



Cervico-Facial Necrotizing Fasciitis: A Ten-Year Clinical Evaluation of 80 Cases in Enugu, Eastern Nigeria

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Abstract

Introduction: The purpose of this article was to evaluate the 80 patients with Cervico-Facial Necrotizing Fasciitis (CNF) amongst 1109 oral and maxillofacial patients seen at the Oral & Maxillofacial surgery department of a Nigerian Teaching hospital.

Patients and Methods: We carried out a 10-year retrospective evaluation of 80 patients with Cervico-facial necrotizing fasciitis seen at the Oral and Maxillofacial Department of the University of Nigeria Teaching Hospital, Enugu, Nigeria from 2004 to 2013. We reviewed all patients who had a diagnosis of cervico-facial necrotizing fasciitis during this period from notes kept in the Records Department. We identified the trends in the number of cases categorized by oral hygiene status, yearly occurrence, age, and sex and treatment outcome.

Result: Eighty cases were recorded, accounting for 7.2% of all oral and maxillofacial cases reviewed. Of the 80 cases, 31 (38.75%) were males, while 49 (61.25%) were females giving a male-to-female ratio of 1:1.6. The year 2013 presented more number of cases (26; 32.5%) and 2006 was the least (1; 1.25%). Patients between the ages of 20 years to 29 years were more affected (18; 22.5%). They were all emergencies and most 71(88.7%) came from rural areas. Poor oral hygiene was evident in all the cases. The treatment of choice was surgical debridement and hospitalization. Five patients (6.3%) were lost.

Conclusion: This study has shown an increasing trend in occurrence of Cervico-facial necrotizing fasciitis with morbidity and mortality surge in Enugu, Nigeria. While emphasis should be on individual oral health care and health-seeking behavior, there is a need also for health care policy makers to re-focus on this morbidly increasing orofacial infection.

Keywords: Necrotizing fasciitis; Clinical evaluation; Enugu nigeria

Introduction

Cervicofacial Necrotizing Fasciitis (CNF) remains a health challenging burden in the developing and underdeveloped nations, mainly due to neglected or untreated and severe dentofacial infections. It was first detected and described in 1871 by Joseph Jones who referenced more than 2600 during the American civil war [1]. The disease was named "Streptococcal gangrene" by Meleny in 1924 and described the condition as a more generalized lesion when he isolated Hemolytic streptococci in 20 cases studied [2]. However, recent studies supported the polymicrobial etiology of the disease and ascribed various names to the lesion which include hospital gangrene, necrotizing erysipelas, Streptococcal gangrene, gangrenous erysipelas, Hemolytic streptococcal gangrene, and suppurative fasciitis [3]. Poverty, immune-compromised infections, lack of adequate awareness on sound oral health care and other poor health conditions are also the major factors contributing to the prevalence of the disease. According to Vinod, the probability of infection occurring at the lower head (face) and neck region is increased as the teeth act as the focus of the infection [4]. It can be said that 90% of the head and neck pyogenic infection have tooth as the causative factor, while the rest 10% may have different aetiology. Thus in all head and neck pyogenic infection, tooth should be considered as the causative factor, unless otherwise proved [5]. The teeth in the jaws have classical location and anatomical criteria and so the clinical presentation is so specific that depending on the character of the infection, one can trace the source and find out which tooth is the culprit. Authors

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Received Date: 21 Dec 2018

Accepted Date: 09 Jan 2019

Published Date: 11 Jan 2019

Citation:

Chukwuneke FN, Okechi UC, Nwosu JN, Onyeka TC, Okoroafor IJ, Akpeh JO. Cervico-Facial Necrotizing Fasciitis: A Ten-Year Clinical Evaluation of 80 Cases in Enugu, Eastern Nigeria. *World J Oral Maxillofac Surg.* 2019; 2(1): 1018.

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Figure 1: One of the female patients with necrotizing fasciitis.



Figure 2: An elderly patient with necrotizing fasciitis.



Figure 3: A debridement procedure in one of the patients.

have expressed different opinion on the role of the co-morbidities as a risk factor in the pathogenesis and progression of the disease. While some are of the opinion that pre existing ill health, co morbid states like Diabetes mellitus, alcoholism, retroviral disease, vascular insufficiency, neutropenia play a vital role in the pathogenesis of the disease, others think otherwise [6-9]. The prevalence and management of CNF as a potentially fatal fulminant disease condition in our environment Nigeria is presently sub-optimal and largely under-reported in dental literature [1]. In recent time, there has been an increasing trend in the occurrence of CNF in our environment. We postulate that Poverty, ignorance, superstitious beliefs in addition to improper health seeking behavior and poor oral health care habits may be a chain reactions causing CNF in our environment. The fact that these aetiological factors and causes of CNF are treatable and modifiable risk factors emphasizes the need for increasing oral health care awareness among the general public by the health policy makers as a first step in the prevention of this ailment.

