

# Reviewing trends in the incidence of cancrum oris in Ibadan, Nigeria

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## Summary

The objective of this clinic based retrospective study was to review the trends in the incidence of cancrum oris at the Dental clinic of the University College Hospital, Ibadan, Nigeria. Records of children aged 1 to 16 years diagnosed as having cancrum oris between 1st of January 1986 to 31st December, 2000 were reviewed.

Of the six thousand three hundred and ninety (6390) children seen within the period of study, 45 had cancrum oris with the modal age been 3-5 years and the mean age was  $4.2 \pm 2.7$  years. There was a declining trend in the proportion of children presenting with the disease at five yearly interval within the period of study, although malnutrition was still a common factor in all the children.

**Keywords:** *Cancrum oris, Incidence, Ibadan.*

## Résumé

L'objet de cet étude rétrospective située dans une clinique est de réexaminer les tendances dans la fréquence d'oris cancrum dans un cabinet dentaire du Collège Hospitalo-Universitaire, Ibadan, Nigeria.

Dossiers des enfants âgés de 1 à 16 ans diagnostiqués étant atteints d'oris cancrum entre 1<sup>er</sup> janvier 1986 au décembre 31 2000 ont été passés en revue. Entre six mille trois cents quatre vingt dix (6390) enfants vus pendant la période de cet étude, 45 était atteint d'oris cancrum avec la tranche d'âge modal entre 3-5 ans et l'âge moyen était  $4,2 \pm 2,7$  ans. On a remarqué une baisse dans la tendance de la proportion des enfants atteints de cette maladie tous les cinq ans pendant la durée de cet étude, quoique la sous-alimentation soit encore une facteur fréquente chez tous les enfants.

## Introduction

Cancrum oris also known as noma<sup>1</sup>, is a devastating infectious disease, which destroys oral soft and hard tissues (Figs. 1 and 2). Most sufferers are under six years of age with 70-90% of them dying and the survivors being usually disfigured for life<sup>2</sup>.

Two and three centuries ago, cancrum oris was well known in Europe and North America<sup>3</sup> but it is now virtually non-existent in the developed countries as a result of drastic improvement in nutrition and hygiene. In contrast cancrum oris is still frequently seen in the poorer parts of some developing countries of Sub-Saharan African<sup>4</sup>. The frequency is estimated to be between one and seven cases per 1000 and may be as high as 12 cases per 1000 in severely affected communities<sup>5</sup>.

Necrotizing ulcerative gingivitis has been suggested to be an important antecedent lesion to cancrum oris<sup>4,6,7,8</sup>. A readily testable hypothesis has similarly been proposed which suggests that in the presence of certain specific micro-organisms, any mucosal ulcer and not only acute ulcerative gingivitis, is potentially capable of evolving into cancrum oris especially in a malnourished immunosuppressed child<sup>1</sup>.

It has been estimated that as many as half a million children in the developing countries are victims of cancrum oris and

that over 100,000 children aged 2-6 years contract the lesion every year<sup>9</sup>. A number of studies on cancrum oris have been conducted in Nigeria<sup>6-12</sup>. Table 1 shows the incidence rates as reported by various authors at different times in the country. One of the studies reported a higher prevalence of the lesions in the northwestern part of the country relative to the southwestern part<sup>9</sup>. The present study aims at reviewing trends in the incidence of the lesion at the dental clinic of the University College Hospital Ibadan since January 1986 to December 2000.

## Materials and methods

A clinic based study was carried out through a retrospective review of records of children aged 1 to 16 years diagnosed as

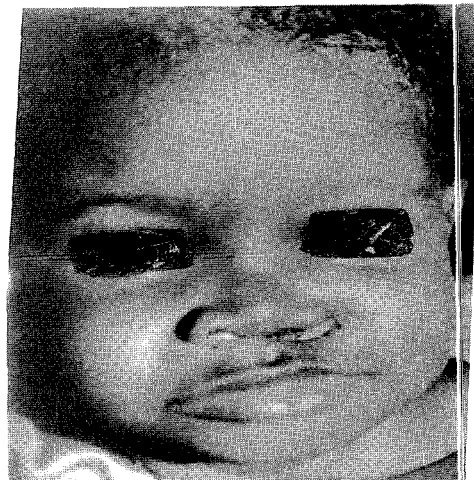


Fig. 1 Shows destruction of the left nasal bones as a result of spread of cancrum lesion in the oral cavity.

