A Ten Year Retrospective Survey of Childhood Oro-facial Neoplasms In A Nigerian Population

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ABSTRACT

Background

Reports in the literature on childhood orofacial neoplasms do not seem to agree on a prevalent pathology, with several authors expressing a divide on the prevalence of orofacial malignancies.

Objective

To review the relevant clinico-pathologic features of neoplasms of the orofacial region amongst children in a Nigerian population.

Materials and method

A 10 year retrospective clinico-histopathologic survey of orofacial neoplasms in children aged 14 years and below seen in Lagos State University Teaching Hospital, Nigeria. The cases of histologically-diagnosed orofacial neoplasms seen during the period were retrieved and analysed based on the following: age, sex, site of lesion and histopathological diagnosis. Histologically, these conditions were divided into benign odontogenic, benign non-odontogenic and malignant orofacial tumours. Data were analysed using SPSS for windows version 17.0.

Results

One hundred and fifty–two cases of histologically-diagnosed orofacial neoplasms were reported over the ten year period. There was a male gender preponderance of 56.6%; with a male : female ratio of 1.3:1. A total of 57.2% of the cases reported were benign non odontogenic orofacial and 5.9% of all childhood orofacial neoplasms). Fibrous, osseous lesions; comprising ossifying fibroma and fibrous dysplasia were the most common childhood orofacial neoplasms reported.

Conclusion

Clinico-pathological characteristics in this series are similar to previous findings in scientific literature; with this study revealing a low prevalence of childhood orofacial malignancies in Nigerians.

Key words: Childhood, orofacial, neoplasm.

Introduction

Several reports on childhood orofacial neoplasms have been documented in scientific literature.[1,2,3,4,5] These neoplasms have been grouped as hard and soft

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tissue neoplasms, with further subdivisions into benign and malignant neoplasms. Benign orofacial neoplasms have been further classified as non-odontogenic or odontogenic orofacial neoplasms[2,3,6]; while the malignant neoplasms have been classified into lymphomas, sarcomas and carcinomas [2,3]. Benign orofacial childhood neoplasms are usually not life threatening, unlike the the malignant childhood neoplasms.[7]

The precise aetiology of most orofacial neoplasms remain unknown, although genetics, viral infections, nutritional deficiency, trauma, alcohol and tobacco intake have all been implicated.[7,8]

The purpose of this study is to review the clinico-histological presentation of childhood orofacial neoplasms in Nigeria; in order to update the current body of knowledge about these conditions. .

Materials and methods

A 10 year (January 2000 – December 2009) retrospective survey of children aged 14 years and below, histologically diagnosed with orofacial neoplasms. Data were collated from the oral biopsy service records of the Department of Oral Pathology, Lagos State University Teaching Hospital, Ikeja-Lagos, Southwest Nigeria.

Patients' biodata collated were age, age group (ages 0-4, 5-9 and 10-14 years) gender, histopathological diagnosis, and tumour location. The orofacial neoplasms were divided into benign odontogenic, benign non-odontogenic and malignant orofacial tumours.The data was analysed using SPSS for windows (version 17.0).

Results

A total of 869 orofacial lesions were reported over the 10 year period. Orofacial neoplasms constituted 17.5 % (152 cases). There was a slight male gender predilection (56.6%); with a male : female ratio of 1:1.3 (Table 1). The age ranged from 6 months to 14 years; with a mean age of 10.11 ± 3.64 years. The peak age prevalence fell among the 10-14 years age group (Figure 1). A total of 93 cases (61.2%) were hard tissue orofacial tumours; while 30 cases (19.7%) were soft tissue orofacial tumours

There was a mandiblar site predilection of 32.2% (49 cases); followed by the maxilla (39 cases, 25.7%), floor of the mouth (9 cases, 5.9%), cheek (5 cases, 3.3%), and the palate and tongue (4 cases , 2.6%). A total of 29 (19.1%) documented cases had unspecified tumour locations(Tables 1 , 2 and 3)

Eighty- seven cases (57.2%) were histologically diagnosed as benign non odontogenic orofacial tumours; fifty cases (32.9%) were benign odontogenic tumours; and fifteen cases (9.9%) were malignant tumours (Tables 1,2 3).

