

Acute Oral Ulceration in Urban Children: Observable Characteristics in the History of Presentation

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ABSTRACT

Objective: To elicit and present common characteristics in the history of presentation of children manifesting clinically with acute oral ulcerative lesions for the first time.

Methods: Prospective study conducted for children who manifested clinically with acute oral ulcerative lesions (oral ulcers and erosions) for the first time at the Oral Surgery clinic of Central Hospital Benin, Edo State Nigeria. Data were described using frequency distribution tables.

Results: Thirty children fulfilled the inclusion criterion. Majority (53%) were in the age range of 9 months to 2 years and sex predilection was in favour of females at 63%. Twenty three percent of children drew the attention of their care givers by complaining of sore gums. Predominant site was the gingiva of isolated tooth or teeth in 20%; all standing teeth in 47%; and in combination with other oral mucosal sites in remaining 33%. All children were observed to be on medication for one or more common childhood illnesses as at the time of visitation.

Least number of different drugs administered within the year or since the child was born was two while the highest number was 12. Antibiotics and antimalaria were most frequently administered.

Ninety percent of these children were in the care of their mothers. All caregivers were gainfully engaged.

Conclusion: Common characteristics of urban children manifesting with oral ulcerative lesions was they were majorly less than 2 years of age, suffered common childhood illnesses resulting in frequent ingestion of antimalaria and antibiotics bought with or without prescription.

Keywords: common characteristics, acute ulcerative lesions, drugs.

INTRODUCTION

Acute oral ulcerative lesions which include ulcers and erosions are some of the clinical presentations of paediatric oral lesions. Others include macules, vesicles, colour changes and alteration in the size of the oral tissues (Yanez et al., 2016). Oral ulceration is damage to both epithelium and lamina propria of oral

mucosa while mucosal erosions involve loss of only the superficial layers of the oral epithelium (Leao et al., 2007; Mortazavi et al., 2016).

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Paediatric oral soft tissue lesions which include aphthous ulcers, traumatic ulcerations, herpes simplex virus (HSV) infection, acute necrotizing ulcerative gingivitis (ANUG), geographic tongue and candidiasis are some of the causes of the clinical manifestation of oral ulcerative lesions (Amadori et al., 2017).

Infectious ulcers may be bacterial (syphilitic, tuberculous, ANUG and so on), virus (herpetic gingivostomatitis, shingles), fungal (Bruce & Roger, 2003; Elfering et al., 2017). It could also result from immune dysfunction (aphthous), stress-induced or drugs (Folayan, 2004).

The atrophic type of pseudomembranous candidiasis which is a more common type of candidiasis is characterized by painful, atrophic, erythematous mucosa. Small vesicles and erosions can be seen in severe cases (Unur et al., 2015). Recurrent aphthous ulcers (RAU) is characterized by painful oral ulceration recurring with varying frequency (Unur et al., 2015). Herpes Simplex Virus Type 1 (HSV-1) is a common viral precipitant of oral ulcers. It presents with widespread small superficial ulcers of the oral mucosa. The gingiva is often inflamed and ulcerated, giving rise to features similar to acute necrotizing ulcerative gingivitis (Leao et al., 2007). Although, HSV-1 has been previously regarded as a disease of children between the ages of 6 months to 6 years (Beltagy et al., 2019), it is now known to occur as well in the second and third decades of life (Bunzli et al., 2004).

Oral ulcers have been known to occur in children of both high and low socioeconomic status; RAU is prevalent among children from high socioeconomic status (Dhanuthai, 2007). In Nigeria, ANUG was found to be a disease of children from the low socioeconomic group whose ages ranged from 3 to 10 years (Enmonwu et al., 1999). The pain and discomfort of oral ulcerative lesions have been reported to be associated with reduced quality of life (Kurklu-Gurleyen, 2016).