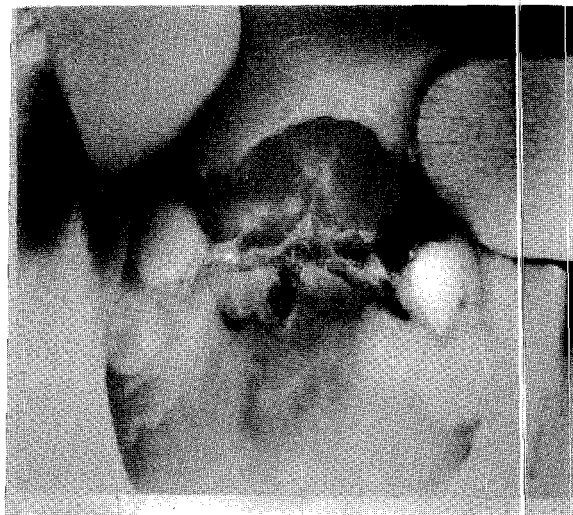


Fig. 2 Extensive destruction of premaxilla in the same patient.

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having cancrum oris between 1st of January 1986 and 31st of December 2000 at the Dental center University College Hospital Ibadan, Nigeria. Information extracted from the oral diagnosis clinical records included the age, sex, social status, evidence of malnutrition, and childhood illnesses suffered by the children just prior to presentation. Information on immunisation status of all the children could not be ascertained, as there was inconsistent recording of this information in some of the records. The

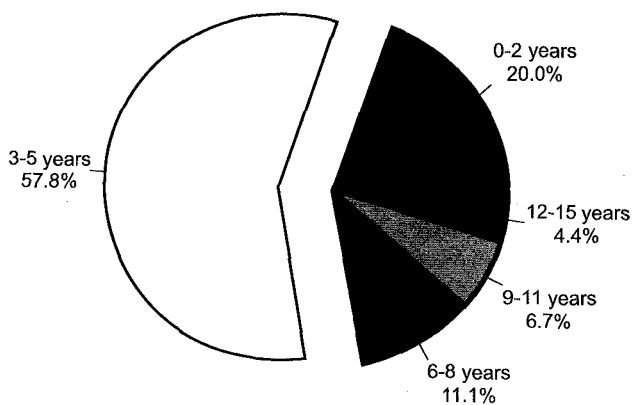


Fig. 3 Age distribution of cancrum oris patients

number of the children who visited the dental center during the period of study was noted. The data obtained were analysed to generate frequency distribution tables and cross tabulations of variables. The period of study was grouped into three five-year intervals i.e. 1986 – 1990; 1991 – 1995; 1996 – 2000 for easy and meaningful analysis.

**Results**

Six thousand three hundred and ninety (6390) children, in the 1–16 year age range were seen and treated for various condi-

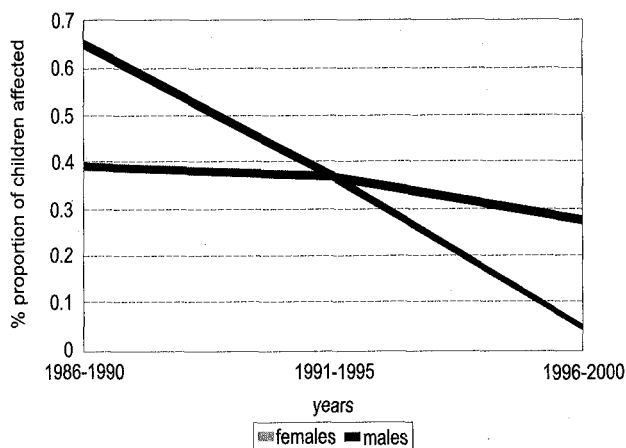


Fig. 4 Five-yearly distribution of cases of cancrum oris

tions within the study period. Of these 45 children had cancrum oris (Table 2). The incidence rate of cancrum oris in the group was therefore 7.0 cases per 1000. The age range among cancrum oris patients was 1– 12 years with mean age at 4.2 + 2.7 year. The modal age of occurrence was found to be between 3 and 5 years (Fig. 3). The male to female ratio was 1.8:1. There were 24

