THE RADIOGRAPHIC APPEARANCE OF AMELOBLASTOMA IN MALAYSIANS

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ABSTRACT

The radiographs of fifteen Malaysian patients with presenting ameloblastoma aged between 20-55 years (average 35 years) were studied for any peculiar local features. The most common features were cortical plate expansion (80%), corticated scalloped margin (67%), multiloculation (87%), and resorption of tooth roots (47%). The latter two features are constantly found in advanced tumour stage. As pain was not a frequent complaint, many Malaysian patients seek treatment only at a very late stage after the tumours have reached large dimensions. Although ameloblastomas may be diagnosed often through radiographs, it should not be relied upon solely.

Keywords: Ameloblastoma, radiographs, Malaysians, multiloculation, root resorption.

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INTRODUCTION

Ameloblastomas are not common. It is estimated to account for about 1% of all jaw cysts and tumours of the jaws[1]. Radiographically, the ameloblastoma has been described as a multilocular or unilocular cyst-like lesion. The periphery of the lesion may be smooth or scalloped. The cortical plate may become thin, expanded and may even become perforated if the lesion is in its advanced stage. It has been stated[2] that radiographically, ameloblastoma may be mistaken for odontogenic keratocyst, fibroma, fibromyxoma, fibrosarcoma, haemangioma, aneurysmal bone cyst and giant cell tumour. The desmoplastic ameloblastoma is especially deceptive radiographically, as it may mimick fibro-osseous lesions or globulomaxillary cyst.

As radiographs form an important adjunct in the diagnosis of oral lesions of various types especially those that involve bone, it is important for clinicians practising in this part of the world to be able to pick up the salient features of ameloblastoma which are peculiar to the local population, if any. This paper aims to study the radiographic features of ameloblastoma in Malaysian patients in comparison with those that have already been documented in the literature.

MATERIALS AND METHODS

This investigation is based upon the records of patients with "simple ameloblastoma"[3] who presented at the Dental Faculty, University of Malaya over a period of seven years between 1977 and 1984. The radiographs of the fifteen patients with no history of previous surgical treatment were used to determine the radiological features of ameloblastoma on presentation. Nine patients were males and 6 were females. The racial distribution was: six Chinese, five Malays, two Indians, one Kadazan and one Orang Asli (Malaysian aborigine). Their ages ranged from twenty to fifty-five years with an average of 35 years.

So that the features of ameloblastoma in Malaysians may be studied, the methods employed by McIvor[4] were closely adhered to as follows:-

Tumours were classified as radiologically multilocular if more than one corticated transluscent area was present. The bony cortex surrounding the tumour was classified as being smooth or scalloped. Expansion of the tumour and of the overlying cortical bone plate, or its perforation were recorded if seen on a tangential view. Radiolucencies separated from erupted or unerupted teeth by normal trabecalar bone were classified as being situated in edentulous areas. Radiolucencies adjacent to the root, to the crown, or both, were classified as being adjacent to teeth. Root resorption, whenever present, were recorded. The tumours were classified as being situated in the ramus if the radiolucencies lay behind a line drawn from the maximum concavity of the upper border of the mandible to the angle of the mandible; and in the body of the mandible if in front.

RESULTS

The salient radiographic features seen in the present series of ameloblastomas were multilocular radiolucencies involving the mandibles and the maxillae. All of them exhibited scalloped margins (Fig 1). Unilocular lesions were not as common and tend to exhibit smooth margins (Fig 2). Expansion of the cortical plates was a feature of large ameloblastomas which were responsible for causing facial deformity (Figs 3,4). Untreated ameloblastomas continued to expand the cortical plates until they were perforated (Fig 1). Teeth that were intimately associated with the tumour had their roots resorbed to variable degrees of intensity (Figs 1,2,4). The radiological features of the tumours are presented in Table I.