Ossifying fibroma was observed to be the most common childhood orofacial tumour (21 cases, 13.8%) ; followed by (unspecified) odontogenic cysts 13 cases, 8.5%) ; and ameloblastoma (12 cases,7.9%). Of the ameloblastoma, 11(91.7%) were unicystic ameloblastoma; while 1 (8.3%) was a case of multicystic ameloblastoma. Burkitts lymphoma accounted for 9 (5.9%) of the cases

Benign Non-Odontogenic Orofacial neoplasms(Table 1)

Benign odontogenic orofacial neoplasms accounted for 57.2% (87 cases) of all childhood orofacial neoplasms. There was a predilection in females, accounting for 47 cases (54.0%) and a female : male ratio of 1.4:1 . The age ranged from 0.6-14 years with a mean age of 9.89±3.82 years. The modal age was 13.0 years. Peak age range prevalence was observed in the 10-14 years age range. . The maxilla was the most affected site .The most common bening non odontogenic orofacial neoplasm observed in the series was ossifying fibroma (22 cases,25.3%); followed by pyogenis granuloma (11 cases, 12.6%). (Table 1)

Odontogenic Orofacial neoplasms

Odontogenic orofacial neoplasms accounted for 32.9% (50 cases) of all childhood orofacial neoplasms. There was an obvious male preponderance (37 cases,74.0%), with a male to female ratio of 2.8 : 1.0 . The age ranged from 3 to 14 years, with a mean age of 11.53± 2.48 years.The modal age was 13.0 years. Peak age prevalence was observed in the 10-14 years age group. There was a site predilection for the mandible, accounting for 31 cases (62.0%). The most commonly observed odontogenic orofacial neoplasm was the group of unspecified odontogenic cysts (13 cases, 26.0%); followed by ameloblastoma (12 cases, 24.0%), of which Unicystic ameloblastoma accounting for 91.7% (11 cases) and Multicystic ameloblastoma 8.3% (1 case). (Table 2)

Malignant Orofacial neoplasms

Malignant orofacial neoplasms accounted for 9.9% (15 cases) of all children orofacial neoplasms. There was an obvious male preponderance in the series (73.3%, 11 cases), with a male to female gender ratio of 2.7 : 1. The minimum and maximum ages were 1.5 years and 13 years respectively. The mean age was 6.57±3.28 years and the modal age was 5 years. The peak age prevalence occurred among the 5-9 years age group. The neoplasms commonly occured in the maxilla (33.3% 5 cases). The commonest malignant orofacial neoplasm observed was Burkitts lymphoma, which occurred in 9 cases (60.0%); followed by mucoepidermoid carcinoma.

TABLE 1
CLINICAL DATA FOR BENIGNNON- ODONTOGENIC OROFACIAL NEOPLASMS PATIENTS

		Age			Gender		Jaws	
	No.	0-4	5-9	10-14	M	F	Max	Mand
Ossifying fibroma*	21	-	4	17	13	8	10	7
Fibrous dysplasia*	8	1	-	7	1	7	3	1
Pyogenic granuloma*	11	-	2	9	4	7	4	4
Mucocele	8	4	2	2	4	4	-	-
Cemento-ossifying fibroma*	6	-	-	6	1	5	2	3
Capillary Haemangioma	3	1	-	2	1	2	-	1
Cystic hygroma	2	1	1	-	2	-	-	-
Fibrous epithelial hyperplasia	2	1	-	1	-	2	-	-
Fibromyxoma	3	-	1	2	1	2	2	1
Pleomorphic adenoma	1	-	-	1	1	-	-	-
Tuberculous lymadenopathy	2	-	-	2	1	`1	-	-
Lymphangioma	2	1	1	-	2	-	-	-
Bony exostosis*	1	-	-	1	-	1	-	-
Central giant cell granuloma	1	-	-	1	-	1	-	1
Epidermoid cyst	1	1	-	-	-	1	-	-
Fibrous epulis	1	-	-	1	-	1	-	1
Fibrohystiocytoma	2	-	1	1	2	-	-	-
Fibrolipoma	1	-	-	1	-	1	-	-
Granula cell myoblastoma	1	1	-	-	-	1	-	-
Granula cell tumour	1	-	-	1	1	-	-	-
Globulomaxillary cyst	1	-	-	1	1	-	1	-
Haemangio-lympangioma	1	-	-	1	-	1	-	-
Haemangio-pericytoma	1	-	-	1	1	-	1	-
Monomorphic adenoma*	1	-	1	-	1	-	-	-
Myxofibroma	1	-	-	1	1	-	1	-
Neurofibroma	1	-	-	1	1	-	-	-
Neurolemma	1	-	-	1	1	-	-	-
Oral papilloma	1	-	1	-	-	1	-	-
Lymphoepithelial cyst	1	-	-	1	-	1	-	-
Total	87	11	14	62	40	47	24	19

