

Clinicopathologic Analysis of Biopsied Orofacial Lesions Seen in Children in a Tertiary Health Centre in Port Harcourt: An 11-Year Review

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Abstract

Background: Orofacial lesions in children and adolescents are diverse and show variation in prevalence from one region to another. Previous Nigerian studies on orofacial lesions in this age group have focused on tumours and tumour-like lesions, with the exclusion of cysts and some inflammatory/reactive lesions. The aim of this study was to describe the demographic characteristics of all biopsied orofacial lesions seen in children and adolescents aged 16 years and below. **Materials and Methods:** This retrospective study reviewed histopathology records over an 11-year period for histologically diagnosed lesions in patients aged 16 years and below. All such cases were extracted, and the age, gender, site and histopathologic diagnosis were recorded for each case. Lesions were categorized into three groups: inflammatory/reactive, cystic and neoplastic, with the neoplastic lesions sub-divided into benign and malignant. Patients were categorized into three age groups: 0 - 5 years, 6 - 12 years and 13 - 16 years. Data analysis was done using SPSS version 23. **Results:** A total of 109 biopsied lesions were seen in children \leq 16 years during the period under review, representing 20.8% of all biopsied lesions during the same period. The patients' age ranged from 4 months to 16 years, with a mean age of 10.4 ± 4.1 years and the lesions were encountered most frequently in the 6 - 12 years age group (45.9%). There was no gender predilection and the mandible (30.3%), maxilla (20.2%) and gingiva (22.9%) were the most frequently involved sites. Neoplastic, Inflammatory/reactive and Cystic lesions constituted 52.3%, 35.8% and 11.9% of cases respectively. The most frequent histopathologic diagnoses were pyogenic granuloma (16.5%) and unicystic ameloblastoma (12.8%). The most common inflammatory/reactive lesion was pyogenic granuloma (46.2%) and it was significantly associated with the gingiva ($p = 0.000$). Unicystic ameloblastoma was the most common neoplastic lesion, while dentigerous cyst was the most

frequently encountered cystic lesion. **Conclusion:** Most orofacial lesions in children aged 16 years or below are either benign neoplasms or inflammatory/reactive lesions, with the three most common diagnoses being pyogenic granuloma, unicystic ameloblastoma and dentigerous cyst. The mandible is the most commonly affected site.

Keywords

Orofacial, Paediatric, Inflammatory, Neoplastic, Cystic

1. Introduction

Orofacial lesions in children and adolescents are diverse, with some showing a higher frequency in this population than in adults [1] [2]. They include different groups that may be characterized into inflammatory/reactive, cystic and neoplastic [1] [3]. While there is an abundance of literature reporting on oral/orofacial conditions in children and adolescents, majority of them are focused on dental caries, periodontal diseases, trauma and malocclusion, with limited reports on orofacial lesions requiring biopsy [4]. Among the reports of biopsied orofacial lesions in children and adolescents, many authors have reported inflammatory/reactive lesions to be the most frequent orofacial lesions [5] [6] [7] [8], but there has been discrepancy over which individual lesions are most common. While Wang [7] and Zuniga [5] both found mucocoele to be the most frequent lesion in the paediatric population, Saravani [8] reported more cases of pyogenic granuloma, and Jaafari-Ashkavandi [6] found more cases of peripheral giant cell granuloma. Dhanuthai *et al.* [1] on the other hand reported that cystic lesions were the most common category of lesions in children, with dentigerous cyst being the most frequently encountered lesion. Indeed, the prevalence of orofacial lesions in children and adolescents may vary from one region to another. Previous Nigerian studies on orofacial lesions in children and adolescents have focused on tumours and tumour-like lesions [9] [10] [11] [12], with the exclusion of cysts and some inflammatory/reactive lesions. Only one previous Nigerian study addressed all categories of orofacial lesions [3], and it was carried out in the South-West geopolitical zone. There has not been any such study in Port Harcourt (South-South Nigeria). The aim of this study was to describe the demographic characteristics of all biopsied orofacial lesions seen in children and adolescents aged 16 years and below.

2. Materials and Methods

This was a retrospective study carried out at the Department of Oral Pathology and Oral Biology, University of Port Harcourt Teaching Hospital, Nigeria. The entire histopathology records of the Department were reviewed from inception (January 2008) to December 2018 (11 years) for histologically diagnosed lesions in patients aged 16 years and below. All such cases were extracted, and the age,

gender, site and histopathologic diagnosis were recorded for each case. Lesions were categorized into three groups [1] [3]: inflammatory/reactive, cystic and neoplastic, with the neoplastic lesions sub-divided into benign and malignant using the ICD-O 3.2 coding system. Patients were categorized into three age groups: 0 - 5 years (primary dentition stage), 6 - 12 years (mixed dentition stage) and 13 - 16 years (permanent dentition stage). Data were subjected to descriptive analysis using SPSS version 23. Test of significance done using Chi-square, with $p \leq 0.05$ considered statistically significant.

