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Research Article

Relative Prevalence of Odontogenic Cysts and Tumours in Kano; Northern Nigeria

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Abstract

Background & Objective: Odontogenic cysts and tumours are distinct entities and quite a common occurrence in the jaw bones. They sometimes coexist and may even share histogenetic/embryologic origin. Consequently, a comprehensive study of both entities is justified.

Materials and Methods: This was a 7-year (2006 - 12) retrospective study of all odontogenic cysts and tumours diagnosed at the pathology department of Aminu Kano Teaching Hospital, Kano. Histology slides on all cases were retrieved and reviewed by the authors. Where slides were not available, fresh sections were cut from archival parafin blocks.

Results: One hundred & sixty five odontogenic cysts (43) & tumours (122) were diagnosed during the seven year study period. Patients age ranges from 3 to 61 years and 12 to 75 years (median age 30) for odontogenic cysts and tumours respectively with the highest occurrence in the 2nd-3rd decade age group for both lesions. Among the odontogenic cysts and tumours, most frequent lesions were dentigerous cysts and ameloblastomas which constituted 60.5% and 73.0% respectively. Male to female ratio for odontogenic cysts and tumours were 1.5 : 1 each. Both had mandible as the most frequent anatomic location.

Conclusion: The study provides a cumulative data of odontogenic cysts and tumours. The findings were consistent with most published reports in other developing nations but somewhat at variance with developed world where odontogenic cysts were more commonly reported than tumours and both odontogenic cysts and tumours afflict a slightly older age group.

Keywords: Odontogenic cysts, Odontogenic tumours, Dentigerous cysts, Ameloblastomas

Introduction

Odontogenic cysts and tumours are distinct entities and are common occurrence in the jaw bones.They are individual lesions arising from the odontogenic apparatus with varying pathogenesis. They sometimes coexist and may even share histogenetic/embryologic origin. Odontogenic cysts are unique lesions in that they are derived from odontogenic epithelium and only occur in oral and maxillofacial region.[1] The odontogenic cysts are formed from remnants of odontogenic epithelium which are trapped within the jaw bones or in the gingival epithelium and are classified into inflammatory and developmental [1-3]. The developmental cysts arise from trapped epithelium within the jaw bones and sometimes in the gingiva during odontogenesis. They may be from epithelial rests of Malasezz, dental lamina or the enamel organ. The inflammatory odontogenic cysts are formed due to inflammatory process often at the root of carious lesions or a nonvital teeth which are left untreated over a long period [4]. They may appear small but have tendency to expand the jaws with some being prone to recurrences [2].

Odontogenic tumours are derived from remnants of odontogenic apparatus which give rise to a variety of lesions ranging from harmatomatous lesions to benign and to frankly malignant tumours [5]. These lesions vary in location, etiology and histogenesis and tissue types. The tumours also vary in tissue of origin from odontogenic epithelium, ectomessenchyme or a mixture of both [6].

Surprisingly, there are no documented studies of combined odontogenic cysts

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and tumours in Nigeria. The aim of this article was to carry out a clinico-pathological study of combined odontogenic cysts and tumours in Kano with the aim of finding the most common of both entities and to analyse variables such as age, gender, site, and histological type, as well as to compare our findings with other studies from different geographical locations of the world.

Materials and Methods

This was a 7-year (2006 - 12) retrospective study of all odontogenic cysts and tumours diagnosed at the pathology department of Aminu Kano Teaching Hospital, Kano. It is the only tertiary health institution offering histopathological services in Kano State - the most populous state in Nigeria (2006 census). Histology slides on all cases were retrieved and reviewed by the authors. Where slides were not available, fresh sections were cut from archival parafin blocks. All specimens were fixed in 10% aqueous formal saline, routinely processed for paraffin embedding, then sectioned at 5µ and stained with haematoxylin and eosin. Biodata (age, sex and gender) on all cases were retrieved from laboratory records. Collated results were presented as tables and analysed using Statistical Programme for Social Sciences Version 18.

We also tabulated some of the major works on odontogenic cysts and tumours reported here in Nigeria and outside the continent of Africa for the purpose comparison.