(Max= Maxilla, Mand= Mandible; *cases with some unspecified sites)

TABLE 2
CLINICAL DATA FOR ODONTOGENIC OROFACIAL NEOPLASMS PATIENTS

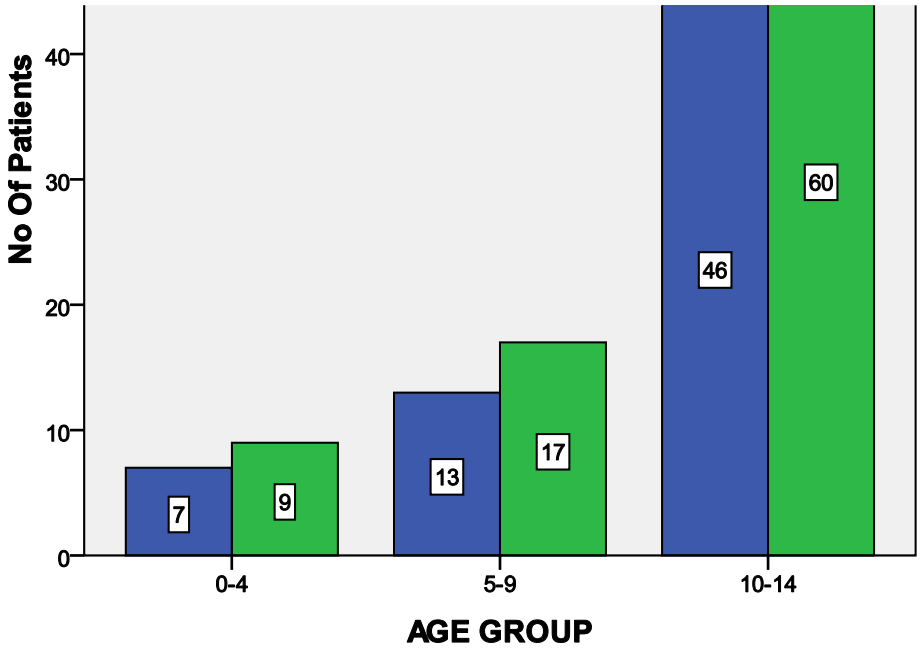
		Age			Gender		Jaws	
	No.	0-4	5-9	10-14	M	F	Max	Mand
Ameloblastic fibroma*	2	-	-	2	1	1	-	1
Ameloblastoma*	12	-	-	12	8	4	-	9
Adenomatoid dontogenic tumour*	4	-	1	3	3	1	3	-
Calcify epithelial odontogenic cyst*	2	-	1	1	2	-	1	-
Dentigerous cyst	5	-	1	4	3	2	1	4
Nasolabial odontogenic cyst	1	-	-	1	-	1	1	-
Odontogenic cyst*	13	-	-	13	10	3	2	8
Odontogenic fibroma	3	-	2	1	2	1	1	2
Odontogenic fibromyxoma	1	-	-	1	1	-	-	1
Odontogenic keratocyst	3	-	-	3	3	-	-	3
Odontogenic myxoma	1	-	-	1	1	-	-	1
Radicular cyst	2	-	-	2	2	-	-	2
Squamous odontogenic tumour*	1	-	-	1	1	-	-	-
TOTA L	50	0	5	45	37	13	9	31

