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ODONTOGENIC TUMORS IN CHILDREN AND ADOLESCENTS- A SINGLE CENTRE RETROSPECTIVE STUDY

Dental science

Dr.Resmi.G.Nair* MDS Associate Professor Department of Oral Pathology Government Dental College Kozhikode City PIN -673008 KERALA State INDIA *Corresponding Author

Dr. Sudha.S MDS Professor and the Head of the department Department of Oral Pathology Government Dental College Kozhikode City PIN -673008 KERALA State INDIA

ABSTRACT

Aim: To determine distribution of odontogenic tumors in children and adolescents.
Materials and Methods: Archives of biopsy reports retrieved from Department of Oral Pathology, Government Dental College, Kozhikode (January 2001 through December 2016). Histologicaly diagnosed cases of odontogenic tumors ≤ 19 years were included and data analyzed for age, gender, site and histopathologic type.
Results: Total 91 odontogenic tumors (42.33%) were identified. Majority were males aged 13-19 years. Mandible was commonest site and Odontoma was the most common odontogenic tumor.
Conclusion: Odontogenic tumors in children and adolescents cannot be considered infrequent.

KEYWORDS

Odontogenic tumors, adolescents, children

Introduction

Odontogenic tumors comprise a complex group of lesions of diverse histopathologic types and clinical behavior [1]. These tumors have specific histopathologic patterns that reflect various stages of odontogenesis [2]. Frequency of odontogenic tumors in pediatric population differ greatly ranging from 1% to 28% [3, 4]. Although odontogenic tumors in pediatric population have been studied worldwide, very less data is available from India. The aim of this study is to determine the relative frequency and distribution of odontogenic tumors in children and adolescents ≤ 19 years.

Materials and Methods

Archives of biopsy reports were retrieved from the Department of Oral Pathology, Government Dental College, Kozhikode from January 2001 through December 2016. All histologicaly diagnosed odontogenic tumors ≤ 19 years were included. Odontogenic Keratocyst was not included as it is reinstated as a cyst in latest WHO classification [5, 6]. Data was analyzed for age, gender, anatomic site and histopathologic type. Age of the patients were categorized into 3; Group1 (0-6 years), Group 2 (7-12 years) and Group 3 (13-19 years). Maxilla and mandible were divided into 2 regions – anterior and posterior. Anterior was defined from distal aspect of right canine to distal aspect of left canine, Posterior from mesial aspect of first Premolar to distal aspect of third molar. Data was analyzed by descriptive statistics using SPSS (Statistical Package for Social Science).

Results

Of the 8306 biopsies, 922 constituted pediatric cases (11.1%). 215 tumors were seen, of which 91 (42.33%) were odontogenic. There were 48 males and 43 females; M: F = 1.12:1. Group 3 was affected more. [Table1].

Table1. Frequency and distribution of odontogenic tumors in relation to age and gender

Tumor type	Incidence		Age in years			Gender	
	N	%	0-6 (Group 1)	7-12 (Group 2)	13-19 (Group3)	Male	Female
Odontoma	37	40.66	1	16	20	19	18
Ameloblastoma	20	21.98	1	6	13	15	5
Adenomatoid Odontogenic tumor	16	17.58	0	4	12	8	8
Peripheral odontogenic fibroma	7	7.69	1	4	2	1	6
Ameloblastic fibroma	5	5.49	0	2	3	3	2
Central odontogenic fibroma	4	4.40	0	0	4	1	3
Dentinogenic ghost cell tumor	1	1.10	0	0	1	1	0
Odontogenic Myxoma	1	1.10	0	0	1	0	1
Total	91	100%	3	32	56	48	43
			35	56	91		

Mandible was the commonest site, maxilla: mandible= 1:1.6. [Table2].

Table2 Anatomic Site Distribution of Odontogenic Tumors

Tumor Type	N	Maxilla anterior	Maxilla posterior	Mandible anterior	Mandible posterior	Maxilla	Mandible	Maxilla: mandible
Odontoma	37	22	2	5	8	24	13	1:0.54
Ameloblastoma	20	1	0	0	19	1	19	1:19
Adenomatoid Odontogenic tumor	16	8	0	6	2	8	8	1:1
Peripheral Odontogenic fibroma	7	0	0	5	2	0	7	NA
Ameloblastic fibroma	5	2	0	1	2	2	3	1:1.5
Central odontogenic fibroma	4	0	0	0	4	0	4	NA
Dentinogenic ghost cell tumor	1	0	0	0	1	0	1	NA
Odontogenic Myxoma	1	0	0	1	0	0	1	NA
Total	92	33	2	18	38	35	56	1:1.6

Odontoma was the most common tumor comprising 40.66% followed by Ameloblastoma 21.98% and Adenomatoid odontogenic tumor 17.58%.

