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## **Epidemiological and Clinical Aspects of Dental Cellulitis in Antananarivo**

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The study was carried out with the aim of determining the epidemiological and clinical aspects of face and neck cellulitis of dental origin treated in the maxillofacial surgery service. Since studies regarding cellulitis are still rare in Madagascar and since its importance is alarming, the present study has been chosen. A retrospective study has been realized with the files of the 320 patients in the Service of Maxillofacial Surgery in the University Hospital Centre of Antananarivo, Madagascar, in the period between 1st January 2003 and 31 December 2005. Diagnosis of cellulitis of dental origin was on clinic examination. Most patients had illness story and swelling and/or discharge of pus in the skin. Factors favouring the apparition of cellulitis, location and type of cellulitis, symptoms, tooth or teeth responsible have also been investigated. Results showed that cellulitis was frequent in the region of Antananarivo, Madagascar. Those who are the most affected are children and young people, mainly student, working or non-working people. Moreover, pain and swelling are the alarming symptoms of this pathology. Also, it was found that lower molars constitute the most frequent causal teeth. They are responsible of lower cheek cellulitis and cellulitis of the mandibular region.

**Key words:** Cellulitis, teeth, epidemiology, symptoms, Madagascar

**INTRODUCTION**

Cellulitis is an infection of perimaxillary soft tissue. Dental origin after tooth decays dominates aetiologies (Le Breton, 1997; Yam *et al.*, 2002; Huang *et al.*, 2004; Mathieu *et al.*, 1995). They can be serious when loco-regional complications (médiastinale cellulitis, Ludwig’s angina) or general complications occur (septicaemia) (Le Breton, 1997; Lézy and Prine, 2004; Reychler and Chausse, 1991; Verdalle *et al.*, 1997; Srirompotong and Art-Smart, 2003).

This pathology is frequent in developing country (Le Breton, 1997); however, cellulitis studies are rare in Madagascar. Few studies were conducted in African countries showing the importance of cellulitis morbidity. In Madagascar, only two oral and maxillofacial surgery wards are available for all the country.

The aim of this study is to determine the epidemiologic and clinical aspects of face and neck cellulitis of dental origin treated in our maxillofacial surgery ward.

This study is of value to scientific community in the developing countries.

**MATERIALS AND METHODS**

We have realized a retrospective study with 320 outpatient and inpatient files collected in maxillofacial surgery ward in the University Hospital center in Antananarivo-Madagascar during 3 years (1st January 2003-31st December 2005).

Cellulitis secondary to non dental origin was excluded (trauma, postoperative). Cellulitis diagnosis of dental origin was done on clinical examination. They had toothaches in illness story and skin swelling and/or skin fistula.

In this study, we analysed:

- Age (patients divided into 10 years classes)
- Sex
- Profession: we divided into 4 classes: persons who can pay their medical fees for an adequate dental care (executives), persons who cannot pay (labour, unemployed), student and children
- District or quarters origin
- Cellulitis risk factors
- Cellulitis location
- Type of cellulitis
- Symptoms
- Responsible teeth

**RESULTS**

Among 2950 patients coming to our ward, 320 were coming because of cellulitis of dental origin (12%).

Results related to the number of patients as well as their respective characteristics are shown below.

**Age**

Patients between 21 and 30 years-old were the most subjected to cellulitis (Table 1), followed by those between 11 and 20 years-old. These results show that young people are more affected by cellulitis in the region.

Table 1: Frequency and age class of patients treating cellulitis of dental origin

Age (years old)	No.	Percentage
<10	60	18.75
11-20	91	28.44
21-30	109	34.06
31-40	30	9.38
41-50	20	6.25
>50	10	3.13
Total	320	100.00

Sex	No.	Percentage
Male	173	(54.06%)
Female	147	(45.93%)

Profession	No.	Percentage
Pupil	71	22.18%
Student	25	7.81%

Labour	No.	Percentage
Executive	18	5.62%
Housewife	30	9.37%
Unemployed	76	23.75%
Children under 5 years	17	5.31%

District of origin	No.	Percentage
Poor quarters in Antananarivo	181	(59.73%)
Peripheral quarters in Antananarivo	70	(21.87%)

Cellulitis risk factors	No.	Percentage
NSAD intake without antibiotics	37	(57.81%)
Pregnancy	13	(20.31%)
Diabetes	2	(3.13%)
Use of inadequate antibiotics	12	(18.75%)
Total	64	

Symptoms	No.	Percentage
Pain	320	(100%)
Fever	37	(11.56%)
Anorexia	75	(23.43%)
Important tiredness	25	(7.81%)
Tumour	320	(100%)
Skin or oral cavity fistula	47	(14.68%)

**Cellulitis locations**

Most patients had lower cheek (41.56%) and submandibular (28.12%) cellulitis (Table 2).