3. Results

A total of 109 biopsied lesions were seen in children ≤ 16 years during the period under review. This represented 20.8% of the total number of 523 lesions biopsied in all patients during the same period. The patients' age ranged from 4 months to 16 years, with a mean age of 10.4 ± 4.1 years, and the lesions were encountered most frequently in the 6 - 12 years age group (45.9%) (Table 1). There were 55 males and 54 females, and the mandible (30.3%), maxilla (20.2%) and gingiva (22.9%) were the most frequently involved sites (Table 2). Inflammatory/reactive lesions constituted 35.8%, cystic lesions accounted for 11.9% of cases, while the remainder (52.3%) were neoplastic lesions. The most frequent histopathologic diagnoses were pyogenic granuloma (16.5%) and unicystic ameloblastoma (12.8%) (Table 3).

Inflammatory/reactive lesions occurred mostly on the gingiva (53.8%) and lips (15.4%), with pyogenic granuloma (46.2%) being the most frequent histopathologic diagnosis. There was statistically significant association of pyogenic granuloma with the gingiva ($p = 0.000$) and of mucocele with the lips ($p = 0.000$).

Cystic lesions were seen most often in the 6 - 12 years age group (61.5%). The mandible was the most common site (69.2%), and the majority of cases were dentigerous cyst (69.2%). This was statistically significant ($p = 0.009$).

Table 1. Age and Gender distribution of paediatric orofacial lesions.

Group	Gender	Age Group			Total
		0 - 5 yrs	6 - 12 yrs	13 - 16 yrs	
Reactive lesions	Male	3	8	8	19 (48.7%)
	Female	3	9	8	20 (51.3%)
	<i>Subtotal</i>	6	17	16	39 (100%)
Cystic lesions	Male	0	5	1	6 (46.1%)
	Female	1	3	3	7 (53.8%)
	<i>Subtotal</i>	1	8	4	13 (100%)
Neoplastic lesions	Male	6	13	11	30 (52.6%)
	Female	1	12	14	27 (47.4%)
	<i>Subtotal</i>	7	25	25	57 (100%)
Total		14 (12.8%)	50 (45.9%)	45 (41.3%)	109 (100%)

Table 2. Site distribution of paediatric orofacial lesions.

Site	Group			Total (%)
	Reactive	Cystic	Neoplastic	
Mandible	1	9	23	33 (30.3)
Gingiva	21	0	4	25 (22.9)
Maxilla	2	3	17	22 (20.2)
Lips	6	0	4	10 (9.2)
Buccal mucosa	0	0	4	4 (3.7)
Cheek	1	0	2	3 (2.8)
Adenoids/tonsils	3	0	0	3 (2.8)
Tongue	1	0	1	2 (1.8)
Extraction socket	2	0	0	2 (1.8)
Retromolar area	0	0	1	1 (0.9)
Floor of the mouth	0	1	0	1 (0.9)
Infraorbital region	0	0	1	1 (0.9)
Forehead	1	0	0	1 (0.9)
Submandibular region	1	0	0	1 (0.9)
Total	39 (35.8%)	13 (11.9%)	57 (52.3%)	109 (100%)

Table 3. Histopathological types of paediatric orofacial lesions.

Histopathological diagnosis	Frequency (%)
Reactive lesions	
Pyogenic granuloma	18 (16.5)
Mucocoele	5 (4.6)
Reactive lymphoid hyperplasia	4 (3.7)
Granulation tissue	3 (2.8)
Periapical granuloma	2 (1.8)
Fibrous hyperplasia	2 (1.8)
Peripheral ossifying fibroma	2 (1.8)
Epithelial dysplasia	1 (0.9)
Epithelial hyperplasia	1 (0.9)
Chronic inflammation	1 (0.9)
<i>Subtotal</i>	39 (35.8)
Cystic lesions	
Dentigerous cyst	9 (8.3)
Radicular cyst	2 (1.8)
Calcifying odontogenic cyst	1 (0.9)
Epidermoid cyst	1 (0.9)
<i>Subtotal</i>	13 (11.9)

