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Diffuse Cervico-Facial Cellulitis: Epidemiological and Clinical Aspects of 297 Cases

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Abstract

Introduction: Cervicofacial cellulitis is a medical and surgical emergency, it is an extensive infection of the aponeurotic spaces of the face and neck. Although frequent in black Africa rather than in developed countries, they remain associated with a poor prognosis and few studies have been done on this subject. Their management must be early, probabilistic and then adapted to the bacteriological results of the pus taken. As Senegal is one of the many sub-Saharan African countries without recent data on cervicofacial cellulitis, we felt it was important to review the situation. The aim of our study was to describe the epidemiological and clinical aspects of cervicofacial cellulitis in the ENT department of Lamine Sine DIOP of the Fann National University Hospital of Dakar. **Materials and Method:** This was a retrospective study conducted over 5 years from January 2017 to December 2021 in the ENT-CCF LAMINE SINE DIOP Department of the CHNU FANN in Dakar. Our data sources were hospitalization registers and medical records of patients hospitalized for cervicofacial cellulitis. Our data were analyzed using the spss 12 for windows software. **Results:** During this 5-year period, we collected 297 cases of cervicofacial cellulitis, *i.e.* 19% of the hospitalizations. The average age was 35 years with a sex ratio of 2.23. The notion of taking NSAIDs was found in 90.57% of the cases, the immunocompromised background was present in 18 patients, *i.e.* 6.06% of the cases. The site of the swelling was sub-mento-maxillary in 49% of the cases and anterior cervical in 5% of cases. The portal of entry was dental in 189 patients, *i.e.* 64% of cases, and unknown in 3%. 4 deaths were recorded, *i.e.* 1.35% of patients hospitalized for cervicofacial cellulitis, and 1 case of mediastinitis with polyseritis was transferred

to the Department of Thoracic and Cardiovascular Surgery, which had a favourable outcome. **Conclusion:** Cervicofacial cellulitis is a fairly common infection with a poor prognosis in developing countries. They affect a relatively young and healthy segment of the population. At the National University Hospital of Fann in Dakar, they are increasingly frequent and linked to the use of non-steroidal anti-inflammatory drugs.

Keywords

Cellulitis, Cervico-Facial, Dakar

1. Introduction

Cervicofacial cellulitis is a medical-surgical emergency, it is an extensive infection of the fascial spaces of the face and neck [1]. By separating and surrounding the muscles, the aponeurotic planes constitute true "highways" for the diffusion of infection in the absence of anatomical barriers between these different spaces [2]. Although frequent in black Africa rather than in developed countries, they remain associated with a poor prognosis and few studies have been done on this subject in Senegal. Their prognosis depends on several factors, in particular, the length of the treatment, which must be early, probabilistic and then adapted to the bacteriological results of the pus taken, the terrain and the technical facilities in place.

The severity of complications sometimes requires multidisciplinary management involving both ENT surgeons, thoracic-cardiovascular surgeons and intensive care physicians. As Senegal is one of the many countries in sub-Saharan Africa that do not have updated data on cervico-facial cellulitis, it seemed essential to us to take stock of the situation.

Thus, the aim of our study was to describe the epidemiological and clinical aspects of cervicofacial cellulitis in the ENT department of Senegal: Lamine Sine DIOP of the Fann National University Hospital of Dakar.

2. Patients and Methods

This was a retrospective descriptive study from January 2017 to December 2021 conducted at the ENT department LAMINE SINE DIOP of the CHNU FANN of Dakar. All patients of any age and sex with a complete file and hospitalized during the said period for diffuse cervico-facial cellulitis with or without complications were included. Our data sources were hospitalization registers and complete patient files. These data were reported on operating sheets and included epidemiological, clinical and paraclinical data, the treatment administered and the immediate (48 hours), short term (1 month) and medium term (3 months) evolution. The latter was considered favorable in the absence of clinical signs and unfavorable in the event of complications or death.

Moreover, pharyngeal and parapharyngeal suppurations that were not extensive were excluded from our study. The statistical analysis of our results was

done with the software spss 12 for windows.

3. Results

3.1. Epidemiological Data

During this five-year period, we collected 297 patients with cervicofacial cellulitis out of a total of 5628 hospitalizations, *i.e.*, an annual incidence of 59 cases/year and a hospital prevalence of 18.95% (Figure 1). The average age reported was 35 years with extremes ranging from 2 to 79 years and an age range of 30 to 40 years in 29.63% of cases (Figure 2). We recorded 205 men (69.02%) and 92 women (30.98%) for a sex ratio of 2.23.

