Prevalence of Odontogenic Cysts and Tumors – A Clinicopathological Study

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Abstract

Background: The incidence and frequency of odontogenic cysts and tumors depends on the different geographic location. Odontogenic cysts and tumors are lesions that arise from the tooth apparatus or its remnants. The purpose of this study was to determine the prevalence of odontogenic cysts and tumors over a period of 5 years 9 months and to compare our results with other published studies.

Aim and Objective: The purpose of this study was to evaluate the prevalence of odontogenic cysts and tumors diagnosed at the Department of Oral Pathology, M.M. College of Dental Sciences & Research, Mullana (Ambala) and to compare the results with findings in the literature.

Materials and Method: Data of odontogenic cysts and tumors diagnosed during 2014 to 2019 (till September) w4ere collected from the files of the Oral Pathology Department, M.M. College of Dental Sciences & Research, Mullana (Ambala).

Results: Out of the total 71 cases of odontogenic cysts, most prevalent odontogenic cysts were found to be radicular cysts (n=42, %= 59.1%), followed by dentigerous cysts (n=17, %=23.9%) and odontogenic keratocyst (n=12, %=16.9%). Among the odontogenic tumors out of 49 cases reported, the most prevalent was ameloblastoma (n=28, %=57.1%) followed by, ameloblastic fibroma (n=06, %=12.2%), odontoma (n=05,%=10.2%), adenomatoid odontogenic tumor (n=03, %=6.1%), peripheral odontogenic fibroma (n=02, %=4.08%), ameloblastic carcinoma (n=02, %=4.08%), odontogenic fibroma (n=02, %=4.08%) and odontogenic myxofibroma (n=01, %=2.04%). The anterior and posterior portion of the body of mandible was the most common site for both odontogenic cysts and tumors. The age group for odontogenic cysts ranged from 07 to 72 years of age, whereas for the odontogenic cysts the range was 10 to 75 years of age. The male to female ratio for the odontogenic cysts was 1:1.2, whereas for the odontogenic tumors it was found to be having more female predilection with the ratio of 1:1.3.

Conclusion: The prevalence of odontogenic cysts was similar to that reported in the literature, with incidence of radicular cysts seen most frequently. In case of odontogenic tumors the findings vary to the reported literature with ameloblastoma being more commonly reported.

Key words: *Ameloblastoma, dentigerous cysts, odontogenic cyst, odontogenic tumors, odontoma, radicular cysts*

Introduction

Odontogenic cysts and tumors are derived from epithelial, ectomesenchymal or both the elements of the tooth-forming apparatus.[1,2] The jaws are host to a wide variety of cysts and tumors because large part of the tissue is involved in tooth formation.[3]These generally show slow, expansive growth and in some cases associated with marked bone destruction and recurrence.[4] Studies using histopathological data are important to characterize and establish the prevalence of oral and maxillofacial lesions in different age groups. In this respect, research based biopsy records are necessary to analyse the main types of lesions that occur in a given population and to provide data that can guide pathologists particularly in the

diagnosis and management of these lesions. Therefore, the purpose of this study was to evaluate the prevalence of different types of odontogenic cysts and tumors diagnosed histopathologically over a period of 5 years and 09 months in Mullana (Ambala) at the institutional level according to age, gender and site affected and to compare the results with findings in the literature.

Materials and Method

Data of odontogenic cysts and tumors diagnosed during 2014 to 2019 (till September) were collected from the files of the Oral Pathology Department, M.M. College of Dental Sciences & Research, Mullana (Ambala). The data were collected according to the variables; age, gender and site.