TABLE 3

CLINICAL DATA FOR MALIGNANT OROFACIAL NEOPLASMS PATIENTS

		Age			Gender		Jaws	
	No	0-4	5-9	10-14	M	F	Max	Mand
Anaplastic carcinoma*	1	-	1	-	1	-	-	-
Burkitts lymphoma*	9	2	6	1	7	2	3	2
Malignant fibrohistiocytoma	1	-	1	-	1	-	-	-
Mucoepidermoid carcinoma	1	-	-	1	1	-	1	-
Rhabdomyosarcoma	1	-	1	-	-	1	-	1
Squamous cell carcinoma	1	-	1	-	-	1	-	-
Spindle cell sarcoma	1	1	-	-	1	-	-	-
TOTAL	15	3	10	2	11	4	4	3

FIG 1



Discussion

The review of scientific literature revealed the relative prevalence of childhood orofacial neoplasms in Africa is higher than that of other geographical regions; being responsible for approximately 20% of all orofacial neoplasms.[1,2,9] This study however reported a slightly lower prevalence of 17.5%, similar to previous studies in scientific literature[10,11,12,13]; but contrasting previous Nigerian studies with prevalences of 20% and above.[2,9] This variation could be as a result of the varied childhood age groups used by different researchers.[1,2,9,10,11]

The male gender preponderance observed in our study for orofacial neoplasms is in agreement with reports in scientific literature.[1,2,9,10,12]

A total of 90.1% (137 cases) of the orofacial neoplasms were observed to be benign, while 9.9% (15 cases) were malignant. This presentation is similar to reports from studies conducted by Ajagbe and Daramola (91.5% and 8.5% respectively) in 1982.[14] The incidence of benign and malignant orofacial neoplasms in studies by Bhaskar were 91.0% & 9.0% respectively[7]; and Koch (92.0% & 8.0%) respectively.[15] However, it is worthy of note that other previous Nigerian and African studies have reported higher incidence percentages for malignant neoplasms.[1-3, 9, 16, 17] No reason could be adduced for the low malignancy incidence in this study. However, further studies which may give a better insight into this presentation among Nigerians should be encouraged. Fibro-osseous lesions (ossifying fibroma and fibrous dysplasia) were the commonest childhood orofacial neoplasms, which agrees with previous findings.[2,4,9,10,12].

Regarding the benign non odontogenic neoplasms, a female preponderance was observed; with a female to male ratio of 1.4 : 1.0. This was similar to reports from the review of literature.[1,2,4,12] The maxilla was the most affected site; although there has been reports of mandibular predilection.[1,2]

Unicystic ameloblastoma, dentigerous cyst and adenomatoid odontogenic tumours were the commonest benign odontogenic neoplasms. The benign odontogenic neoplasms generally presented with a male preponderance (male to female ratio of 2.8 : 1) and a predilection for the mandible, a pattern similar to reports in scientific literature.[1,2,4,9,13]

Incidence of orofacial malignant neoplasms accounted for less than 10% in the series. This is similar to reports from previous studies.[7,14,15] The commonest malignant childhood neoplasm were the lymphomas, predominantly Burkitts lymphoma. This pattern of presentation is also similar to reports in scientific literature.[6,9] Burkitts lymphoma is a common childhood malignancy in parts of Africa, and Epstein-Barr virus and malaria being strongly linked to its development.[17,18] The high Incidence of malaria in Africa, especially in Nigeria[17] could therefore explain the reason for Burkitts lymphoma being the most common malignant orofacial neoplasm among the series in this study.

