

Cervical and facial infections – a real life threat

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Abstract. Cervicofacial infections of dental origin are a difficult and complex issue of oral and maxillofacial surgery. Recognizing in due time the situations which are likely to develop a life-threatening condition and medical surgical prompt interventions significantly reduce the rate of the complications. Between January 2009 and March 2013, at the Clinic of Oral and Maxillofacial Surgery of the University of Medicine and Pharmacy "Victor Babeş" Timisoara, 17 patients with severe cervicofacial infections were admitted in the emergency department as they needed a complex medical surgical treatment in accordance with protocol established together with the intensive-care department. Assessing the situations, we noticed a difficult, prolonged time of the recovery process which needed a hospitalization period of around 20 days. It recorded two deceased because of cervical necrotizing fasciitis and oral floor phlegmon, the most severe forms of the cervicofacial infections. The severity of the condition of the patients with cervicofacial infections must be figured and as quickly as possible an energetic therapeutic attitude must be adopted. The experience shows a frequent resistance to antibiotics like ampicillin, penicillin and oxacillin. The patients must be guided in due time to a clinic which has an intensive care department, where the surgical treatment must be administrated together with an intensive treatment for supporting the general condition. The reduction of the vital risk of the cervicofacial infections of dental origin will be done through an attentive assessment of the general and local condition (status) of the outpatients, before the dental extraction. The absence of a treatment adapted to the situation and to the clinic development, meaningfully increases the rate of the complications and the length of the hospitalization, the lethal evolution being not excluded.

1. Introduction

The diagnosis and the treatment of the severe cervicofacial infections present a challenging problem for the oral and maxillofacial surgeon. These infections remain an important health problem, with significant risks of morbidity and mortality, if the situations which are likely to develop a life threatening condition are not recognized in due time [9]. Because of the variety of the antibiotics, the development of new therapeutic schemes and of the safety of the surgical techniques as well as the rate of the complications of the cervicofacial infections is decreasing, especially when the medical-surgical intervention is performed in due time. The cervical necrotizing fasciitis and the phlegmon, the most severe forms, are the result of acute, diffuse infections, favored by a deficient immunologic background, having as the most frequent etiologic factor a mandibular molar tooth. The infectious process has a local expansive tendency, through the infiltration and the destruction of the cervical tissues, following the anatomic cleavage plans and an aggressive evolution with a rapid deterioration of the general condition and jeopardizing the life of the patient [7].



2. Objectives

The cervicofacial region presents particularities which can complicate the evolution of an infection with such a location. The anatomic complexity of the region and the deep location of the infection, render the diagnosis more difficult. The spreading of the infection is favored by the natural connection between deep neck spaces, the infection being able to exceed the limits of the region and to invade the adjacent spaces, the mediastinum and endocranial cavity. The layer of covering unaffected soft tissues can be substantial, increasing the risk of neurovascular injury, during the surgical approach.

In spite of the progress achieved by the modern antibiotics and the sophisticated diagnosis methods (MRI, CT), it is ascertained an increase of the rate of the severe cervicofacial infections, with complicated dental lesions antecedently treated through a dental extraction without a careful examination of the local and general condition (status) of the patient. Consequently, a complete assessment of the biological condition of the outpatient is necessary, as well as the recommendation of a prophylactic antibiotic treatment [8].

3. Material and method

Our study, completed between January 2009 and March 2013, comprises of 17 patients with cervicofacial infections of exclusive dental origin, who needed complex medical surgical procedures and intensive care treatment. The patients, 10 men and 7 women, between the ages of 18 and 65 years (an average of 40 years), came to the emergency room and were hospitalized at the Clinic of Oral and Maxillofacial Surgery in Timisoara with the following diagnosis:

- orbit abscess – 1 case
- masseter abscess – 3 cases
- submandibular abscess – 5 cases
- genian abscess – 3 cases
- oral floor phlegmon (Ludwig angina) – 2 cases
- necrotizing fasciitis – 2 cases
- laterocervical abscess – 1 case

The odontogenic etiology of the cervicofacial infections include dentoalveolar infectious processes in evolution, as well as recent dental procedures:

- periapical chronic osteitis in 6 cases
- procedures involved in tooth extraction in 11 cases

Considering the initiator event, the infection of the deep cervicofacial space was produced following the ways:

- direct, by spreading along the anatomic cleavage plans and the connections between the deep cervical spaces;
- lymphatic, by spreading the infection from the oral cavity through the lymphatic system

The microbiological examination performed in these cases showed the presence of klebsiella, staphylococcus aureus, escherichia coli and pyocyanic bacillus and with variable tested sensibility to amoxicillin, cephalosporin of second and third generation (Medocef, Cefort, Rocephin) or carbapenem (Tienam), gentamicyn, ciprofloxacin, colistin and resistance to ampicillin, oxacillin, erythromycin and tetracycline[4].