Table 2 Gender distribution of children seen within the period of study

	Male (%)	Female (%)	Total (%)
No with cancrum oris	28(0.28)	17(0.54)	45(0.70)
No without cancrum oris	3185(99.13)	3160(99.46)	6345(99.30)
Total	3213(100)	3177(100)	6390(100)

$\chi^2 = 2.578, df = 1, P > 0.05$

cases between 1986 – 1990; 13 cases between 1991 – 1995; and 7 cases between 1996 – 2000 translating to a rate of 1.04%, 0.74%, and 0.32% respectively. Figure 4 shows the proportion-

Table 1 Incidence of cancrum oris by previous various authors

Authors	Period of review	Age range seen (years)	No. of Children with cancrum oris	Total No of children	Incidence rate
Aderinokun 1990	Jan-Dec 1985	0 – 15	–	–	12.77% (cancrum oris + AUG)
Osuji 1990	August 1983 – July 1984	1 – 16	5	1,359	0.37%
Otuyemi & Adetunji	Jan – June 1998	0 – 15	10	633	1.58%
Otuyemi et al 1998	–	0 – 15	25	2462	1.02%
Idigbe et al 1998 Southwest	Oct. 1996 – Apr. 1998	< 15	10	8.9million	0.0001%
Northwest		<15	129	3.5 million	0.003%
Oginni et al	Jan 1982 – Dec. 1996	2 – 16	142	8481	1.7%

AUG = Acute ulcerative gingivitis.

**Table 3** Types and frequency of childhood illnesses accompanying cancrum oris

Years	No.	Measles	Malaria	Chicken pox	Cough	No record	Unspecified
1986 – 1990	24	9	5	2	4	3	1
1991 – 1995	14	3	6	–	2	1	2
1996 – 2000	7	2	3	–	1	1	–
Total	45	14(31.11%)	14(31.11%)	2(4.44%)	7(15.56%)	5(11.11%)	3(6.67%)

ate distribution of cancrum oris cases at five-yearly intervals by the sexes. It indicates a declining trend in the proportion of children presenting with the disease for both males and females.

Records showed that all the children with cancrum oris had evidence of malnutrition as indicated by varying degrees of clinical signs including oedema of the lower limbs, angular stomatitis, discoloured and sparse fluffy hair on the head. There were also records of poor oral hygiene with gross accumulation of plaque and calculus.

As revealed in Table 3, measles and malaria were the most frequent childhood illnesses suffered by the children prior to presentation. Fewer of the children were reported to have had measles as the years progressed.

### Discussion

Cancrum oris is a public health problem in the developing countries. It is found mainly in Africa, even though none of the least developed countries of the world can be excluded<sup>10</sup>. There have been many epidemiological studies on cancrum oris in different parts of the world and particularly in Nigeria<sup>6-12</sup>. The overall incidence rate recorded in the present study is in agreement with the incidence rate estimated for some countries in sub Saharan Africa<sup>1</sup>. Higher prevalence was reported in the north west of Nigeria compared to the southwest<sup>9</sup>. This was attributed to poorer living conditions of the children in the northwest as compared to the southwest. From this review, the highest incidence rate was recorded between 1986–1990 Fig. 4, and a progressive decline was observed over the years. This observation is in agreement with the study of Oginni *et al*<sup>12</sup>, who reported the highest number of cases between 1986 – 1987. This period was found to coincide with the introduction of structural adjustment program in Nigeria. A period characterised by severe inflation and depreciation of the local currency. This may have reduced the nutritional status of Nigerian children as a result of reduced socio-economic status of parents.

The modal age of 3-5 years in the present study is not different from earlier reports and confirms the fact that most sufferers of cancrum oris are under six years of age<sup>2</sup>. These groups of children are referred to as the weakest and defenseless members of society especially in the presence of malnutrition.

