CLINICAL STATISTICS OF THE ADENOMATOID ODONTOGENIC TUMOUR IN MALAYSIA (1968–1986)

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ABSTRACT

The records of the Division of Stomatology were reviewed for the incidence of adenomatoid odontogenic tumour diagnosed between 1968 and 1986. Forty-five cases were found. The prevalence of this tumour according to their age, sex, site and its distribution in the various states in Malaysia are reported. Many features were similar to previous reports of this entity. However the incidence of AOT appears to be higher among the Indians and lower in the Chinese population. It is suggested that this feature may be peculiar to Malaysians.

Keywords

Adenomatoid odontogenic tumour–jaw–clinical statistics.

INTRODUCTION

The adenomatoid odontogenic tumour (AOT) is a benign, hamartomatous lesion of odontogenic epithelial origin[1]. Since its first description by Ghosh[2] in 1934, more than 160 verifiable cases have been reported worldwide[1–15]. Most of these were based on studies from North America[13–15], Europe[5] and Africa[11]. Apart from a comprehensive study of seven so-called adenoameloblastomas in Malaysians by Lee[4] in 1965, relatively little is known of the frequency of occurrence of this tumour in this country. It is thus the aim of this study to retrospectively survey 45 such cases diagnosed in the Division of Stomatology between 1968 and 1986. This report presents our findings.

MATERIALS AND METHOD

The records of the Division of Stomatology, Institute for Medical Research were reviewed for the incidence of AOT diagnosed between 1968 and July 1986. Forty-five cases were found. The criteria for

the selection of these cases was based on the definition of an AOT by the WHO committee on the Histological Typing of Odontogenic Tumours, Jaw Cysts, and Allied Lesions in 1971:[12]

> "A tumour of odontogenic epithelium with duct-like structures and with varying degress of inductive change in the connective tissue. The tumour may be partly cystic, and in some cases the solid lesion may be present only as masses in the wall of a large cyst"

Information on all these histologically verified cases was collected from the patients' case notes or from accompanying clinical data provided with the biopsy specimens. Analysis of these cases according to the age, sex, race and site of occurrence of the tumour was done. For the analysis of these tumours based on the different states in Malaysia, the hospital or clinic where the patient had his/her initial treatment was taken into consideration. The Federal Territory and Selangor state were combined to form one zone so as to facilitate analysis.

RESULTS

Race

Between 1968 and July 1986 a total of 45 cases of AOT were entered into the records of the Division of Stomatology, Institute for Medical Research (Tables I and II). Of the 45 Patients, 23 were Malays, 10 Chinese, 7 Indians, 1 Sikh, 1 Kadazan, 1 Bugis and the race unrecorded in two cases (Table I).

Sex

There were 28 females and 15 males, the sex of two patients being unrecorded. (Table III) The male female ratio was 1 : 1.87.

Age

The age at which the lesion was first diagnosed ranged from 10 to 31 years. A peak incidence in the second decade (62.2%) was observed with 95.6% of the patients in the second and third decade age group (Table III). The mean age was 18.0 years and the median 17.0 years. For the male patient the

Table I Distribution of adenomatoid odontogenic tumour by race, sex, age and site (1968–1986)

Race	Sex	No. of patients	Mean Age ± S.D. (Range)	Site	
				Maxilla	Mandible
Malay	F	16	16.5 ± 3.9 (11–23)	11	5
	M	7	16.9 ± 5.8 (11–28)	6	1
Chinese	F	6	20.0 ± 8.3 (13–30)	3	3
	M	4	18.8 ± 5.9 (12–25)	3	1
Indian	F	5	19.0 ± 3.8 (15–23)	5	0
	M	2	15.5 ± 0.5 (12–19)	2	0
Total		40*		30	10

* Exculdes 3 cases of other race and 2 of unrecorded race.

