Scholars Journal of Medical Case Reports

OPEN ACCESS

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

Mediastinitis Complicating Odontogenic Cervicofacial Cellulitis

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DOI: 10.36347/sjmcr.2021.v09i04.007 | **Received:** 09.03.2021 | **Accepted:** 07.04.2021 | **Published:** 11.04.2021

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Abstract **Case Report**

Mediastinitis is a serious complication of cervicofacial cellulitis secondary to the spread of infections developed from a dental focus to the mediastinum. The first signs are sometimes crude and can lead to diagnostic delay. The key exam is a cervical and thoracic CT scan. Its treatment consists of a large tissue excision associated with antibiotic therapy directed against aero-anaerobic germs. We report the case of an immunocompetent patient with dental cervical cellulitis complicated by suppurative mediastinitis.

Keywords: Cervicofacial cellulitis, mediastinitis, treatment, prognosis.

INTRODUCTION

Cervicofacial cellulitis is a polymicrobial infection of the cellulo-adipose tissues of the head and neck characterized by progressive destruction of the aponeurotic spaces and adipose tissue that can spread to surrounding tissues. Its risk lies in the spread of the infection to the deep spaces of the neck on the one hand; and on the other hand its extension to the mediastinum. Mediastinitis is the most serious complication of cervicofacial cellulitis, which can very quickly become life-threatening, thus requiring urgent and appropriate management. Through a clinical case and a review of the literature, we will discuss the management of mediastinitis complicating cervical cellulitis of dental origin in an immunocompetent patient.

OBSERVATION

We report the case of a 47-year-old patient, with no particular history, admitted to the maxillofacial emergency unit for an inflammatory lower left cheek swelling with cervical extension in a febrile context (39 ° C). The anamnesis noted the notion of dental pain with non-steroidal anti-inflammatory drug (NSAID). The clinical examination on admission found an asthenic patient, mildly dyspneic with a respiratory rate of 26 bpm associated with a blood pressure of 120/70 mmHg. The physical examination objectified the presence of a lower left cheek swelling with cervical extension, painful, warm, taking the cup with difficulty in breathing and difficulty in swallowing. We note the presence of an inflammatory placard located in the upper quarter of the left anterosuperior thoracic region (Figure 1). This swelling was associated with a limitation of the mouth opening to 20 mm with the presence of a decay of the tooth 37.

The initial biological assessment shows hyperleukocytosis at 52,000, CRP at 519 mg / l and glycemia at 1.12 g / l. The HIV and hepatic serologies are negative. The cervicothoracic CT reveals a cervical infiltration with collection opposite the internal face of the sternocleidomastoid muscle fusing along the retropharyngolaryngeal space extended to the mediastinum with collection at the level of the anterior mediastinum with significant infiltration of the mediastinal fat. We also note the presence of multiple subcutaneous thoracic collections. The panoramic dental x-ray reveals the presence of a decay of the tooth 37 with the presence of an apical granuloma (Figure 2).

Fig- 1: **Cervicofacial cellulitis, cervicothoracic inflammatory placard**

Fig-2: Apical granuloma of the 37

Initial, adjuvant, probabilistic antibiotic therapy was initiated intravenously with amoxicillin + clavulanic acid (augmentin 2g × 3 / d) associated with 5-nitro-imidazoles (flagyl 500 mg × 3 / d). The patient was treated in the operating room under general anesthesia after tracheotomy. A cervicotomy was performed revealing multiple collections with foci of necrosis. After draining 500cc of pus necrosectomy and abundant lavage, Delbet blades were left in place, one of which was lowered to the anterior mediastinum (Figure 3 and 4). The subcutaneous thoracic collection was drained by making a skin incision in an area of fluctuation (Figure 5). The causal tooth was extracted. Culture of the pus isolated alpha hemolytic streptococcus. The initial antibiotic therapy was secondarily adapted to the germs. The patient was subsequently admitted to intensive care until hemodynamic stabilization. Twice-daily treatments combining physiological serum and polyvidone iodine were carried out until complete dryness.

The subsequent loss of cervical substance associated with the retraction of the cervical flap was repaired secondarily by total skin grafting (Figure 6).