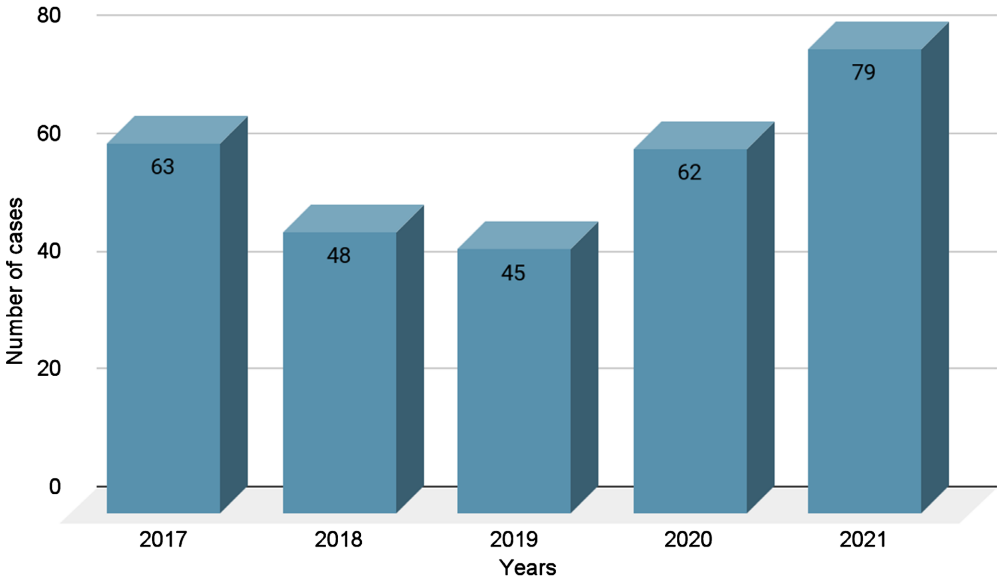

Figure 1. Cervicofacial cellulitis numbers from 2017 to 2021.

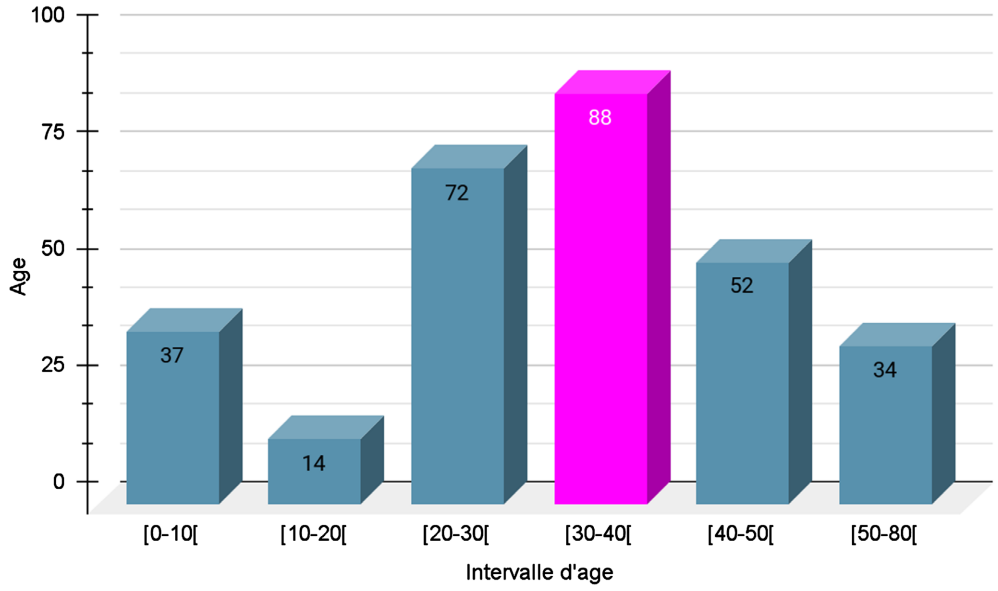

Figure 2. Age distribution.

The notion of taking non-steroidal anti-inflammatory drugs was found in 269 (90.57%) of our patients, these NSAIDs purchased either in pharmacies or on the street from low-cost street vendors. Immunosuppression was represented by: diabetes in 12 cases, active pregnancy in 4 cases and human immunodeficiency virus infection in 2 cases, *i.e.* a total of 18 cases (6.06%).

3.2. Clinical and Paraclinical Data

The clinical signs were varied (Table 1) depending on the portal of entry of the cellulitis and its extension to the surrounding anatomical structures.

