

Original Research Article

Epidemiological and Clinical Profile of Maxillo-Facial Odontogenic Cellulites in Children

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Abstract: Introduction: Odontogenic maxillofacial cellulitis are infections of the cellulose-adipose tissues of the face of dental origin and which can be life-threatening for the patient. This study aims to determine the epidemiological and clinical profile of odontogenic maxillofacial cellulitis in children. **Patients and Method:** This is a retrospective, cross-sectional, observational, single-center study involving patients aged 0 to 18 years hospitalized at the CMF Stomatology department in Owendo from 2016 to 2022. Incomplete files, patients treated on an outpatient basis and those with non-odontogenic cellulitis. The epidemiological and clinical parameters studied were age, sex, residence, level of education, lifestyle, contributing factors, reason for consultation, consultation time, type of cellulitis, topography of the causal tooth, and sign of gravity. **Results:** 72 patients collected. The mean age was 9.03 ± 5.71 years. The male gender represented 58% with a sex ratio of 1.4. 9.7% of patients brushed their teeth twice a day, 47.2% of patients did so once and 44.1% of patients did not brush their teeth. 54.2% of patients performed soft brushing, 2.8% of patients performed hard brushing. 79.2% of patients consumed cariogenic foods. 62.3% of patients self-medicated with NSAIDs. 56% of patients consulted between 1-10 days. 94% of patients presented with circumscribed cellulitis and 6% of patients presented with diffuse cellulitis. 5.6% of patients had dysphagia and 5.6% of patients had tight trismus. **Conclusion:** Maxillo-facial cellulite odontogenic infections are predominant in boys. They are favored by taking NSAIDs and cariogenic foods. The circumscribed stage is frequently encountered.

Keywords: Cellulite, odontogenic, maxillofacial, NSAIDs, epidemiology, clinic.

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INTRODUCTION

Maxillofacial odontogenic cellulitis is defined as an infection of dental origin of the cellulose-fatty spaces of the face with an extensive tendency. These are serious conditions that can be life-threatening [1].

According to its epidemiological aspect, these are less frequent conditions in children, affecting more the male sex [2]. The most common etiology is dental caries. In the USA, among children hospitalized for a facial infection, 50% had cellulitis of dental origin [1].

According to its clinical aspect, the circumscribed stage is the most frequent and the genius topography the most observed.

Odontogenic maxillofacial cellulitis.

PATIENTS AND METHOD

This is a retrospective, observational, single-center study involving patients aged 0 to 18 years, treated between March 2016 and July 2022 at the CMF Stomatology department of the CHUO.

Odontogenic maxillofacial cellulitis were included. Patients treated on an outpatient basis, those with incomplete records and those with non-odontogenic maxillofacial cellulitis were excluded.

The epidemiological and clinical parameters studied were age, sex, residence, level of education, lifestyle, contributing factors, reason for consultation, consultation time, type of cellulitis, topography of the causal tooth, and sign of gravity.

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The data were entered and analyzed by the R. and Epi-info 7 software. Simple variables were expressed as mean and percentage.

RESULTS

Our study included 72 patients.

Epidemiological Data

- **Age:** The average age of the patients was 9.03±5.71 years with extremes ranging from 0 to 18 years. And the age group of 6 to 10 years old was the most representative with 33.3 % (Table 1).
- **Gender:** The male gender represented 58% with a sex ratio of 1.4.
- **Level of education:** 51 patients attended school, or 71%, and 21, or 26%, of patients were not educated.
- **Way of life:** 7 patients or 9.7% brushed their teeth twice a day compared to 34 or 47.2% who did it once and 31 or 44.1% who did not brush their teeth.
- 39 patients or 54.2% used a soft bristle toothbrush compared to 2 or 2.8% of patients who brushed hard.
- **Factors favorable:** We observed 57 patients or 79.2% who consumed cariogenic foods, 15 or 20.8% did not. were not consuming (Table 2).

38 patients were self-medicated with NSAIDs, i.e. 62.3%, and 34 patients, i.e. 37.7%, did not had not consumed (Table 3).

Table 1

Age (years)	Workforce _	Percentage
0 - 5	18	25
6 - 10	24	33.3
11 - 15	17	23.6
16 - 18	13	18.1
Total	72	100

Table 2

Cariogenic foods	Workforce (%)
Yes	79.2
No	9.7
Unspecified	11.1

Table 3

Type of medication	Workforce _	Percentage
NSAIDs	18	29.5
NSAIDs + Analgesics	16	26.2
Analgesics	15	24.6
Antibiotic therapy + NSAIDs + Analgesics	4	6.6
Antibiotic therapy + Analgesics	3	4.9
Antibiotic therapy	2	3.3
Unspecified	3	4.9
Total	61	100

Data Clinics

- **Reason for hospitalization:** 100% of patients had swelling, 68% had fever on admission, 35% had trismus (Table 4).
- **Consultation time:** 54 patients or 75% consulted within 1-10 days (Table 5).
- **Type of cellulite:** 68 patients or 94 % of cases presented circumscribed cellulitis and 4 patients either 6% of cases presented with diffuse cellulitis (Figure 1).
- **Site of circumscribed cellulite and topography of the causal tooth:** The Genian regions were the most concerned, i.e. 29.2% for the Upper Genian region, 1 6.7 % for the lower Genienne region followed by the submaxillary region (19.4%), with the pre-molar and molar as the most indexed tooth (Table 6).
- **Signs of severity:** 19 of 72 patients had a sign of severity, 4 patients or 5.6% had tight trismus and 4 patients or 5.6% had dysphagia (Table 7).