It has been reported that oral ulcerative lesions are indicative of underlying local or systemic event (Keels, 2017). Systemic disease and illnesses such as measles, malaria and secondary anaemia which are stressful conditions and also known to compromise immune reactions have been observed as important predisposing factors in ANUG in Nigerian children (Emslie, 1963; Enmonwu et al., 1999). Primary herpetic gingivostomatitis which has been reported as the most common viral infection in the mouth (Davies and Epstein, 2010) and systemic diseases like malaria have been known to be associated with it (Folayan et al., 2014). Conditions such as pseudomembranous candidiasis have also been reported to be associated with predisposing factors such as prolonged antibiotics and steroid therapy, local trauma, malnutrition, endocrine disorders, and immunosuppressant (Rodloff, 2011).

The population of this study were urban children. Urban living has important health benefits, such as better access to health care, education, and social amenities (McMichael 2002; Vlahov & Galea 2002). With increasing urbanization, it has been observed that a proportion of urban dwellers live in disadvantaged neighbourhoods, (Antai & Moradi 2010) and evidence suggests, that living in socially disadvantaged areas is associated with increased risk of mortality (Bosma et al., 2001). Ultimately though, it is the multiplicity of socioeconomic factors at both the individual and community levels that shape the health of the children in the urban environment (Antai & Moradi 2010).

Oral ulcers are known to occur in children of both high and low socioeconomic status, and since urban children have access to healthcare, and social amenities, there is a need to know if there is a common characteristic in urban children that present with these ulcerations.

The objective of this study was to elicit and present the common characteristics in the history of presentation of the children manifesting clinically with acute oral ulcerative lesions for the first time at the Oral Surgery clinic of Central Hospital Benin, Edo State Nigeria.

MATERIALS AND METHODS

This was a prospective study of cases of acute oral ulceration in children. Data was collected for a period of time between October 2015 to October 2020. The setting for this study was the Oral and Maxillofacial Surgery clinic of Central Hospital Benin. The population of study was of children (or the accompanying person for children who cannot express themselves) who complained of a sore or wound in the mouth.

Patient selection:

Children whom the accompanying persons admitted that it was the first time child manifested with oral ulcerative lesion.

Inclusion criterion:

Children presenting with acute ulcerative lesions.

Exclusion criteria:

- Acute ulcerative lesions as a result of trauma (falls, fights, self-inflicted from placing objects in the mouth);
- Chemical burns (topical use of medications, ingestion of caustic substances);
- Recurrent oral ulcers;
- Chronic ulcers.
- Patients on medication for chronic illnesses;
- Patients with systemic illnesses/ diseases;
- Associated body ulcers.

Ethical Clearance:

Ethical clearance (HA. 737/75) for this study was obtained from the ethics committee of the Ministry of Health, Edo State.

Data used for this study were collected for child and for accompanying person (caregiver).

Data collected for the children were: age, gender, presenting complaint of child to care giver, oral location of ulcerative lesion, position of child in the family, common childhood illnesses, medication given (type and frequency).

Data of observable characteristics in history of presentation:

- History of common childhood illnesses for a period of one year or up to the year in children less than one year.
- Data of their drug history was collected from their mothers or primary care giver for a period of one year or up to the year for children less than one year.

Method of collection of data of observable characteristics in history of presentation:

The primary care giver was encouraged to settle down and think back carefully for the past one year or for a child of less than one year, since the child was born, of any condition the child had come down with and write it down; or it was written down for them on a sheet of paper.

In addition, all the known drugs the child had been given were written down.

For them to recall and for it to be easier for them, they were asked to indicate how many bottles of such drugs they had bought.

Were there bottles of medicine in the house before?

How many illnesses was a bottle used for?

If there were tablets or capsules, how many and if they could remember the dosage.

Were there injections given? What drug?

And how many times.

For the accompanying parent/guardian that was not the primary care giver, they were asked and assisted when the need arose to call the primary care giver on phone to get these details.

Data collected from accompanying person were: relationship to child, educational level of caregiver and employment status of caregiver.

Treatment given:

Treatment: non-pharmacologic and pharmacologic

Non-pharmacological

Counseled:

- Oral hygiene instructions (warm salt mouth bath and gentle tooth brushing with cotton wool for very young children, very soft tooth brush for older children: reason being that the oral mucosa was tender);
- Nutrition, oral care, appropriate fluid intake (Stoopler & Al Zamel, 2014): Banana; boiled egg; groundnut paste. This was suggested to the mothers due to their nutritional value of protein and iron (Schultz-Hautd & From, 1961). In addition, the blunt nature of these foods will not traumatize the oral mucosa.