Results

A total of one hundred & sixty five odontogenic cysts(43) and tumours(122) were documented during the 7 year study period. Table 1 showed the prevalence of common odontogenic cysts distributed by histological findings, gender, anatomic location and age. Overall odontogenic cysts were diagnosed more frequently in males (60.5%), with a male to female ratio of 1.5:1. The age range was 3 to 61 years with the highest occurrence in the 2nd and 3rd decades. In relation to anatomic location, mandible accounted for most number of cases (65.1%). The most diagnosed was the dentigerous cysts, which accounted for 26 cases (60.5%), followed by radicular cysts (37.1%) and one case of eruption cyst (2.4%).

Table 2 depicts the distribution based on histologic type, gender, anatomic location and age of affected patients by odontogenic tumours. The 122 cases were found in 74 males and 48 females, hence showing a preponderance of odontogenic tumours in males. The age of the patients at diagnosis ranged from 12 to 75 years with a median age of 30 years and peaked at the 2nd and 3rd decades. The tumours showed strong preference for mandible (75.4%). The most frequent odontogenic tumours were ameloblastomas (73%). The second most frequent tumour were adenomatoid odontogenic tumours and odontogenic myxomas each comprising 9.8%. This was followed by ameloblastic fibromas (2.5%). Other odontogenic tumours in this series were keratocystic odontogenic tumours and calcifying epithelial odontogenic tumours each comprising 1.6%, whereas squamous odontogenic tumour and odontogenic fibroma each comprising 0.8%.

Discussion

Studies have shown that there is a world wide geographical variations in the incidence of odontogenic lesions [6,7]. Literature search showed great differences between data from sub-Saharan Africa and western countries with regards to odontogenic cysts and tumours to a large extent [1,5,6,8-10]. A total of 165 cases of odontogenic cysts(43) and odontogenic tumours(122) were seen during the study period making odontogenic cysts less common than odontogenic tumours in Kano. This is consistent with most sub-Saharan African studies but at variance with the developed world where there are large collections of odontogenic cysts in various documented reports [1,8,9]. Several reasons can be proffered for our disparity with the developed world which includes lack of comprehensive routine radiography for detection and the fact that odontogenic cysts are generally painless until infected or disfigurement. Another reason is that most private dental clinics do not bother to send cystectomy specimens for histology as diagnosis can be obvious on clinico-radiological ground.

Histopathologic diagnosis	No. of cases	%	M : F	Mand.	Max.	<20 years	21 -39 years	40 – 59 years	>60 years
Dentigerous	26	60.5	1.9:1	21	5	9	14	3	-
Radicular	16	37.1	1.3:1	6	10	2	7	5	2
Eruption	1	2.4	0:1	1	-	1	-	-	-
Total	43	100	1.5:1	28	15	12	21	8	2

(M: male, F: female, Mand: mandible, Max: maxilla)

Table 1: Relative frequency, gender, site and age distribution of odontogenic cysts in Kano

Histologic type	No. of cases	%	M : F	Mand.	Max.	<20 years	21 -39 years	40 – 59 years	>60 years
Ameloblastoma	89	73	1.8:1	80	9	11	54	20	8
AOT	12	9.8	1:2	3	9	6	5	1	-
KOT	2	1.6	1:1	2	-	-	1	1	-
CEOT	2	1.6	2:0	1	1	-	-	2	1
SOT	1	0.8	1:0	-	1	-	-	1	-
Ameloblastic fibroma	3	2.5	2:1	3	-	1	2	-	-
Odontogenic myxoma	12	9.8	1:1	9	3	6	3	1	2
Odontogenic fibroma	1	0.8	1:0	1	-	-	1	-	-
Total	122	100	1.5:1	99	23	24	66	26	11

(AOT: adenomatoid odontogenic tumour, KOT: keratocystic odontogenic tumour, CEOT: calcifying epithelial odontogenic tumour, SOT: squamous odontogenic tumour, M: male, F: female, Mand: mandible, Max: maxilla)

Table 2: Relative frequency, gender, site and age distribution of odontogenic tumours in Kano.