Table 4

Reason for consultation	Effects _	Percentage (%)
Swelling	72	100
Fever	49	68
Lockjaw	25	35
Tooth pain	20	28
AEG	4	6
AEC	2	3
Dysphagia	3	4

Table 5

Consultation deadline	Workforce _	Percentage
1-5 days	27	37.5 _
6-10 days	27	37.5
11-15 days _ _	8	11.1
16-20 days _ _	7	9.7
21-25 days	2	2.8
180 days	1	1.4
Total	72	100



Figure 1: A: low acute circumscribed genius cellulitis serous stage; B: peri-cellulite orbital
(Source: CHUO-Stomatologie)



Figure 2: Diffuse odontogenic maxillofacial cellulite (source: CHUO-Stomatologie)

Table 6: Location of the lesion

Superior dental origin	Causal tooth		Workforce (%)
- Upper lip	Central incisor	2	2.8
- Wing of the nose	Lateral incisor	8	11.1
- Canine fossa and angle of the eye	Canine	4	5.6
- Genienne high	Molar + pre molar	21	29.2
Lower tooth origin			
- Bottom lip	Central incisor	6	8.3
- Chin region	Lateral incisor	5	6.9
- Genienne region low	Canine	12	16.7
- Submaxillary region	Molar + pre molar	14	19.4

Table 7

Severity criteria	Effective	%
Dysphagia	4	5.6
Tight lockjaw	4	5.6
Crepitation	3	4.2
Dyspnea	2	2.8
Sepsis	2	2.8
Signs of shock	2	2.8
Chest pain	1	1.4
Palpitations	1	1.4

DISCUSSION

Epidemiological data

Age

The average age of patients is 9.03 ± 5.71 years. This result is similar to that of ANZOUAN-KACOU ERMA *et al.*, [3] at TREICHVILLE University Hospital who reported an average age of 8.63 years, as well as S. Tizki who noted an average age of 8 years [8]. And differs from that of AMRANI Soma BENGHOMARI Soraya AMEUR Khadidja at Tlemcen University Hospital who found an average age of 12.39 ± 3.94 years, as well as N. EchCharii with an average age of 6 years [7]. It appears from these studies that children of all ages can be affected by this condition.

Sex

Out of 72 cases of cellulite recorded, the male sex predominated at 58% with a sex ratio of 1.4 which agrees with ANZOUAN-KACOU ERMA *et al.*, at the TREICHVILLE University Hospital [3] which found 52.8% in favor of the male sex. This male predominance is explained by the poor oral hygiene found in boys. Studies carried out by KABA M. at the Provincial hospital of Mouilla, by DILU.N in Kinshasa, BENGONDO C. at the Yaoundé University Hospital by Miloundja *et al.*, in Gabon showed that the male sex is most affected by this condition [9-11]. And according to these same authors, the male predominance is due to poor oral hygiene, more precisely to dental caries in boys [12].

Despite a male predominance which is unanimous among the authors, our crossover study revealed that maxillofacial cellulite can occur at any age in children regardless of gender in our context. This observation therefore excludes any hypothesis which would refer to a genetic predisposition. Furthermore, this once again confirms the fact that boys actually have poor oral hygiene, which explains a clear male predominance for this condition, as many authors indicate [6].

The residence

93% of patients identified for this condition resided in urban areas compared to 7% in rural areas. Which is consistent with the observation made by ANZOUAN-KACOU ERMA *et al.*, at the TREICHVILLE University Hospital [3] for whom, the rural population is less represented than the urban population. It may be explained by the fact that the frameworks of our study being located in urban areas, patients are cared for in peripheral structures and are not referred or evacuated in case of complications.

Level of education

Within our sample, 71% of patients are in school compared to 26% not in school. As paradoxical as it may seem, we can explain the result obtained by the fact that many children consume cariogenic foods as school meals. Furthermore, this predominance among school-aged patients can also be explained by the fact that the child is generally in school from the age of 3

years in our context, which would explain that the age group below 3 years can be included in the 26% of those not in school.