Poverty is an important risk factor for the lesion<sup>2,13</sup>. Malnutrition is usually a consequence of poverty and chronic malnutrition is one of the predisposing factor<sup>13</sup>. Interactive association between multiple risk factors responsible for cancrum oris have been noted especially the synergism between malnutrition and illness. In the present study, malnutrition was recorded in all the children, with over 80% of them having suffered from childhood illnesses just prior to presentation. Measles and malaria were the most frequently suffered illnesses, although the frequency of measles was found to have decreased over the years. These infections coupled with malnutrition have been documented to lower the innate immune response. Lowered immune response, in turn can cause mucosal lesions that may

then constitute the portal of entry by a trigger organism<sup>1</sup>. From the results of this study, it has been firmly established that there is a definite decline in the number of fresh cases seen as well as the relative proportion of cancrum oris with other lesions. This observation has generated many questions in the minds of researchers in this part of the world especially in the face of dwindling economic power and increasing poverty.

It is worthy of note that there is a simultaneous decline in the cases of measles seen in the present study along with a general increase in immunisation coverage within the society. One may therefore safely infer that improved immunisation coverage is responsible for the observed decline. This observation is supported by the finding of a study by Idigbe *et al*<sup>9</sup>, in which the overall immunisation coverage for six childhood diseases was recorded at between 60–80% in the southwest, whereas in the Northern part of Nigeria the immunisation coverage was much lower for the same period.

The present study shows a higher predilection of cancrum oris for males than females even though the observation was not statistically significant. This finding differs from earlier reports where both genders were reported to be equally affected<sup>14</sup>.

In conclusion, Cancrum oris causes a lot of facial mutilation as one of its post infection complication. It is therefore a disease that should best be prevented than cured. Its prevention will require measures that address the declining economic status which manifest as poor sanitation, overcrowded living conditions and a decline in the nutritional status of children. Another preventive measure is the continued campaign for immunisation of all children below the age of six.

### References

1. Enwonwu CO. Noma: a neglected scourge of children in sub Sahara African. Bulletin of the World Health Organisation. 1995; 73: 541 – 545.
2. Leclercq M. Mona contact. Cancrum oris network action. The face of poverty. WHO Publication 1, 1999.
3. Tempest MN. Cancrum oris. Brit J Surg 1966; 53: 49 – 969.
4. Barmes DE, Enwonwu CO, Leclercq MH et al: The need for action against orofacial gangrene (Noma). Tropical medicine and international health. 1997; Editorial 2: 1111 – 1114, December.
5. World health Organisation. A disease such as Noma should not exist. Noma contact. WHO publication 1997; 1 – 2 October.
6. Osuji OO. Necrotising ulcerative gingivitis and cancrum oris (Noma) in Ibadan, Nigeria. J PPeriodontol 1990; 61: 769 – 772.
7. Obiechina AE. Cancrum oris: Growing need to highlight a

- grave condition. *Africa Health*. 1991; 13: 35 – 36.
8. Otuyemi O, Ogunbodede E, Adetunji T *et al*. A study of acute necrotising ulcerative gingivitis in Nigerian children. *Pediatric dental Journal*. 1998; 8: 133 – 137.
  9. Aderinokun GA. Characteristics of children attending the Dental clinic (UCH), Ibadan: An indication of community Awareness and Attitude to Oral health. *Nig. Dent J*. 1990; 9: 28 –32.
  10. Otuyemi O and Adetunji T. Oral health problems in Nigerian children – A clinical study of 633 patients seen at Ile-Ife, Nigeria. *Nigerian Medical Practitioner* 1992; 22: 3 – 7.
  11. Idigbe EO, Enwonwu CO, Falker WA *et al*: Living condition of children at risk for noma. Nigerian experience. *Oral Dis* 1990; Apr. 5: 156 – 162.
  12. Oginni FO, Oginni AO, Ugboko VI *et al*: A survey of cancrum oris seen in Ile-Ife Nigeria. *Int. J paediatric Dent* 1999 Jun; 9: 75 – 80.
  13. Leclercq M: Can dentistry tackle inequality? The challenge of noma. *FDI world*. 1999; 2/99: 9 – 13.
  14. Enwonwu CO, Falker WA, Idigbe EO *et al* Noma (cncrum oris): Questions and answers. *Oral diseases*. 1999; 5: 141 – 149.