Materials and Methods

We carried out a 10-year retrospective review of 1109 oral and maxillofacial patients seen at the Oral and Maxillofacial Department of the University of Nigeria Teaching Hospital (UNTH), Enugu, Nigeria. The focus was on the 80 cases diagnosed with Cervicofacial Nectrotizing Faciitis. We recorded and reviewed all the patients during this period from notes kept in the Records department of the Hospital. Relevant information retrieved included patients' oral habits, past medical and drug history, socio-demographic data, onset of symptoms and the treatment outcome. Oral cavities were properly assessed to identify the affected tooth as well as the periodontal tissues using Sillness-Loe plaque index and Sulcus Bleeding Index (SBI). All the 80 patients had the same spectrum of presentation: life threatening cervico-facial infection characterized by aggressive spread of inflammation and necrosis of the surrounding tissues (Figure 1,2 and 3). Clinical and laboratory findings carried out were also noted. Some of the patients also presented with oral lesion characterized by the presence of patchy white plaques and confluent pseudo-membranous mucosa suggesting opportunistic infection with oral candidiasis. We identified the trends in the number of cases categorized by the yearly occurrence and time of presentation, age, and sex and treatment outcome. To study changes in the yearly occurrence, we grouped the cases by the year of presentation and diagnosis while treatment outcome was assessed based on total remission and abatement of the disease.

Results

Most of the patients came from remote rural areas, lived at a subsistence level with little or no formal knowledge and sound oral health care education. Consequently, they were ignorant of the availability of orthodox treatment for their cases and resulted to the use of local herbs and patronizing quacks. Poor oral hygiene was evident in all the cases treated (Table 1). We lost some of the patients due to complications of the spread of the infection to the vital organs such as the brain and the mediasternal region, late presentation and co-morbidity from other systemic diseases such as diabetes and hypertension. Of the 1109 oral & maxillofacial patients recorded within the ten-year study period, 80 (7.21%) cases of CNF were observed (Table 2). Patients between the ages of 20 years to 29 years were more affected (18; 22.5%) while 70 years to 79 years were least (1; 1.25%). The total number CNF patients were 80 while that of the unaffected was 1029. Of the 80 recorded cases, 31 (38.75%) were males; and 49 (61.25%) were females giving a male-to female ratio of 1:1.6. The trends in yearly occurrence shows that more cases of



Figure 4: Patient after debridement and progression of secondary healing.



Figure 5: Patient after total healing and abatement of the disease.

Table 1: Distribution of the oral health status of the patients.

| Oral health status | Male | (%) | Female | (%) | Frequency | (%) |
|--------------------|------|-------|--------|-------|-----------|-------|
| Good | - | - | - | - | - | - |
| Fair | - | - | - | - | - | - |
| Poor | 2 | 2.5 | 1 | 1.25 | 3 | 3.75 |
| Very poor | 29 | 36.25 | 48 | 60 | 77 | 96.25 |
| Total | 31 | 38.75 | 49 | 61.25 | 80 | 100 |

CNF were observed in the year 2013, followed by 2012, 2011, 2010, 2005 with 2006 having the least frequency. The prevalence of CNF amongst the two sex groups were equal in 2004 and 2007 while more amongst females in 2008, 2009 and 2012. We carried out surgical debridement on 60 (75%) of the patients; 23 (28.75%) males and 37 (46.25%) females. Seventeen patients (21.25%); six (7.5%) males and 11 (13.75%) females were mainly treated with antibiotics in addition to tooth extraction (Figure 4). Seventy-one of the patients came from the rural areas with the number of male 25 (31.25%) to female 46 (57.5%) while 9 (11.25%) of the patients came from the urban areas with the number of males 6 (7.5%) to females 3 (3.75%). All the patients presented late and were hospitalized. Five patients (6.3%) were lost due to complication arising from the spread of infection and poorly controlled co-morbidities while the rest had total remission and abatement of the diseases (Figure 5).

Discussion

Necrotizing Faciitis commonly affect the extremities, but can affect any part of the body and when it involves the head and