Pharmacological

Use of medicine:

Stop current medicine if it has been on-going or frequently taken.

The patients were advised to stop antibiotics that were ongoing as they were on it frequently and for those not prescribed or wrong dosage.

Metronidazole syrup 5ml 8-hourly for 5 days was prescribed for under-fives while tablets 100mg for the same duration was given to 6years and above. This was if they were not already on metronidazole.

Follow-up:

- phone call and WhatsApp,
- visit to clinic.

Assess outcome for 3 days; then weekly or until symptoms are resolved and gingival health and function restored. Clinical photographs were taken at various stages to monitor progress.

Data analysis:

The Microsoft Excel 2010 software was used to compile and analyze data.

Data was organized and presented as frequency distribution tables

RESULTS

Thirty children met the inclusion criterion. Majority (53%) were in the age range of 9 months to 2 years, while the sex predilection was in favour of females at 63%. Eighty percent of these children were 6 years and below (table 1). Ninety seven percent (29) children were sent to the Dental center from the paediatric unit. One child (3%), the 11-year-old visited the clinic directly from home.

Table 1: Demographic characteristic of children

Variable	Number of children (n)	Percent (%)
Gender		
Male	11	37
Female	19	63
Age		
9months-2years	16	53
>2years-4years	6	20
>4years-6years	2	7
>6years-8years	5	17
>8years-10years	-	-
>10years-12years	1	3

All children were observed to be on medication for one or more common childhood illnesses such as malaria, catarrh or cough as at the time of visitation. None of the accompanying persons admitted in the history of presenting complaint that the oral ulcerative lesions were preceded by vesicles (explained to them by asking if there was a boil in the mouth that burst into the sore or wound). All patients experienced resolution of ulcers without any scarring within 2 weeks of consultation and management.

The predominant site was the gingiva of isolated tooth or teeth in 20%; all standing teeth in 47%; and in combination with other oral mucosal sites in the remaining 33% (Table 2). Some of the children (23%) drew the attention of their care givers to their mouths by complaining of sore gums, this was closely followed by drooling of saliva in 20% of children. Refusal to brush the teeth was what attracted the care giver to the ulcerative lesion in 3% of the children (Table 2).

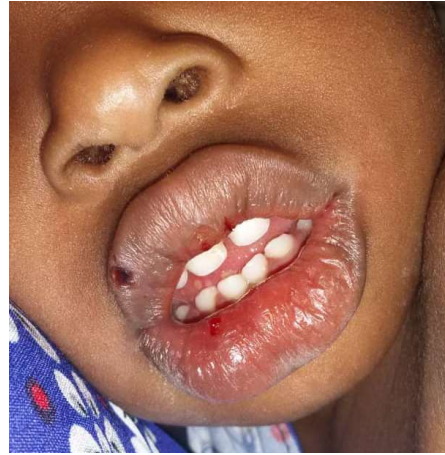


Figure 1a: ulcerative lesions on tongue and gingiva Figure 1b: ulcerative lesions on upper and lower lips; tongue and gingiva



Figure 1c: ulcerative lesions of the gingiva.

Observable characteristics in history of presentation:

- Table 3 shows the position of the child in the family. It can be observed that 80% of these children were first born and 9 months to 2 years old children made up 43%.
- All children were on a combination of drugs on presentation to the dental clinic.
- The least number of drugs administered within the year or since the child was born for children of 9

months to two years old was two while the highest number was 12 (Table 4).

- The medicines given are listed on table 5. Care givers bought medicines according to the illnesses therefore, names of some medicines were not known by them.
- The frequency of the administration of these medicines are listed on table 5. Antibiotics and antimalaria were the medicines given with the highest frequency.

- These drugs were reported to have been taken as applicable as often as the child had any of the conditions listed on table 6.
- All children had experienced some common childhood illnesses (Table 6) severally.
- Ninety percent of these children were in the care of their mothers.
- At least 57% of care givers had secondary education. They were in the majority.
- All care givers were gainfully engaged: 50% employed and the other 50% owning businesses. This indicated that money was readily available.

