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Pranav Parashar
Associate Professor,
Department of Dentistry, Index
Medical College, Hospital and
Research Centre, Indore, India
Pradesh, India

Noori Dalwadi
Bachelor of Dental Surgeon,
Goenka Research Institute of
Dental Science, Gandhinagar,
Gujarat, India

Chintan Modi
Senior Lecturer,
Department of Oral Medicine
and radiology, Jodhpur Dental
College, Jodhpur, Rajasthan

Neha Garg
Senior Lecturer,
Department of Periodontics,
Daswani Dental College, Kota,
Rajasthan, India

Correspondence
Pranav Parashar
Associate Professor,
Department of Dentistry, Index
Medical College, Hospital and
Research Centre, Indore, India

Institutional experience on the prevalence of the Odontogenic tumors: A retrospective analysis

Pranav Parashar, Noori Dalwadi, Chintan Modi and Neha Garg

Abstract

Background and Aim: Most of the available literature is from Africans and American countries, which showed that difference of frequency in the distribution of the different type of Odontogenic tumors. However there is very little information about the prevalence of Odontogenic tumors in India. Hence the present study was carried out to provide data on Odontogenic tumors and to provide the frequency distribution of the same in different medical institutes in Indore city

Materials & Methods: Medical institute in Indore city were reviewed for the retrieval of the data for the study. For the inclusion in the study, the histopathological reports were retrieved from the pathological department of the respective institute. All the lesions which were diagnosed as Odontogenic lesions were included in the study. A total of 80 cases diagnosed as Odontogenic tumors were included in the study.

Results: As per the gender distribution 50 cases were found in male and 30 cases were found in females, with the ratio found to be 2:1. As per the locations mandible was more affected as compared to maxilla, with 55 cases to be found in mandible itself and 25 cases in maxilla which shows the ratio to be almost 2:1.

Conclusion: Odontogenic tumors are very rare and consist of heterogeneous group of lesions which are derived from Odontogenic tissues. The present study provides the information related to the epidemiology and the geographic variation among the Odontogenic tumors in the central Indian population. There is essentiality to have the knowledge in relation to the data of the Odontogenic tumors so as to ascertain the risk group of population and to ascertain proper diagnosis of the lesion.

Keywords: Ameloblastoma, jaw lesions, odontogenic lesions, prevalence, tumors

Introduction

Tumor can be defined as a swelling that does not include a neoplastic process. Odontogenic tumors are the group of heterogeneous lesions; they are derived from the Odontogenic epithelium, mesenchymal elements and ectomesenchyme [1]. The places of origin vary from gingival to alveolar mucosa to intraosseous lesions. Tumors in this group can be considered as diverse group of lesions. This group of lesions can arise at any stage of life in an individual. They are considered as rare lesions and relatively destructive of the jaw bones [2].

Although this group of relation are very rare, there are literatures which showed increased frequency of these tumors in different areas of the world. Different countries shows different incidence of the Odontogenic tumors [3]. This difference in occurrence can be rated to the geographical location as well as ethnic life style of the individual in that particular area. Such types of lesions are more common in mandible as compared to maxilla with the ratio of 3:1. When the comparison is done in gender predominance it was found to be male predominance as compared to females [4].

Due to their oral presentation, non-neoplastic nature, local aggressiveness and hamartomatous proliferation such lesion are of great interest among general dentist and also among specialist [5]. Studies which have been previously published in different parts of the world have shown that there is different distinct geographic variation in the prevalence of the Odontogenic tumors among different parts of the world. Most of the available literature in this aspect is from Africans and American countries, which showed that difference of frequency in the distribution of the different type of Odontogenic tumors [6]. However there is very little information about the prevalence of Odontogenic tumors in India. Hence the present study was carried out to provide data on Odontogenic tumors and to provide the frequency distribution of the same in different medical institutes in Indore city.

Materials & Methods

Medical institute in Indore city were reviewed for the retrieval of the data for the study. All the institutional management and the committee were informed about the study and prior permission was taken from all of them. For the inclusion in the study, the histopathological reports were retrieved from the pathological department of the respective institute. All the lesions which were diagnosed as Odontogenic lesions were included in the study. A total of 80 cases diagnosed as Odontogenic tumors were included in the study. All the included cases were analyzed for gender, site of tumor, age and histopathological type.

Limited information was obtained for the follow up cases. This may be related to the poor awareness of health, poverty in the region, illiteracy and lack of motivation. There were cases in which multiple biopsies were taken, in such cases the excisional biopsy report was considered as final one and case

was counted as one only. The data were analyzed and descriptive stats were applied for the analysis of the data.

Results

A total of 80 cases were included in the study. All the lesions were diagnosed as Odontogenic tumors on the basis of histopathology diagnosis. On the basis of histopathological features it was found that all the lesions did lack malignant features. As per the gender distribution 50 cases were found in male and 30 cases were found in females, with the ratio found to be 2:1. As per the locations mandible was more affected as compared to maxilla, with 55 cases to be found in mandible itself and 25 cases in maxilla which shows the ratio to be almost 2:1.

In the table 1 we summarised the distribution of the different Odontogenic tumors classified as per WHO classification of Odontogenic tumors with age, gender and site of distribution.