Although this study, like Ajagbe and Daramola's study[14] reported low incidences for malignant orofacial neoplsms among Nigerian children; it is

important to note that previous African studies have documented high incidences of childhood orofacial malignancies.[1,2,3,9,16,17] No plausible reason could be adduced for our low childhood orofacial malignancy incidence, except to hypothesize that perhaps the malaria endemic associated with Burkitts lymphoma in some parts of Africa maybe gradually waning and becoming a thing of the past.[17]

Rhabdomyosarcoma was observed to be the most common malignant mesenchymal childhood orofacial neoplasm while muco-epidermoid and anaplastic carcinomas were observed to be the most common malignant childhood orofacial epithelial neoplasms.[2] The age range, gender and site incidences as reported were similar to reports from earlier studies.[3,9]

In conclusion, clinico-pathological presentation of orofacial childhood neoplasms in Nigerians is generally similar to reports in scientific literature; although a lower incidence of childhood orofacial malignancies was reported in this study. No laudable reason was found for this, although validation through further research is recommended.

REFERENCES

1. Aregbesola SB, Ugboko VI, Akinwande JA, Arole GF, Fagade OO. Orofacial tumours in suburban Nigerian children and adolescents. Br J Oral Maxillofac Surg 2005;43:226-231
2. Arotiba GT. A Study of Orofacial Tumours in Nigerian Children. J Oral Maxillofac Surg 1996;54:34-38
3. Ajayi OF, Adeyemo WL, Ladeinde AL, Ogunlewe MO, Omitola OG, Effiom OA et al. Malignant Orofacial neoplasms in Children and adolescents: A clinicopathologic review of cases in a Nigerian tertiary hospital. Int J Paed Otolaryngol 2007;71:959-963
4. Elarbi M, El-Gehani R, Subhashraj K, Orafi M. Orofacial Tumours in Libyan Children and adolescents. A Descriptive Study of 213 cases. Int J Paed Otyolaryngol 2009;73:237-242
5. Kummoona R. The Managements of Orofacial Tumours of Children in Iraq. J Craniofac Surg 2009;20:143-150
6. Regezi JA, Sciubba JJ. Oral pathology: Clinical pathologic correlation 3rd ed. WB Saunders, Philadelphia, 1999, pp 323,409-410.
7. Bhaskar SN. Oral Tumours of Infancy and Childhood. J Paedtr. 1963;63:195-210
8. Parkin DM, Pisani P, Ferlay J. Estimates of the worldwide incidence of sixteen major cancers. Int J Cancer 1993;54:594-606
9. Adebayo ET, Ajike EO, Adekeye EO. Tumours and tumour like lesions of the oral and perioral structures of Nigerian children. Int J Oral Maxillofac Surg 2001;30:205-208
10. Al-Khateeb T, Al-Hadi HA, Almasri NM. Oral and maxillofacial tumours in North Jordanian children and adolescents: a retrospective analysis over 10 years. Int J Oral Maxillofac Surg 2003;32:78-83
11. Keszler A, Guglielmotti MB, Dominguez FV. Oral pathology in children. Frequency, distribution and clinical significance. Acta Odontol Latinoam 1990;5:39-48
12. Ulmanasky M, Lustmann J, Balkin N. Tumours and tumour like lesions of the oral cavity and related structures in Isreali children. Int J Oral Maxillofac Surg. 1990;28:291-294
13. Sato M, Tanaka N, Sato T, Amagasa T. Oral and maxillofacial tumours in children: a review. Br J Oral Maxillofac Surg. 1997;35:92-95
14. Ajagbe HA, Daramola JO. Primary tumours of the jaws in Nigerian children. J Natl Med Assoc. 1982;74:157-161
15. Koch H. Statistical evaluation of tumours of the head and neck in infancy and childhood. J Maxillofac Surg. 1974;2:26-31
16. Asamoa EA, Ayanlere AO, Olaitan AA, et al. Paediatric tumours of the jaws in Northern Nigeria. J Craniomaxillofac

17. Chizonga MM. Oral malignant neoplasia: A survey of 428 cases in two Zimbabwean hospitals. Oral Oncol 2006:42;177-183

18. Araujo I, Foss HD, Bittencourt A, Hummel M, Demel G, Mendora N, et al. Expression of Epstein-Barr virus gene production Burkitt's lymphoma in NE