Table 2: Distribution of lesion and presentation of complaint by child to caregiver of oral ulcerative lesions

Variable	Frequency (n)	Percent (%)
Distribution of ulcers		
Localized		
Gingiva of isolated tooth/teeth	6	20
Gingiva of all standing teeth	14	47
Gingiva and tongue	4	13
Generalized (mucosa of oral cavity including the lips and gingiva)	6	20
Presenting complaint of child to care giver		
Drooling saliva	6	20
Drooling blood-stained saliva	2	7
Bleeding gums on tooth brushing	2	7
Sore gums	7	23
Pain	2	7
Cries frequently	3	10
Refuses food on account of pain	2	7
Refuses tooth brushing	1	3
Does not accept parent looking into the mouth or touching the mouth	3	10
Touching/pointing to the mouth frequently	2	7

Table 3: Distribution of children according to birth rank among siblings

Age	Birth rank among siblings			
	1 st n (%)	2 nd n (%)	3 rd n (%)	4 th n (%)
9months-2years	13(43)	2(7)	- (0)	1(3)
>2years-4years	5(17)	- (0)	1(3)	- (0)
>4years-6years	2(7)	- (0)	- (0)	- (0)
>6years-8years	4(13)	1(3)	- (0)	- (0)
11years	- (0)	1(3)	- (0)	- (0)
Total (n/%)	24(80)	4(13)	1(3)	1(3)

Table 4: Frequency of the number of medicines administered within the year or since child was born.

Number of medicines	Number of children within the age range				
	gmths-2years (n=16)	>2years-4years (n=6)	>4years-6years (n=2)	>6years-8years (n=5)	11years n=1
2	4			4	
3	2	1			1
4	2	1	2		
5	5	1			
6		1			
7	1	1			
8	1	1			
11					
12	1			1	

Table 5: Frequency of administration of medication

Medication	Frequency of administration
Unknown medicine	
Anti-malaria	44
Antibiotics	20
Cough syrup	16
Worm expeller	4
ORT	4
Blood tonic	1
Known medicine	
Artesunate	3
Promethazine	1
Augmentin	39
Ampiclox	1
Paracetamol	84
Vitamin C	12
Multivite	8
Lonart	32
Rhinitol	1
Amaquine	1
B-complex	5
Piriton	1
Septrin	16
Cefuroxime	3
Albenazole	1
Brustan N	5
Pican	4
Quinine	3
Diclofenac	1
Ibuprofen	2
Erythromycin	1
Coatem	14
Ampicillin	1
Amartem	2
Amoxicillin	41
Flagyl/Metronidazole	7
Camosunate	1
Fortum	6
Zinnat	1
Coflex	2
Fansidar	1
Folate	1

DISCUSSION

The common characteristics in the history of presenting complaint of urban pediatric patients manifesting with oral acute ulcerative lesions for the first time was the objective of this study. A female preponderance to oral ulceration as observed in this study has been noted in adult studies on oral ulceration by Amoateng & Donkor (2004). Hormonal changes and stress in females have been implicated (Scully, 2013; Azodo & Erhabor, 2018). The reverse was the case in a study carried out across all age groups on oral ulceration by Omoregie & Okoh (2013).

Children within the ages of nine months to two years made up 53% of this study and children from nine

months to six years made up a total of 80% in this study. HSV-1 causing Primary Herpetic Gingivostomatitis has been regarded as a disease of children between the ages of 6 months to 6 years (Beltagy et al., 2019). Primary herpetic gingivostomatitis is the most common pattern of symptomatic *herpes simplex virus* (HSV) infection. Over 90% of cases are caused by HSV type 1, and the remaining are caused by HSV-2 (Chen et al., 2010). Peak prevalence has been reported to occur between 2 and 3 years (Neville et al., 2002). The general course of the infection is 10-14 days (Faden, 2006).