Table 1: Demographic distribution of Odontogenic tumors

Type of Odontogenic lesions	Total (%)	Gender		
		Male	Female	Male: Female
Ameloblastoma	42 (52.5)	26	16	1.5
AOT	4 (5)	3	1	1.5
CEOT	2 (5.2)	2	0	2
Odontoma	18 (22.2)	10	8	1.2
Ameloblastic Fibroma	2 (5.2)	2	0	2
KCOT	12 (15)	7	5	1.4
Total	80	50	30	

AOT: Adenomatoid Odontogenic Tumor
CEOT: Calcifying epithelial odontogenic tumor
KCOT: Keratocystic odontogenic tumor

Among all the included Odontogenic lesions, Ameloblastoma were the most common benign tumors with over all prevalence found to be of 52.5%, this was followed by odontoma with 22.2% prevalence and KCOT with 15% rate. In the analysis for the gender distribution it was found that in all the lesions males were affected more as compared to females with ratio as 2:1.

The below table 2 shows the age distribution of the Odontogenic tumors included in the study. Most of the lesions occurred in the fourth decade of life with maximum lesion were between the second and the sixth decade of life. The most prevalent tumor that is Ameloblastoma was found to mostly occur in third decade of life. Tumors which were found to be common in second decade of life included AOT i.e. Adenomatoid Odontogenic tumor and Odontomes.

Table 2: Distribution by age for the Odontogenic tumors

Odontogenic lesions / Age	0-9	10-19	20-29	30-39	40-49	50-59	60-69	Total
Ameloblastoma	0	2	14	15	9	1	0	42
AOT	0	1	1	0	2	0	0	4
CEOT	0	0	0	1	1	0	0	2
Odontoma	1	5	2	2	8	0	0	18
Ameloblastic Fibroma	0	0	1	0	1	0	0	2
KCOT	0	0	3	2	7	0	0	12

AOT: Adenomatoid Odontogenic Tumor
CEOT: Calcifying epithelial Odontogenic tumor
KCOT: Keratocystic Odontogenic tumor

In respect to the site for the occurrence of the Odontogenic tumor, mandible was more frequently associated as compared to maxilla. Ameloblastoma and Keratocystic Odontogenic tumor showed high predilection for mandible as compared to maxilla. They were found more in posterior mandible as compared to anterior mandible. However Adenomatoid Odontogenic tumor and odontoma were found in maxilla. Adenomatoid Odontogenic tumor was more commonly found in anterior maxilla as compared to posterior, where as for odontoma it was vice versa. In general Odontogenic tumors had high predilection for posterior mandible and maxilla.

Discussions

Odontogenic tumors are very rare and consist of heterogeneous group of lesions which are derived from Odontogenic tissues [3, 7]. The presence of them reflects the presence of abnormality in the normal odontogenesis pattern in the body. Relative frequency distribution on Odontogenic tumors in world the literature is mainly concentrated on Europeans, Africans and American populations. There are very few studies which are reported in the Indian populations or subcontinents [8]. Studies from different areas of world in this relation indicates that there is requirement of knowledge

of the frequency, site of involvement and basic clinical features of these lesions to identify the risk factors and population group at risk^[9]. They mostly occur in gnathic bones and approximately 3% of lesions are biopsied in dental treatment. They consist of 1% of all jaw tumors in oral cavity^[10, 11].

Studies from different countries like China, Tanzania, Europe, American and Srilanka have shown higher prevalence of Ameloblastoma among the Odontogenic tumors^[12]. Similar results were obtained in our present study.

The present study comprises of the profile of the Odontogenic tumors in the Indian population in the Indore city. The Odontogenic tumors included in the present study were in accordance with the WHO classification in 2005^[13]. As per our knowledge such type of studies are still in more demand as the nomenclature of such lesions are still not clear and more studies in such aspect are necessary to be undertaken with larger number of populations.

This study in accordance with the previous study confirmed that most of these Odontogenic tumors are having benign nature. About all the Odontogenic tumors occurred in patient less than 5 years of age. Most of the previous studies have reported for 1:1 ratio of male to female for the gender distribution of the Odontogenic tumors, however in our study we found male predominance as compared to the females this was in accordance with the study done by Odukoya. Female predominance was reported by Regezi *et al.* and Chan & Wu. In relation to the site of occurrence of the Odontogenic tumors; in the previous study it was reported that mandible is more commonly affected as compared to maxilla. Similar results were obtained in our present study too. In maxilla and mandible except Adenomatoid Odontogenic tumor most of the lesions were found in the posterior part of the jaws.

In the present study second most common tumor is odontoma; this is in contrast with the previous study carried out in Canadian population and Argentine population. Third most common lesion was found to be KCOT that is Keratocystic Odontogenic Tumor^[14]. This is in contrast with the study done earlier. They had found that AOT is the third most common lesion. The result for contrast is related that the previous study did not included KCOT in their classification, as it was considered as cyst before.

Calcifying epithelial Odontogenic tumor and ameloblastic fibroma were exclusively diagnosed in females with both having predilection for mandible in this study. They represent 1.67% of all OT. The frequency of these neoplasms in other series was also lower, confirming the rarity of these tumors.

Conclusion

The present study provides the information related to the epidemiology and the geographic variation among the Odontogenic tumors in the central Indian population. There is essentiality to have the knowledge in relation to the data of the Odontogenic tumors so as to ascertain the risk group of population and to ascertain proper diagnosis of the lesion.

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