Odontoma

Majority occurred in Group 2, maxillary anterior region, maxilla: mandible 1.85:1 and showed equal gender predilection.

Ameloblastoma
Occurred in mandible posterior region, maxilla: mandible 0.05:1. Males affected more; M: F= 3:1.

Adenomatoid odontogenic tumor (AOT)
Accounted 17.58%, showed equal gender and site predilection. Majority occurred in Group 3.

Peripheral Odontogenic Fibroma
Accounted 7.69%, female predilection and occurred exclusively in mandible.

Ameloblastic Fibroma
Accounted 5.49% with equal gender and site predilection.

Central Odontogenic Fibroma
Comprised 4.48%, female predilection, exclusively in mandible posterior region.

Dentinogenic Ghost Cell Tumor & Odontogenic Myxoma
One case from each (1.10%) was reported. Both were in adolescent group and in mandible.

Discussion

Primary jaw tumors are classified into odontogenic or non-odontogenic and benign or malignant [7].Their biological behavior range from hamartomas and benign neoplasms to aggressive malignant tumors [8, 9]. Establishing comparisons is difficult due to differences in criteria applied to diagnose and classify the lesions, the upper age limit and racial-ethnic origin of the population[3,10,11,12,13,14]. Odontogenic tumors represented 42.33% of the total neoplasms. This was higher than studies by Arotiba et al [15], Ulmansky et al [16] and lower than Sato et al [13] & Tanaka et al [14]. Odontogenic tumors show predilection for mandible. This is corroborated with our finding. Some found maxillary predilection [17]. Males were affected more and is in agreement with Ajayi et al [18]and others[12].

Odontogenic tumors were rare in Group1. This is in agreement with previous literature [12, 18]. Majority occurred in Group3. In permanent teeth, crown formation is completed by 5 years; odontogenic tumor seems to develop after crown formation. This strengthens the impression that odontogenic tumors arise from quiescent remnants of tooth germ[13,14,18].

Odontoma was the most common tumor and is in agreement with previous studies whereas some authors reported ameloblastoma as most common tumor [18, 19]. Odontomas are slow growing and asymptomatic [20]. The increased number may be due to the widespread use of Orthopantomography which has allowed their detection easier. Majority involved maxillary anterior region which was in agreement with earlier studies[20].

Previous studies report ameloblastoma as the commonest odontogenic tumor [12,18]. The reported frequency of ameloblastoma is 24% to 53.8% [10, 17]. This was higher than our study (21.98%). Some authors like Jones[21], Tanrikulu R[22] observed lower percentages. In this series most cases occurred in adolescents, in mandible posterior region and showed male preponderance.

75% of AOT occurred in adolescents, in anterior maxilla, showed equal gender predilection. Asamoa et al [23] and Arotiba et al [19] found AOT as most frequent pediatric tumor in Nigeria. Odontogenic fibroma is rare in children, incidence ranging from 0% to 1.3% [12, 18]. Our study showed 7.69% and 4.40% for peripheral and central odontogenic fibroma. This was similar to findings of Al- Khateeb et al [17]. Most cases were in mandible and showed female preponderance. This was in agreement with Lu et al [24].

Amelobastic fibroma showed equal gender and site predilection. Others reported predilection for mandible[18].The reported incidence is 1.2% to 39% [12, 13,]. Our study showed 1 case of Odontogenic Myxoma and Dentinogenic Ghost Cell Tumor. Both occurred in adolescents and in mandible.

Malignant odontogenic tumors are rare in pediatric population [25, 26]. No malignant odontogenic tumors were observed in this study.

Conclusion

We conclude that odontogenic tumors in pediatric group cannot be considered infrequent. Variations with previous literature does not seem to be due to ethnic or racial differences, but rather to the criteria applied in each study and the lack of infrastructure and facilities to detect asymptomatic lesions.

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