major sequelae in the aesthetic outcome: these are unsightly left cheek, cervical, and thoracolumbar scars. For any dental abscess, medical practitioners should absolutely perform a general clinical examination. Apart from resuscitation and appropriate antibiotic therapy, multidisciplinary competence in odontostomatology, plastic surgery, maxillofacial and general surgeries are needed in regional or/and rural hospitals [18]. Indeed, the use of pure honey can be decisive in the management of extensive wounds

## 9. Patient perspectives

The patient was grateful for the intervention and had showed satisfaction through regular calls. He once said: “Doctor you have giving me another life.”

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None.

## Ethical approval

This case report didn't require review by Ethics committee, regional hospital, Maroua, far north Cameroon.

## Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

## Author contribution

**Stéphane Kohpe Kapseu:** Conceptualization, data collection, case analysis and writing of the manuscript. **Christian Djieukam Monkam:** participated in the surgery and case analysis. **Théophile Tchargo Doumo:** Participated in the surgery and data collection. **Venant Tchokonte-Nana:** Supervision, validated the case data and writing of the manuscript.

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N/a.

## Guarantor

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## Declaration of competing interest

The authors declare no conflict of interests.

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