Continued

Neoplastic lesions	
<i>Benign</i>	
Unicyclic ameloblastoma	14 (12.8)
Fibroma	7 (6.4)
Adenomatoid odontogenic tumour	4 (3.7)
Ossifying fibroma	3 (2.8)
Osteoma	3 (2.8)
Lipoma	2 (1.8)
Odontoma	2 (1.8)
Neurofibroma	2 (1.8)
Lymphangioma	2 (1.8)
Granular cell tumour	1 (0.9)
Schwannoma	1 (0.9)
Fibrolipoma	1 (0.9)
Cemento-osseous dysplasia	1 (0.9)
Fibrous dysplasia	1 (0.9)
Basal cell adenoma	1 (0.9)
Ameloblastic fibroma	1 (0.9)
<i>Subtotal</i>	46 (42.2)
<i>Malignant</i>	
Lymphoma	6 (5.5)
Rhabdomyosarcoma	3 (2.8)
Osteosarcoma	1 (0.9)
Chondrosarcoma	1 (0.9)
<i>Subtotal</i>	11 (10.1)
Total	109

Of the neoplastic lesions, 46 (80.7%) were benign, while 11(19.3%) were malignant. The mean age for the benign lesions was 11.1 ± 3.7 years. There was slight male predominance (52.2%), the mandible was the most frequent site (41.3%), and the most common histologic diagnosis was unicyclic ameloblastoma (30.4%). The malignant lesions had a mean age of occurrence of 8.9 ± 4.9 years. They were commoner in males (54.5%), with most cases occurring in the maxilla (63.6%). The most common malignant neoplastic lesion was lymphoma (54.5%).

4. Discussion

Orofacial lesions in children ≤ 16 years accounted for 20.8% of all cases of orofacial lesions seen in the general population in this study. This is almost identical

to the 20.6% reported by Zuñiga *et al.* [5] and similar to the 20% and 19.3% reported by Arotiba *et al.* [11] and Jafari Ashkavandi *et al.* [6] respectively. Other authors have reported lower figures of 10.5% [13] and 15.05% [1], while Kamulegeya and Lakor [14] found a higher prevalence (29.3%).

Neoplastic lesions (52.3%) were the most frequent group of lesions encountered in this study. This contrasts with most reports in the literature in which inflammatory/reactive lesions were more common [5] [7] [8]. One previous Nigerian study [3] also reported neoplastic lesions to be the most common in the paediatric age group. The high prevalence of neoplastic lesions in children seen in this study may be attributed to the high incidence of unicystic ameloblastoma seen in this study, which comprised 12.8% of all paediatric orofacial lesions. Previous Nigerian studies [15] [16] have also reported a high prevalence of ameloblastoma in children. Majority of the neoplastic lesions in this study were benign (80.7%). This agrees with most reports in the literature [11] [17]. Aregbesola *et al.* [10] however found a slight preponderance of malignant lesions in their study.

Malignant neoplastic lesions in this study were more frequent in males, affecting the maxilla more and lymphomas being the most common type. This is similar to previous Nigerian reports [9] [11] [12] [16]. The high prevalence of lymphomas in children in this population is attributable to the high incidence of Burkitt's lymphoma in African children.

Inflammatory/reactive lesions in this study were the second most frequent lesions (35.8%). They occurred mostly on the gingiva and lips, and the most frequent diagnosis was pyogenic granuloma, followed by mucocele. Pyogenic granuloma was significantly associated with the gingiva, while mucocele was associated with the lips. These findings are largely in keeping with the findings of other authors [1] [5] [6] [7] [8].

Cystic lesions in this study accounted for just 11.9% of all the orofacial lesions in children. This is less than what most previous authors have reported [1] [3] [7]. The reason for this may be because most cases of radicular cyst in this part of the world are diagnosed and treated clinically without being sent routinely for biopsy. This may also be why dentigerous cyst was the most commonly reported in this study whereas radicular cyst was commonly reported in most other studies. Dentigerous cyst was the most common cyst in this study, similar to most published reports [1] [7] [18]. There was significant association of dentigerous cyst with the mandible and the 6 - 12 years age group.

Similar studies from other geopolitical zones of Nigeria, as well as multicenter studies are encouraged in order to get a complete picture of the prevalence and distribution of paediatric orofacial lesions in Nigeria. We also encourage possible further research on the genetics of orofacial lesions in children.

5. Conclusion

The findings of this study suggest that orofacial lesions are relatively common in

children aged 16 years or below, with most cases being benign neoplasms or inflammatory/reactive lesions. Lesions involved mostly the mandible, maxilla, gingiva and lips, and the most frequent histologic diagnosis in decreasing frequency were pyogenic granuloma, unicystic ameloblastoma and dentigerous cyst.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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