Facilitating factors

This study reveals that 9.7% of patients brush their teeth twice a day and 79.2% of patients consume cariogenic foods. This result reflects the poor oral hygiene of the population studied. Furthermore, 84.7% of patients were self-medicated before the consultation, 29.5% of patients took NSAIDs, 26.2% took a combination of NSAIDs + Analgesics, 24.6% of patients only took Analgesics and 6.6% of patients took a combination of NSAIDs + Antibiotic + Analgesics. It appears that almost all of the patients were self-medicated, particularly with NSAIDs in most cases. When we know that taking nonsteroidal anti-inflammatory drugs is considered by all authors to be one of the predominant contributing factors in the occurrence of maxillofacial cellulitis [13]. Because the latter mask the cardinal signs of inflammation (pain, heat, redness, edema) thus leading to the worsening of the infection. In addition, they cause an alteration of immune defenses (decrease in phagocytic function). However, the study by Nicot *et al.*, in 2014 [14] shows that taking NSAIDs is not linked to the severity of the infection, even if it can be the cause of its appearance [15-17].

Clinical data

Reason for consultation

100% of patients have swelling, 68% have fever on admission, 35% have trismus, 28% have dental pain, 6% have AEG, 4% have dysphagia and 3% have AEC. This observation is corroborated by the study of ANZOUAN-KACOU ERMA *et al.*, at the TREICHVILLE University Hospital for whom painful swelling, followed by trismus and fever are the main reasons for consultation. The same goes for M. Ghammam, J *et al.*, (2019) [38] for whom febrile cervical swelling is the main reason for consultation. However, Souaga *et al.*, [14], Menard *et al.*, [15] and Jaquier *et al.*, [16] noted tooth pain like main reason for consultation. Thus, regardless of the country, the main reason for consultation could vary.

Consultation deadline

This study revealed an average duration of 13 days (range: 2-180) between the onset of symptoms and the consultation. This is not far from the deadline found by Djafarou Abarchi B *et al.*, in NIGER for whom, the average consultation time is approximately 16.68 days (extremes 9 and 30 days). This can be explained by the low socio-economic level, the difficulty of access to health care structures + the lack of awareness of the population on the harms of self-medication, the use of self-medication and traditional therapy as first intention.

Type of cellulite:

94% of patients have circumscribed cellulite compared to 6% who have diffuse cellulite. It thus

emerges that diffuse maxillofacial cellulite is rare. Which is similar to the observation made by *MILOUNDJA and Co.* [19] These results are rather reassuring when we know that circumscribed cellulitis constitutes a very limited circumscribed inflammation of the cellular tissue of which we distinguish two types, namely: acute cellulitis and cellulitis. chronic which constitute relatively less serious pictures than diffuse odontogenic cellulitis which is defined as being a bacterial dermohypodermatitis with a dental starting point producing a rapid and uncircumscribed expansion of the inflammatory signs and which can be accompanied by signs of seriousness at the like the compression of the aero-digestive tracts, an extension with mediastinal damage or a diffusion of the germ throughout the body creating a picture of septicemia.

Site of circumscribed cellulite and topography of the causal tooth:

This study revealed that the upper genius region was the most affected at 29.2% (Molar + pre molar), followed by the lower genius region at 19.4% then (Molar + pre molar), the submaxillary region 16.7% (Canine), Wing of the nose 11.1% (lateral incisor), Lower lip 8.3% (lateral incisor), Chin region 6.9 % (central incisor), Canine fossa and angle of the eye 5.6% (canine) and finally, Upper lip 2.8 % (central incisor). *ANZOUAN-KACOU ERMA et al.*, We joined in his study and noted a predominance of lower genial cellulitis with the lower molars as causal teeth. From these results, it appears that the main teeth responsible for the occurrence of maxillofacial cellulitis in a child in Gabon are: the molar and pre molar, i.e. 48.6%, the canines, i.e. 22.3%, the incisors. lateral or 18% and central incisors or 9.7%. These results are in agreement with most authors [18, 21, 26, 28]. This can be explained by the mechanical function of each of these teeth during chewing of the food bolus. In fact we have:

- 8 incisors: which are used to slice food;
- 4 canines: which are used to shred food;
- 8 premolars: which are used to grind food;
- 12 molars: which are used to grind food;

It thus emerges that the molars and premolars are the most active teeth during chewing, which exposes them to food residues, micro/macro-trauma during chewing, without forgetting abnormalities of evolution of the latter can also promote bacterial proliferation which will be the cause of odontogenic cellulitis.

Signs of seriousness

The observation made in this study is that dysphagia and tight trismus are the most observed signs of severity followed by snowy crepitations, dyspnea, septicemia, signs of shock and signs of mediastinal damage. This observation is similar to that of *AMRANI Soma BENGHOMARI Soraya AMEUR Khadîdja* (2016) for whom, the appearance of trismus and dysphagia in a febrile context mark clinical signs of seriousness. As well as *Mohammed Lakouichm i et al.*,

(2014) for whom, clinical signs including trismus, dysphagia, especially chest pain, snowy crackles and skin necrosis, constitute signs of the seriousness of cellulite.

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