The complex medical-surgical treatment was performed in cooperation with the intensive care [12] department and followed the protocol:

- Monitoring the hemodynamic parameters and the vital functions in the intensive care department [10][3]
- Combating the toxicoseptic shock through an energetic anti-infectious treatment
Associated antibiotic therapy with wide spectrum, administrated parenteral, initially based on the clinical experience (cephalosporin in association with an aminoglycoside or quinolone with metronidazole) [6], promptly modified according to culture and sensitivity test results. If the patients are in shock before any surgical procedures, we must establish a

secure airway and in maximum emergency situations we perform cricothyrotomy and tracheal intubation through the oral passage or tracheotomy

- The prophylaxis of cavernous sinus thrombosis (heparin, clexane)[1][2]
- The surgical treatment usually applied simultaneously is meant to ensure the drainage of all the cervical spaces involved in the septic process, to aerate them and to use the antiseptics. Every approach used must be wide; most cervical infections need a transcervical approach, which facilitates an adequate exposure, with the protection of the neuromuscular structures [1]
- Anti-inflammatory and analgesic medication
- Stimulation of the general immunity through non specific vaccine therapy, administration of gamma globulins and vitamins
- The removal of the etiologic factors through extraction of the causal teeth after the local and general rehabilitation in order to gain healing and prevent relapse [5].

4. Results

Assessing the presented situations we noticed a difficult long-term healing process which needed a hospitalization of 10 - 40 days. A patient with cervical necrotizing fasciitis needed after 2 hours of hospitalization intubation through tracheotomy because of severe respiratory distress appeared together with toxicoseptic shock. After 8 days of continuous medical and surgical treatment, after a short improvement of the general situation, the patient died because of cardio respirator stoppage. In the other cases no relapse was noticed after the remission of the infection, the removal of etiologic factors and after discharging the patient from hospital.

5. Discussions

The patients with cervicofacial infections who arrived late at the Clinic of Oral and Maxillofacial Surgery and whose treatments were delayed or misconducted can expect a greater number of complications and a prolonged recovery period.

Necrotizing fasciitis, a streptococcal infection, with morbidity and mortality rate of 70-80%, was the most severe form of cervicofacial infection, as one of the two cases treated in our clinic had a lethal end. The gravity of the situation of such patients must be inferred as soon as possible and strong therapeutic measures must be taken. We have to administrate antibiotics in high doses, with a good penetration in the soft tissues and bone, based on an antibiotics with wide spectrum, like cephalosporin of the second or third generation (Medocef, Cefort, Rocephin), or carbapenem (Tienam), associated with a second antibiotic of the aminoglycoside group (gentamicin, neomycin) and metronidazole to cover also the anaerobic bacteria, present in the deep, unaerated cervicofacial deep spaces and the patient must be directed into emergency care, in the intensive care unit. It is compulsory to obtain microbial cultures from the pathological secretions, as well as blood cultures, consequently adapting the antibiotherapy according with the sensitivity tests. The experience proves frequent resistance to antibiotics like penicillin, ampicillin, and oxacillin, those being used nowadays only when their bactericide action is indicated by tests. Amoxicillin is more efficient associated with clavulanic acid (amoxyclav, augmentin). Surgical treatment is instituted as soon as the preoperational conditions are fulfilled, accomplished simultaneously with the intensive anti-infectious treatment and supporting of the general condition.

6. Conclusions

The abscess of orbital, laterocervical abscesses, the hemifacial and oral floor phlegmon are the cervicofacial infections which, when the diagnosis and/or institution of an adequate treatments are delayed, can threaten the life of the patient.

Necrotizing fasciitis is a dangerous disease which mobilizes all the efforts in an attempt to save the patient's life, which is really endangered.

The occurrence of severe cervicofacial infections among young people is favoured by decreased immunity caused by some exhausting factors (stress, deficient nutrition, pollution), as well as by increased resistance of the microorganisms to the usual antibiotics with the wide spectrum.

In the patients with cervicofacial infections who do not receive treatments adapted to their situation and to their clinical evolution, complications can occur, which prolong the healing time, and this kind of lethal evolution cannot be accepted.

We can prevent the life-threatening danger of such infections through a careful assessment of the general and local condition of the outpatients and by starting a prophylactic antibiotherapy, in accordance with therapeutic plans based on the latest clinical research.

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