The site of the swelling was submaxillary in more than half of the cases (65%) (Table 2), the portal of entry was dental in 189 patients (63.63%), pharyngeal in 80 patients, parotid in 10 patients and undetermined in 10 cases (Figure 3).

We have recorded 3 cases of cellulitis complicated by anterior mediastinitis, one of which was transferred to thoracic and cardiovascular surgery with a pericardial effusion (Figure 4). Our series recorded a case of submaxillary cellulitis with significant loss of substance and exposure of the suprahyoid muscles in a pregnant woman of 12 weeks of amenorrhoea as illustrated in Figure 5.

Table 1. Clinical signs.

Clinical sign	Trismus	Endobuccal pus outlet	Skin fistula	Subcutaneous crepitation	Other
Number (%)	225 (75.76)	34 (11.45)	16 (5.38)	13 (4.38)	9 (3.03)

Table 2. Location of swelling.

Site of the swelling	Submental	Anterior cervical	Sub-maxillary	Sub-mento-maxillary	Jugo-parotid	Other
Number of cases (%)	70 (23.6)	15 (5.1)	50 (16.8)	74 (24.9)	52 (17.5)	36 (12.1)

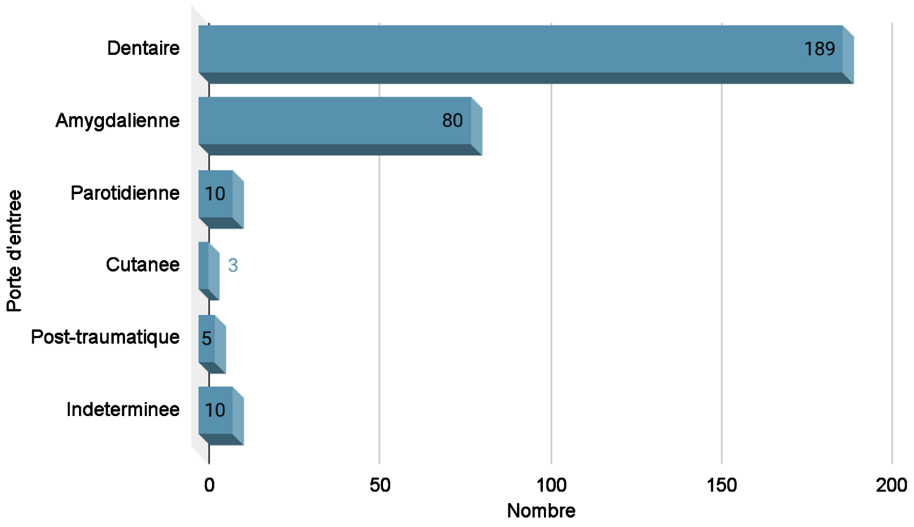

Figure 3. Distribution by entry point.

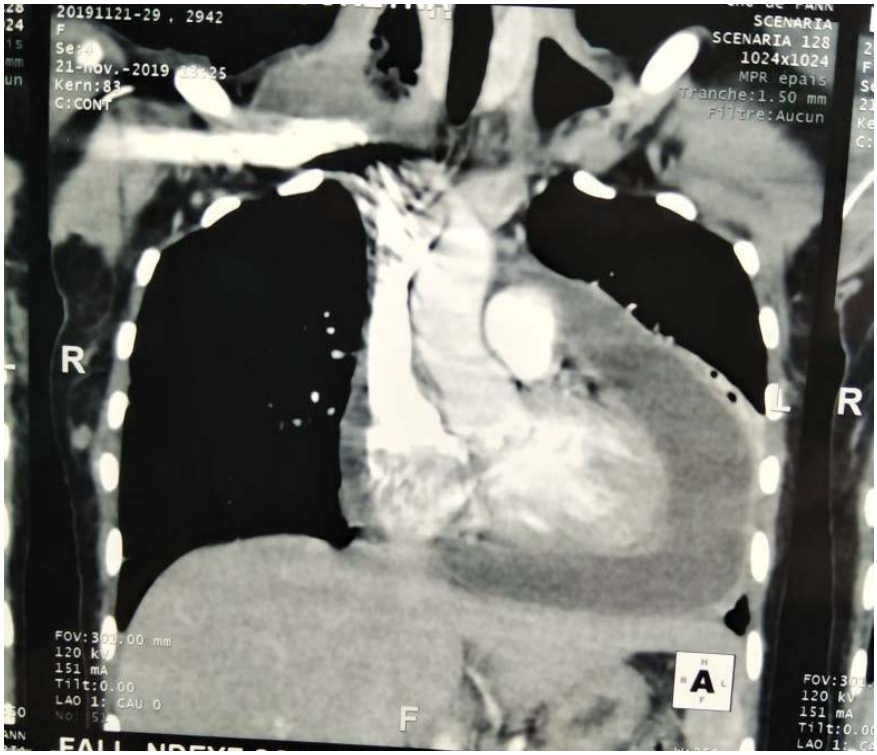

Figure 4. Cervico-thoracic cellulitis complicated by pericardial effusion.