Table II Distribution of adenomatoid odontogenic tumour in Malaysia (1968–86)

State	No. of cases			
	1968–86	1968–69	1970–79	1980–86
Federal Territory –Selangor	11	1	9	1
Penang	6	0	3	3
Perak	6	1	5	0
Johore	5	0	2	3
Kedah	4	0	3	1
Kelantan	3	1	1	1
Pahang	3	1	2	0
Malacca	3	0	3	0
Perlis	1	0	0	1
Total	45	4	29	12
Percentage	(100)	(8.9)	(64.4)	(26.7)

Table III Distribution of adenomation odontogenic tumour by age, sex and race

State	Number of Cases	Age			Sex		Race			
		10–9	20–29	30–39	Male	Female	Malays	Chinese	Indian	Others
Federal Territory –Selangor	11	6	4	1	2	9	4	3	3	1*
Penang	6	1	4	1	1	5	3	1	2	0
Perak	6	4	2	0	5	1	2	2	1	UK**
Johore	5	4	1	0	1	4	4	1	0	0
Kedah	4	2	2	0	2	2	3	1	0	0
Pahang	3	3	0	0	1	2	2	0	1	0
Kelantan	3	3	0	0	1	2	3	0	0	0
Malacca	3	3	0	0	1	2	1	2	0	0
Sabah***	3	1	2	0	1	0	0	0	0	3***
Perlis	1	1	0	0	0	1	1	0	0	0
Total	45	28	15	2	15	28	23	10	7	5
Percentage	(100)	(62.2)	(33.4)	(4.4)			(51.1)	(22.2)	(15.6)	(11.1)

* Sikh
** unknown race
*** Bugis (unrecorded sex); 1 Kadazan; 1 unknown race (unrecorded sex)

mean age was 16.7 ± 5.4 and the female patients 18.0 ± 5.2; the difference is statistically not significant.

SITE

Of the 45 AOT, 33 (73.3%) occurred in the maxilla and 12 (26.7%) occurred in the mandible. In the maxilla the caninepremolar region was the most comman site while in the mandible the incisal-canine region was most commonly involved.

DISTRIBUTION BY STATES

Table II shows the frequency of distribution of AOT in the various states in Malaysia. The highest rate recorded was from the Federal Territory-Selangor area (24.4%). Of the 45 patients recorded, 91.1% were diagnosed between 1970 and 1986.

The distribution of AOT according to the age groups in the various states is shown in Table III. Most of these states had a peak incidence in the 10–19 years age group except for Penang and Sabah where a peak incidence in the third decade of life was observed.

Table III also shows the distribution of AOT in the different states by sex and race. Most of the states consistently exhibited a female preponderance except for Perak which had a male predominance, and Kedah which had an even sex distribution. A higher prevalence rate in the ethnic Malaya group was also observed in the Federal Territory-Selangor area, Penang, Johore, Kedah, Pahang and Kelantan. In the other states no specific preference for a particular race was found.

Analysis of the site distribution of AOT on a state basis shows that in six states (Federal Territory-Selangor, Penang, Perak, Johore, Kelantan and Malacca) a preferential occurrence in the maxilla was observed, while in four others (Kedah, Pahang, Sabah and Perlis) an almost even site distribution was noted.

MODE OF PRESENTATION AND TREATMENT

In all the 45 AOT, the commonest presenting symptom was an intraoral or extraoral swelling. Except for one case which was associated with severe pain, the swelling was usually painless and slowly growing. Tooth displacement was noted in one case. The duration of these symptoms may range from one month to 9 years (mean = 12.3 months; median = 6 months). There was no case in which the lesion was asymptomatic and discovered fortuitously by radiographic examination.

All the 45 AOT in this series were intraosseous in location. Twenty-three lesions (51.1%) were described as well-defined unilocular radiolucencies. One case presented as a radiopaque mass. Bony expansion was noted in 13 cases (28.9%) with perforation in three (6.7%). Twenty-five lesions were radiographically associated with unerupted teeth – this being a canine in 18 cases (72%); incisor in four cases (16%); premolar one case (4%), molar one case (4%); and one case an unspecified tooth (4%). Root resorption was only noted in one case.