neck region it is known as cervicofacial necrotizing fasciitis [6]. Cervicofacial necrotizing fasciitis is uncommon, possibly due to highly vascular nature of this area [9,10]. The most common reported etiological causes include dental caries, periodontal disease and pericoronitis with the mandibular second and third molar teeth being the most implicated [10-13]. Poor oral hygiene is therefore a major contributing risk factor to developing CNF as evidenced in our findings. Most of the patients were from lower economic class of the society and live at a substance level with little or no formal education. Some were ignorant of the availability of orthodox management of their cases and resulted to the use of local herbs. Authors have expressed divergent views regarding age and sex distributions. While some findings suggest the rate of occurrence to be more in males others observed that females are more affected [1,9,13-15]. We observed in our study that females were more affected than the males to the ratio of 1:1.6 male-to-females. These findings may not be unrelated to the geographical variations and place of study. The mean age of the patient seen was 59.3 years (29 to 76 years) which is similar to other studies [10,13,14]. Patients between the ages of 20 years to 29 years were more affected (18; 22.5%) while 70 years to 79 years were least (1; 1.25%). This may better be explained in terms of poor oral health care awareness and improper health seeking behaviour regarding oral health amongst the youths. There seems to be an increasing trend in the rate of yearly occurrence of CNF in recent time as observed in this study. The trends in yearly occurrence shows that more cases of CNF were observed in the year 2013, followed by 2012, 2011, 2010, 2005 with 2006 having the least frequency. No satisfactory explanation could better exist with this observation other than the dwindling emphasis on oral health care awareness in Nigerian environment. Poor oral hygiene was evidence in all the cases. This is in line with other observations by some authors [16,17]. Although other sources such as trauma, tonsillar and pharyngeal infections, cervical adenitis, tumour infections, mastoid and salivary gland infections as well as postauricular lymphadenitis may be among the aetiological factor, the major causes include periapical infections of the mandibular molars, pericoronitis and periodontal disease suggesting poor oral hygiene as a modifiable risk factor [16]. Diagnosis of necrotizing fasciitis could be quite challenging, it may be misdiagnosed as it presents with features similar to other odontogenic infections [10,16,18]. The main stay in its diagnosis is a thorough history, adequate knowledge of the clinical presentation, accompanied by advanced radiographic imaging as Computed Tomography (CT) scan and Magnetic Resonance Imaging (MRI) [10,19,20].

Table 2: Trends in the prevalence number of cases seen amongst the 1109 oral & maxillofacial cases within the study period.

| Years | Unaffected male | % | Affected male | % | Unaffected female | % | Affected female | % | Affected % | Frequency of Unaffected | Total % |
|-------|-----------------|-------|---------------|-------|-------------------|-------|-----------------|-------|------------|-------------------------|---------|
| 2004 | 39 | 3.75 | 2 | 2.5 | 41 | 3.98 | 2 | 2.5 | 5 | 80 | 7.77 |
| 2005 | 45 | 4.37 | 1 | 1.25 | 45 | 4.37 | 4 | 5 | 6.25 | 90 | 8.75 |
| 2006 | 30 | 2.92 | - | 0 | 30 | 2.92 | 1 | 1.25 | 1.25 | 60 | 5.83 |
| 2007 | 34 | 3.3 | 1 | 1.25 | 34 | 3.3 | 1 | 1.25 | 2.5 | 68 | 6.61 |
| 2008 | 60 | 5.83 | 3 | 3.75 | 59 | 5.73 | 1 | 1.25 | 5 | 119 | 11.56 |
| 2009 | 43 | 4.18 | 2 | 2.5 | 47 | 4.57 | 0 | 0 | 2.5 | 90 | 8.75 |
| 2010 | 48 | 4.66 | 3 | 3.75 | 53 | 5.15 | 5 | 6.25 | 10 | 101 | 9.82 |
| 2011 | 59 | 5.73 | 1 | 1.25 | 51 | 4.95 | 8 | 10 | 11.25 | 110 | 10.69 |
| 2012 | 68 | 6.61 | 10 | 12.5 | 79 | 7.68 | 9 | 11.25 | 23.75 | 147 | 14.28 |
| 2013 | 76 | 7.39 | 8 | 10 | 88 | 8.55 | 18 | 22.5 | 32.5 | 164 | 15.94 |
| Total | 502 | 48.74 | 31 | 38.75 | 527 | 51.26 | 49 | 61.25 | 100 | 1029 | 100 |

Table 3: Recorded treatment methods adjusted by sex.

| Recorded Treatment Method | Male (%) | Females (%) | Freq. (%) |
|------------------------------------|------------|-------------|------------|
| Surgical debridement | 23 (28.75) | 37 (46.25) | 60 (75) |
| Antibiotics medications/Extraction | 6 (7.5) | 11(13.75) | 17 (21.25) |
| Management of co-morbidity | 2 (2.5) | 1 (1.25) | 3 (3.75) |
| Total | 31 (38.75) | 49 (61.25) | 80 (100) |

Treatment outcome is often hampered by chain reactions of events and they include; presence of co-morbid conditions, late surgical intervention and delayed hospitalization, aggressive spread of infection to the mediastinal and thoracic region, polymicrobial nature of the infection and inappropriate diagnosis and treatment procedure [1,17]. Consequently we lost 5 patients. There is increasing yearly occurrence of CNF in our environment due to odontogenic infection caused by poor oral hygiene. In our environment patients presents late when management challenges and limited treatment options results in high mortality rate. The fact that this is a modifiable and preventable risk factor emphasizes the need for oral health care awareness campaign and programme of oral health education among the populace as a first step to prevention and early presentation of dental infections for proper treatment.

Acknowledgement

We would like to acknowledge Rev. Christian Okoye dental technologist with the Federal College of Dental Technology and Therapy for his assistance in the collection of data at the department of Oral & Maxillofacial Surgery, University of Nigeria Teaching Hospital Ituku-Ozalla.

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