Type of cellulitis	No.	Percentage
Localized cellulitis	250	(78.12%)
Non suppurative	141	(56.40%)
Suppurative	109	(43.60%)
Diffuse cellulitis	70	(21.88%)

Table 2: Description of cellulitis locations and percentage of concerned patients

Locations	Left	Right	Total	Percentage
Lower cheek	80	53	133	41.56
Upper cheek	18	21	39	12.18
Submental			15	4.68
Suborbital	10	9	19	5.93
Submandibular	37	53	90	28.12
Masseteric area	5	6	11	3.43
Hemiface	7	4	11	3.43
Nasolabial			2	0.06
Total	157	147	320	100.00

Table 3: Description of responsible permanent teeth and percentage of concerned patients

Teeth	No.	Percentage
38	33	11.83
36-37	54	18.88
34-35	16	5.59
31-33	4	1.39
48	27	9.44
46-47	60	20.97
44-45	19	6.64
41-43	5	1.74
18	3	1.04
16-17	9	3.14
14-15	10	3.49
11-13	8	2.79
28	9	3.14
26-27	21	7.34
24-25	10	3.49
21-23	8	2.79
Total	286	

Table 4: Description of responsible temporary teeth and percentage of concerned patients

Teeth	No.	Percentage
74-75	11	26.19
84-85	20	47.61
54-55	3	7.14
64-65	3	7.14
Other	5	11.90
Total	42	

### Responsible teeth

Permanent teeth 46-47 showed the highest percentage (20.97%) among the patients (Table 3). Concerning temporary teeth, teeth 84-85 showed the highest ones (47.61%) (Table 4).

## DISCUSSION

Twelve percent of our consultations are made of perimaxillary cellulitis of dental origin. It confirms the high frequency of this pathology in the developing countries, in which adequate dental care access is very difficult as in Africa and Madagascar (Yam *et al.*, 2002).

Cellulitis affects adults and children but 54% are made of young people (Table 1). The frequency decreased with age perhaps because old people have more missed teeth than young people. Among these patients, both sex were equally concerned.

Labours and unemployed persons are vulnerable. Probably, the high charge of adequate dental care is the cause of this situation. Those patients can hardly access to a proper dental care. Sixty percent of those patients live in poor quarters in Antananarivo.

In 70% of cases, cellulitis was located in the lower cheek and submandibular (Table 2). In 60% of cases, responsible teeth are represented by lower molars (Table 3 and 4). It is reported that those teeth are confirmed as likely responsible of lower cheek and submandibular locations (Le Breton, 1997).

There is less maxillary cellulitis than mandibular cellulitis. Explanation is given from the difference of vestibule depth (Reychler and Chausse, 1991). Vestibule is deep in maxillary bone and surrounding fibro-mucous tissue stops real cellulitis but entails instead an abscess under periosteum (Le Breton, 1997). In mandibular region, infection spread in soft tissue is facilitated.

Localized cellulitis are more frequent than diffused cellulitis (Reychler and Chausse, 1991). This hypothesis is verified in Present study, because three quarters of Present cases are localized ones. About diffused cellulitis (20% of cases), only half of our patients had fever. Localized infections can become a general infection with bacteraemia. There was no report of any case of infection state of shock.

Pain was the first and the most important symptom followed by swelling. These two symptoms are the alarming symptoms of cellulitis (Le Breton, 1997).

The use of anti inflammatory drug has the reputation to favour cellulitis progress of dental origin. These medicines especially used alone speed up cellulitis development because they stop the immunity mechanism. Pregnancy and diabetes are also found to favour the onset of cellulitis (Reychler and Chausse, 1991; Bado *et al.*, 1997; Aronoff and Bloch, 2003).

## CONCLUSIONS

Cellulitis is frequent and represents 12% of our consultations. Children (13.43%) and young persons (54%) are more affected than the elder ones. Students, labours and jobless persons constitute the vulnerable group.

Pain and swelling are the alarming symptoms of this pathology. Three quarters of cellulitis are localized. The lower molars are likely the most frequent causal teeth. They are responsible of lower cheek and mandibular region cellulitis.

Based on the findings from this study, more attention should be paid to the early detection of cellulitis especially within young patients to avoid further

complications. Also, there is an important need of information and education to insure the well-being of individuals exposed to cellulitis case.

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