Authors	Year	Countries	Radicular cyst(%)	Dentigerous cyst(%)
Akram & others	2013	Pakistan	53	34
Mosqueda & others	2002	Mexico	39.9	35.5
Avelar, et al.	2009	Brazil	51.3	30.7
Nunez & others	2010	Spain	50.2	21.8
Meningaud & others	2006	France	53.5	22.3
Ochsenius & others	2007	Chile	50.7	18.5
Jones & others	2009	United Kingdom	52.3	18.1

Table 3: Relative frequency of major odontogenic cysts in scientific literature in other parts of the world.

Authors	Year	Countries	Odontoma (%)	Ameloblastoma (%)	KCOTOM (%)	
Senel, et al.	2010	Turkey	41.8	12.7	4.0	9.3
Santos, et al.	2001	Brazil	50.4	39.3	0.0	4.7
Niranja and Shaikh	2014	India	6.02	54.89	24.06	1.5
Butt, et al.	2012	Kenya	0.20	45.9	11.2	4.9
Gill, et al.	2011	India	5.3	47.7	23.4	3.3

Table 4: Relative frequency of major odontogenic tumours in scientific literature in other parts of the world.

In our series, the most commonly diagnosed odontogenic cysts were dentigerous cysts which comprises 26 cases represnting 60.5% (Table 1), which is in sharp contrast to many reports (Table 3) from western, Asian and some African studies where radicular cysts were always the highest [11-14], but slightly similar to a few studies from African and Asian countries [15-17]. The displacement of radicular cyst from number one position by dentigerous cyst in this report and few other reports from African studies have been adduced to many factors varying from the fact that most dentigerous cysts are asymptomatic and discovered on routine radiograph. (routine radiography is not commonly available in developing world). Another major reason is that many dental patients come to the clinic to seek relief from pain only and not bothered by sophisticated dental surgeries, inaccessibility to mordern dental care is another factor and many private clinics performing surgeries without radiological and pathological investigations [17].

The present study found ameloblastomas to be the most frequent odontogenic tumours comprising 73% (Table 2). This is in contrast to many reports (Table 4) in western countries where odontomas were in a comfortable lead [18], but similar to many African and Asian reports [13,19,20]. The reasons adduced for ameloblastomas being more common than odontomas among odontogenic tumours are similar to the reasons for dentigerous cysts displacing radicular cysts as the most common odontogenic cysts in this report and some other sub-Saharan reports [10,15-17]. The second most common odontogenic tumours were adenomatoid odontogenic tumour and odontogenic myxoma comprising 9.8% each. This is comparable to previous reports from Nigeria where either of them was second or third in frequency of occurrence [11,21]. Keratocystic odontogenic tumours were only two indicating low incidence in this study. However two reports from Brazil placed keratocystic odontogenic tumours as been the most common [22], while studies from India placed keratocystic odontogenic tumours as the second most common odontogenic tumours [5].

Males were more affected by odontogenic cysts and tumours which is comparable to other studies worldwide [3,9,11,12,21,23], but in contrast to report by Borges, et al. [6]. The second and third decades were the peak incidences of both odontogenic cysts and tumours in this study which is similar to other sub-Saharan African studies [11,12,15-17]. The mandible was the most common site of affectation in both odontogenic cysts and tumours which concurred with previous reports in Nigeria, [11,12,15-17]. and Kenyan study [24] but at variance with report in Pakistani study [25]. Individually, among the odontogenic cysts, the dentigerous cysts occured more in the mandible while the radicular cysts were most frequent in the maxilla which corroborates other reports in Nigeria [1,11,12,15]. Among the odontogenic tumours, ameloblastomas and odontogenic myxomas occured more in the mandible while the adenomatoid odontogenic tumours were most frequent in the maxilla which concurred with previous studies [5,21].

In conclusion, the odontogenic tumours are more common than odontogenic cysts in this series and in previous Nigerian studies. The few numbers of radicular cyst was a cause of paucity of odontogenic cysts. The infrequent use of routine radiography is contributory of non detection of odontogenic cysts in our environment.

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