Figure 5. Anterior cervical odontogenic cellulitis with exposure of the suprahyoid muscles.

Bacteriological analysis was performed in 72% of the cases and found a germ in only 60% of the cases, with Streptococcus (76%), Staphylococcus (23%) and other strains (1%) in the lead. Antibiotic therapy was probabilistic with amox-

icillin + clavulanic acid in all patients and then adapted to the antibiogram. Incision-drainage under local anaesthesia was performed in 282 cases (94.95%) with placement of a glove finger or a delbet blade.

3.3. Post-Therapeutic Evolution

The evolution of the patients was marked by a cure in 294 cases (98.99%) including 10 cases of recurrence (3.42%), by a death in 4 cases (1.35%).

4. Discussion

Our study in the ENT-CCF Lamine Sine Diop department of CHNU de Fann allowed us to collect 297 cases in five years (2017-2021), a number largely superior to that found elsewhere, even though these studies were carried out over a longer period of time, even similar to ours. Our annual prevalence (59 cases/year) was higher than that reported by Tran Ba Huy P (25 cases/year) [3] and Hounkpe (5 cases/year) [4]. This could be explained by the fact that patients with cervicofacial cellulitis are not always referred first to oral surgery departments, but rather to oral surgery departments, hence the bias observed, as in the case of Kaba in Gabon, who collected 132 cases in a dental department [5]. The most representative age range of our series was between 30 and 40 years, close to the data found in Cameroon by Njifou *et al.* which was between 21 and 41 years [6] and by Keita between 30 and 35 years [7], in agreement with the data in the literature which make cervicofacial cellulitis a disease of the young adult.

The sex ratio of 2.23 was close to that found by Zagrhe in Burkina Faso [8] and Hounkpe in Benin [4] confirming the male predominance to develop more cellulitis probably due to a negligible oral hygiene and probably also due to the fact that women would be more concerned about their appearance and their health would consult earlier before the stage of diffuse cellulitis [9].

The notion of self-medication with NSAIDs (90.57%) was found in almost all our patients and these figures are close to those of Miloundja [10], on the other hand Rakotoarison [11] and Badou [12] found proportions of less than or equal to 50%; This could be explained in our context by the multiplicity of so-called "street" medicines in our cosmopolitan societies, which constitute a factor in the availability of NSAIDs without any medical prescription, thus encouraging recurrent self-medication [13] of our populations with cheap or even counterfeit products. This corroborates the hypothesis recognized for several decades that anti-inflammatory drugs are factors favoring the outbreak of bacterial infections [14] [15].

The portal of entry was dental (63.63%) as in all series [3] [4] [5] [8] [10]; this is explained by the fact that septic diffusion of dental origin occurs by contiguity in the submaxillary and sublingual space according to the apical dental relationships with the mylohyoid muscle [16] [17]. Thus, infections of the last two molars easily spread to the submaxillary space, whereas those of the first molars spread to the sublingual space; on the other hand, Mateo in France had de-

scribed the pharyngeal portal of entry as predominant in his study [18].

Surgery by incision and drainage associated with probabilistic antibiotic therapy then adapted to the germ was performed in our series with a good evolution (98.99%). This is still the best therapeutic approach as reported elsewhere [19] [20] [21] in the management of cervicofacial cellulitis, as these two therapeutic acts are complementary. Antibiotic therapy acts against bacterial proliferation, whereas drainage limits the diffusion of the bacteria through the various fascial spaces.

Although our study was conducted in the largest ENT center in Senegal, there may have been selection bias, thus minimizing the real epidemiological face of cervicofacial cellulitis.

5. Conclusion

Cervicofacial cellulitis is a fairly frequent infectious emergency with a poor prognosis in developing countries. They are most often due to a dental infection affecting a relatively young and healthy part of the population. In the ENT-CCF department of the Fann National University Hospital in Dakar, they have become increasingly frequent over the last five years and are related to the use of non-steroidal anti-inflammatory drugs. Their medical and surgical management is correlated with very encouraging results. To avoid selection bias, it would be desirable that similar studies be conducted in all new surgery departments throughout Senegal.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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