Results

Out of the total 71 cases of odontogenic cysts, most prevalent odontogenic cysts were found to be radicular cysts (n=42, %= 59.1%), followed by dentigerous cysts (n=17, %=23.9%) and odontogenic keratocyst (n=12, %=16.9%). Among the odontogenic tumors out of 49 cases reported, the most prevalent was ameloblastoma (n=28, %=57.1%) followed by, ameloblastic fibroma (n=06, %=12.2%), odontoma (n=05,%=10.2%), adenomatoid odontogenic tumor (n=03, %=6.1%), peripheral odontogenic fibroma (n=02, %=4.08%), ameloblastic carcinoma (n=02, %=4.08%), odontogenic fibroma (n=02, %=4.08%) and odontogenic myxofibroma (n=01, %=2.04%). The anterior and posterior portion of the body of mandible was the most common site for both odontogenic cysts and tumors. The age group for odontogenic cysts ranged from 07 to 72 years of age, whereas for the odontogenic cysts the range was 10 to 75 years of age. The male to female ratio (M:F) for the odontogenic cysts was 1:1.2, whereas for the odontogenic tumors it was found to be 1:1.3.

Discussion

Odontogenic cyst and tumors account for less than 2-3 % of all oral and maxillofacial lesions.[1] More than 95% of all odontogenic tumors are reported in large series are benign and around 75% are represented by odontomas, ameloblastomas and myxomas.[5] In the present study, Out of the total 71 cases of odontogenic cysts, most prevalent odontogenic cysts were found to be radicular cysts (n=42, %= 59.1%), followed by dentigerous cysts (n=17, %=23.9%) and odontogenic keratocyst (n=12, %=16.9%) which is in accordance to other studies in various countries.[4,6-9] This high incidence of radicular cysts may be due to the precarious oral conditions of the population studied and the lack of public awareness to prevent oral infectious diseases.[4] Among the odontogenic tumors out of 49 cases reported, the most prevalent was ameloblastoma (n=28, %=57.1%) followed by ameloblastic fibroma (n=06, %=12.2%), odontoma (n=05,%=10.2%), adenomatoid odontogenic tumor (n=03, %=6.1%), peripheral odontogenic fibroma (n=02, %=4.08%), ameloblastic carcinoma (n=02, %=4.08%), odontogenic fibroma (n=02, %=4.08%) and odontogenic myxofibroma (n=01, %=2.04%). Similarly, studies from Nigeria, China, Tanzania, and SriLanka show a higher prevalence of ameloblastoma.[10-14] Ameloblastoma accounts for 60.3% of all odontogenic tumors in Indian population, with a mean age of presentation of 30.2 years.[15] As studies on the incidence of ameloblastomas are rare but at the molecular level, it was observed that the transforming growth factor-β (TGF-β)/SMAD signaling pathway is commonly activated in ameloblastomas, adenomatoid odontogenic tumor, and calcifying cystic odontogenic tumors. Meanwhile, the TGF-β/SMAD immuno reaction is significantly reduced in ameloblastomas in comparison to AOT's and calcifying cystic odontogenic tumors. These changes may lead to the more aggressive biological behavior of ameloblastomas through increased cell proliferation and reduced apoptosis and differentiation.[16] In the present study, the anterior and posterior portion of the body of mandible was the most common site for both odontogenic cysts and tumors similar to the studies reported by Nunez-Urrutia et al,[7] Avelar et al[6] and Meningaud et al[17] whereas many previous studies have reported maxilla[18-20] was the anatomic site most often affected by odontogenic cysts but there is no definitive explanation in the literature related to site variations.[21]

The age group for odontogenic cysts ranged from 07 to 72 years of age, whereas for the odontogenic tumors the range was 10 to 75 years of age. The male to female ratio for the odontogenic cysts was 1:1.2 with a female predilection. Similar results have been reported in Brazilian population.[22] On the contr4ary, male predominance was found in other studies[22-26]whereas for the odontogenic tumors it was found to be having

more female predilection with the ratio of 1:1.3.

Conclusion

The prevalence of odontogenic cysts was similar to that reported in the literature, with incidence of radicular cysts seen most frequently. In case of odontogenic tumors the findings vary to the reported literature with ameloblastoma being more commonly reported.

Ethical Clearance: Since it was a retrospective study, there was no need for the ethical clearance from the committee.

Source of Funding: Self

Conflict of Interest: Nil

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