Fig-3 & 4: 3: Surgical drainage by unilateral left cervicotomy, 4: Placement of Delbet blade

Fig-5 & 6:5: Drainage of the subcutaneous thoracic collection with insertion of Delbet blades and loss of left antero-laterocervical substance, 6: Loss of residual substance

DISCUSSION

Acute infectious complications linked to pulp necrosis, periodontal infections, or sometimes to therapeutic procedures, are frequent. They are the cause of abscesses located in the soft tissues of the face and neck. These cellulites develop in the cellular spaces filling the compartments surrounding the mandible and the maxilla. These compartments communicate with each other, in particular via the para-tonsillar space, then with the large anatomical detachment spaces which extend from the base of the skull to the mediastinum: these abscesses represent a real emergency and can involve the patient's vital prognosis. Cellulitis can remain localized at the facial or cervical level, or sometimes diffuse at the cerebral level or in the mediastinum by the retro-pharyngeal, prevertebral, vascular or pretracheal spaces. Odontogénic cellulitis with mediastinal diffusion is a rare but particularly serious complication. Cervicofacial cellulitis is a polymicrobial infection, with ß-hemolytic streptococcus

being the most frequently found germ. However, a plurimicrobial association is demonstrated in 40 to 90% of necrotizing fasciitis [1, 2].

Taking NSAIDs has been shown to be correlated with worsening cervicofacial cellulitis. Likewise, an association between the occurrence of mediastinitis complicating odontogenic cervicofacial cellulitis and the use of NSAIDs has been reported in several other studies with the possibility of progression to fatal necrotizing fasciitis [3-5]. This correlation may be explained by the mechanism of action of NSAIDs against inflammation, which is after all primarily a nonspecific defense mechanism against microbial invasion. NSAIDs inhibit the breakdown of cellular arachidonic acid via the pathway cyclooxygenase, preventing the production of thromboxane A2 and prostaglandin, which play an important role in cell chemotaxis. NSAIDs thus oppose the migration of polynuclear and macrophagic cells and phagocytosis and also reduce the early signs of inflammation, thus delaying consultation [3].

The diagnosis of cervicofacial cellulitis is usually clinically obvious. The difficulty consists in distinguishing a deep cervical or mediastinal collection due to an initial symptomatology which is often frugal. Clinical examination alone has a sensitivity of 55% in the diagnosis of deep cervical [6]. Standard chest x-rays may show an enlargement of the superior mediastinum, a pneumomediastinum or a collection obliterating the retrosternal space and the retrocardiac silhouette. However, these results appear late. The contribution of ultrasound is limited in the exploration of deep collections. The cervico-thoracic CT is the gold standard for diagnosising mediastinitis. It allows on the one hand a precise analysis of the degree of infiltration (extent of the collection, soft tissue, presence of gas bubbles) and on the other hand establishes an optimal approach for efficient drainage.

Mediastinitisis grafted with a heavy mortality. Thus its management must be early and effective. It focuses on 3 main objectives [2, 7–9]:

- Application of resuscitation measures: hemodynamic and respiratory monitoring, correction of hypovolemia, maintenance of adequate oxygenation or even mechanical ventilation
- The emergency initiation of a broad-spectrum, synergistic and bactericidal intravenous probabilistic antibiotic therapy as soon as the patient is admitted. It will be secondarily adapted to germs
- The early surgical drainage of the collection as well as the treatment of the site of infection: for the majority of authors, this represents the keystone of therapeutic success. Drainage will be done by cervicotomy which can be bilateral, and will be associated with a thoracotomy or sternotomy in extended forms. Iterative washings with physiological serum and polyvidone iodine will be associated in the absence of intolerance.

The use of hyperbaric oxygen therapy is based on theoretical and experimental data. It should only be considered on the basis of local material availability and an appropriate medical team. Its preferred indication remains Clostridial gas gangrene. The other indications remain to be evaluated. It should be used in addition to surgical treatment [1, 10].

There are few arguments in the literature to recommend a particular type of dressing, whether classic based on wet compresses or more innovative based on calcium alginates, silver or hydrocolloids. An interesting alternative to conventional dressings would be the VAC type negative pressure occlusive dressings. These allow better healing of the surgical site [11].

CONCLUSION

Mediastinitis remains the most serious complication of odontogenic cervicofacial cellulitis. Only early and appropriate management can improve the prognosis. Prevention must insist on eliminating the over-prescribing of NSAIDs.

Contributions of the authors

All the authors contributed to the medical care of the patient, as well as the writing this article they approved.

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