Nineteen (42.2%) of the 45 AOT were clinically diagnosed as dentigerous cysts. Eight cases (17.8%) were pre-operatively diagnosed as AOT. Enucleation with primary closure was carried out in 29 cases. In four marsupialisation was done with enucleation as a second stage procedure in three cases, and marginal resection of the left body of the mandible in one case. The mode of treatment in the remaining 12 cases was not known. In all 45 cases of AOT, no recurrences were recorded.

DISCUSSION

The present study revealed that the AOT represented about 9.7% of all odontogenic tumours diagnosed in this department and about 0.3% of the total biopsy specimens received between 1968 and July 1986. The reported percentages of AOT found among all odontogenic tumours varies in different studies: Courtney and Kerr (3%)[13]; Hacihanefioglu (2.6%)[9]; and Ajagbe et al. (6.5%)[11]. The differences in findings in these published series may be geographical or due to the fact that some studies covered a broader selection of odontogenic tumours while in others only certain types of odontogenic tumours were selected. In the present study the list of odontogenic tumours considered were based on the WHO classification[12].

In the present study, the findings on the age of occurrence, sex and site distribution of AOT compare favourably with those of previous reports. This investigation further confirms the well-recognised tendency of these tumours to show a preferential occurrence in the anterior maxilla more than the mandible, a higher frequency in females and peak incidence in the second decade of life. A comparison of the distribution of AOT between published series and present study is summarised in Table IV. In Peninsular Malaysia, the three major races are the Malays (56%), Chinese (33.4%) and the Indians (10%)[16]. When this is compared with prevalence of AOT in this study, it would appear that the incidence in the Malays is almost equal with the population ratio while it is lower in the Chinese and higher among the Indians. This seems to infer that the AOT could to some extent exhibit a degree of racial predilection.

Table IV Comparison of the distribution of the adenomatoid odontogenic tumour

Author	Year	Country	No. of cases	Mean Age (Range)	Female	Male	Maxilla	Mand.
Lee	1965	Malaysia	7	13.8 (12–20)	3	4	4	3
Abrams et al.	1986	USA	10	12.3 (9–16)	7	3	7	3
Giansanti et al.	1970	USA	111 (Review)	17.8 (5–53)	65	36	69	37
Hacihanefioglu	1974	Turkey	5	16.0 (6–28)	4	1	2	3
Ajagbe et al.	1985	Nigeria	13	15.2 (10–20)	7	6	8	5
Present study	1986	Malaysia	45	18.0 (10–31)	28	15	33	12

The interstate variation in the incidence of AOT as observed in this study may be due to various reasons. One possible reason is that although the Division of Stomatology is the only oral pathology diagnostic centre providing tissue biopsy services to all government dental clinics and hospitals, there is the possibility that some AOT cases may have been sent to other general pathology laboratories, thus accounting for the lower incidence of this tumour in some of these states as shown in this study. The Division of Stomatology is more accessible to hospitals and dental clinics in the Federal Territory and Selangor. Other reasons could be the unequal utilisation of the hospitals and dental clinics and the varying populations in the different states.

The clinical presentation and radiographic findings in this study correlate well with those of previous reports[4,9,15]. The high percentage of dentigerous cyst as a clinical diagnosis could be attributable to the fact that a large proportion of these lesions presented as unilocular radiolucencies associated with the crowns of unerupted teeth. It is further known that fine scattered radiopacities may sometimes be present

within these radiolucencies and these structures may be useful in the pre-operative diagnosis of an AOT[10]. This feature was however not observed in the present study.

In this study the lack of recurrences following simple enucleation or curettage further confirm the views that the AOT is a benign, hamartomatous lesion that can be adequately treated by conservative surgical excision.[10]

ACKNOWLEDGEMENTS

The authors thank all their colleagues for generously contributing their cases for this study, and to the staff of the Division of Stomatology for their technical and secretarial assistance.

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