Table 6: Frequency of purpose of medication according to childhood illness

Childhood illness	Number of children
Catarrh	13
Cough	19
Malaria	27
Diarrhoea	3
Teething	5
Infection	3
Falls	4
Ear pain	3
Lack of appetite	2
Vomiting	3
Fever	17
Constipation	4
Typhoid	1
Convulsion	1
Tonsillitis	1
Throat pain	1
Post immunization	1

Table 7: Distribution of characteristics of accompanying persons

Accompanying person	Frequency (n)	Percent (%)
Relationship with child		
Mother	27	90
Father	2	7
Grandmother	1	3
Level of education		
Primary	3	10
Secondary	17	57
Tertiary	10	33
Profession		
Business	15	50
Gainfully employed	15	50

The pain and discomfort of oral ulcerative lesions in addition to its associated difficulty in feeding has been known to result in dental consultation (Kurklu-Gurleyen et al., 2016; Oyetola et al., 2018). The complaint of the children to their care givers and observation made by them of their children confirms these findings. Irritability, nausea and anorexia are some of the symptoms of primary herpetic gingivostomatitis (Mortazavi et al., 2016). Drooling of saliva and blood-stained saliva; crying, refusal of food and touching of the child's mouth were some of the observations made by the care givers that drew their attention to the child's plight and prompted consultation.

The gingiva was affected in all children in this study. The involvement of the gingiva was either isolated to a tooth, all teeth or in combination with other oral mucosal surfaces. This involvement of the gingiva as a common site of oral ulcerative lesions in children has also been noted by Ojo et al., (1994). In primary herpetic gingivostomatitis, oral manifestations consisted of generalized gingivitis followed, after 2-3 days, by pin-headed vesicles that readily rupture and

give rise to painful ulcers covered by a yellowish pseudomembrane. They often coalesce into larger ulcers. Keratinized and nonkeratinized mucosa can be affected, and the number of the lesions are quite variable (McCullough and Savage, 2005). Mothers and caregivers of the children in this study admitted during history taking that they did not observe any preceding vesicles before their attention was drawn to the ulcerative lesions. In many cases, punched-out erosions along the free gingival margin have been reported in primary herpetic gingivostomatitis (Neville et al., 2002).

The diagnosis of primary herpetic gingivostomatitis is usually made by clinical presentation and history (George & Anil, 2014). The majority (80%) of the children were between 9 months to 6 years old; the presence of generalized clusters of ulcerative lesions surrounded by erythema and the history of fever (malaria, cough and catarrh were the most common illnesses in these children), irritability, refusal of food lead to an impression of primary herpetic gingivostomatitis (Folayan et al., 2014; George & Anil,

2014). In addition, healing was without scarification with no patient presenting with persistent ulceration after 2 weeks.

As regards position in the family, 80% of children in this study were first born. It has been observed that the care and attention given to the first child in relation to hospital visitation in comparison with other children may have a bearing on this finding; this may be due to inexperience, less confidence and uncertainty on the eventual outcome of the condition that trigger the care seeking behaviour or may be due to more attachment and observation of the health of the first child (Osaghae, 2018). In addition, this lack of maternal experience in child care and lack of information of health information may predispose first-born children to increased risk of morbidity (El-Zanaty & Way 2009). One of the common characteristics in the history of presentation of these children was that they were all on medication at the time of presentation. The reason given for this medication was due to one childhood illness or another. It has been observed that the first response by most families to many illnesses in their children is the use of non-prescribed drugs (Zaki et al., 1999) and self-medication is observed to be widespread in urban children in Nigeria (Fadare et al., 2015). The conditions for which the drugs were used were noted to include fever, diarrhoea, vomiting, cough and upper respiratory tract infection (Zaki et al., 1999; Sule, 2003; Oshikoya, 2007). Measles, respiratory tract infections and gastroenteritis are recognized by WHO (Bull WHO, 1995; Bryce et al., 2005) as the major causes of under-five morbidity and mortality either as a single entity or in combination. Acute febrile infections such as malaria, measles and herpes simplex virus infection act as stressors that enhance adrenocortical secretions (Cornil et al., 1968). Plasma cortisol level is higher in malnourished children than well fed children (Platt and Stewart, 1967; Rao et al. 1968); an already elevated cortisol level is further elevated in a malnourished child (Cornil et al., 1968). This excessive cortisol produces a decrease in mitotic activity of epithelial tissue, while reduced synthesis of collagen inhibits proliferation and migration of fibroblasts as well as diminishes the synthesis of connective tissue substances (Fisher & Maibach, 1971). As was noted in this study, other illnesses in these children under review were malaria, trauma, teething among others. The initial symptoms of acute herpetic gingivostomatitis are fever, nausea, anorexia, and irritability (McCullough and Savage, 2005) which may have been assumed to be malaria or even teething and medicines for malaria and or teething will be taken by the children. It was observed that medicines were also given after immunization.

As previously stated, children below the age of six years made up 80% of this study's population. A study on Nigerian children has shown that children aged 5 years

and below constitute the bulk of patients attending the Paediatrics out-patient's clinics in Nigeria (Sule, 2003). The age of children that were administered the highest number of drugs fell into the 9 months to 2 years and greater than 2 years to 4 years age groups. In Nigeria, it is possible to buy prescribed and non-prescribed drugs with /without prescription from a variety of sources (Agbaje & Uwakwe, 2003).

Antibiotics and anti-malaria outside paracetamol, were found to be the most common medicine given to these children. A study in Nigeria by Oshikoya et al. (2007), reported that the most common symptoms that were treated by parental self-medication were malaria and upper respiratory tract infection. Antibiotics are the most widely used medication group worldwide especially in the paediatric population (Chai et al., 2012.) and approximately three fourths of all antibiotics prescription to children are associated with acute respiratory illness (Nash et al., 2002). Catarrh and cough were the next most common childhood illness outside malaria in these children under consideration. In a study carried out in Benin-City Nigeria (Abhulimhen-Iyoha & Okolo, 2012), the most common childhood illnesses as indicated by the number of under-fives admitted were: malaria-44.4%, respiratory tract infections-17.8% and gastroenteritis-10.1%. Few cases of measles were recorded by them and they attributed this to the effects of the National Programme on Immunization. Severe malnutrition was not present in their study. Although the children in this study may have available food, the pain and discomfort of the oral ulcerative lesions in addition to its associated difficulty in feeding (Kurklu-Gurleyen et al., 2016; Oyetola et al., 2018), may result in secondary malnutrition. The younger the individual, the more profound is the effect of malnutrition on tissue resistance (Enmonwu, 1972). This is because malnutrition not only affects the structural and functional integrity of the tissue, but also determines the character of their responses to pathogenic organisms (Folayan, 2004).

Ninety percent of the persons that accompanied the children to the hospital were their mothers, this could be as a result of the tender age of the children as 80% of the children were between 9 months to 6 years old, this is similar to a study which observed that mothers constituted the majority of the accompanying persons for the paediatric population (Azodo & Ogordi, 2016). The parents of children in this study were either employed or engaged in business activities in equal percentage. As regards their level of education, the least number (10%) of them had primary school education. From the above, there is availability of money and awareness to buy medicine whenever they observe any illness in their children. A higher socioeconomic status has been known to endow parents with available income for increased purchases

of sugary snacks for their children (Azodo & Ogordi, 2016). Available income increases the strength of purchase and the ability to take care of any need that arises. The purchase of drugs for any illness their children present with whether the drugs are prescribed or not will not pose much of a challenge to the parents.

CONCLUSION

Acute oral ulcerations were observed to be more common in children of 6 years and below who accounted for 80% of this study's population.

Involvement of the gingiva was found in all children. Common characteristics of urban children manifesting with oral ulcerative lesions showed that the majority of them were less than 2 years of age, had suffered from common childhood illnesses such as malaria, cough and catarrh resulting in frequent ingestion of antimalaria and antibiotics among other medicines which were bought with or without prescription by parents who had money to spend. The already immunocompromised state from childhood illnesses may have been further compromised by frequent ingestion of medicines. Risk factors for acute oral ulcerations include immune dysfunction, drugs, stress among others and these factors in isolation or combined may have contributed to the clinical manifestation of ulcerative lesions in these children. It is recommended that mothers should be encouraged to use the health facilities which is commonly available in the urban areas and not be quick to administer medicines to their children. Policies can also be put in place by the government to monitor the sales of medicines to prevent sales without prescription.

Finally, inexperienced mothers should be encouraged to seek information from healthcare personnel on noticing symptoms of illnesses and not panic and give any available medicine to their children.

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None

Conflict of Interest

None

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