DISCUSSION

McIvor (4) stated that there are four radiographic features that are significant in ameloblastoma. These include the expansion of the cortical plate, the presence of corticated scalloped margin, multilocular appearance of the lesion, and the resorption of the adjacent roots of teeth. The frequencies of occurrence of such features in his sixteen cases were 81%, 62%, 46% and 31% respectively. The corresponding figures in our fifteen Malaysians were found to be 80%, 67% 87% and 47%. The present study confirms McIvor's findings[4] that all the tumours were surrounded by a well-defined smooth or scalloped bony cortex. The features of expansion of cortical plate by the tumour and the corticated scalloped margin appearances occurred at almost the same frequency in both studies. However, the present study showed

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Fig 1. – Presenting ameloblastoma in a female aged 34 years affecting the body of the left mandible. The tumour is multilocular with scalloped margin. There is perforation of the cortical plate. This patient complained of pain coming from the tumour. The roots of $\overline{123}$ are resorbed.

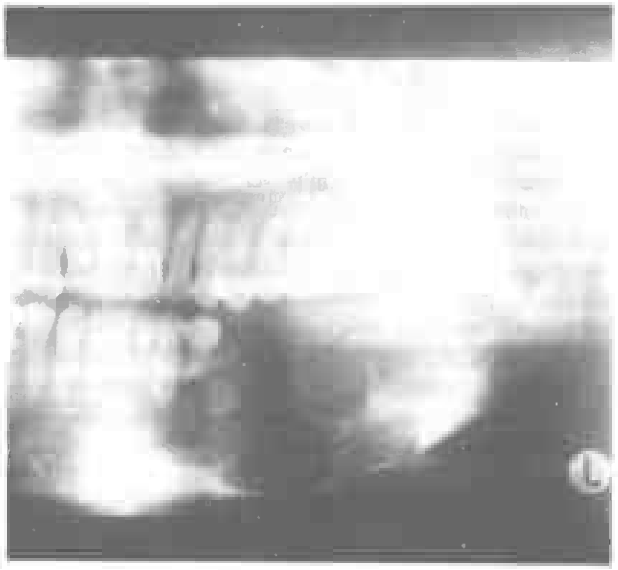

Fig 2 – Presenting amelobastoma in a female aged 36 years affecting the left maxilla. The tumour is unilocular with smooth margin, and is associated with the resorbed roots of the left bicuspids and the crown of an unerupted supernumerary tooth. This type of radiolucency is very often mistaken for that of a dentigerous cyst.

Fig 3 – Presenting amelobastoma in a male aged 47 years affecting the right body of the mandible. The lingual and buccal cortical plates are greatly expanded causing facial deformity.

Fig 4 – Presenting ameloblastoma in a male aged 55 years affecting the left mandible that has reached a huge dimension causing severe facial deformity. The tumour is multilocular with scalloped margins. The affected mandibular molars and canine are displaced.

that the number of tumours with multilocular appearance (87%) far exceeded that of the unilocular type - a feature which occurred almost twice as much as that of McIvor's[4]. Teeth which are adjacent to ameloblastomas quite often undergo root resorption. Struthers and Shear[5] stated that 81% of the tumours in their study had root resorption in contrast to McIvor's[4] 31%. In the present study, the corresponding figure was 47% - a figure which is much higher than that of McIvor's[4]. The author is of the opinion that the length of time the tooth has been in contact with the tumour and its close proximity to it are important factors that will determine whether the tooth would undergo resorption.

Eighty percent of ameloblastomas are found in the mandible with the majority (about 75%) occurring in the molar and ramus

Table I
The Radiological Features of 15 Cases of Presenting Ameloblastomas.

Features of lesions	No. of Cases
a. multilocular	13
b. unilocular	2
c. Expansion of cortex	12
d. scalloped margin	10
e. smooth margin	5
f. perforation	5
g. maxillary lesion	4
h. mandibular lesion (ramus)	4
i. mandibular lesion (body)	7
j. relationship to teeth:	
– in edentulous area	3
– adjacent to root & crown	12
k. root resorption	7

areas[5]. The present study concurred with the above view. However, Sawyer et al[7] found that in Nigerians, 39.1% of ameloblastomas were found in the anterior parts of their mandibles, which was in contrast to the American Blacks whose posterior segment of the horizontal rami were more favoured as sites of ameloblastoma occurrence.

Ameloblastoma does not usually cause pain unless infected or traumatised. All the patients who complained of pain in the present study had perforations of their cortical plates. When such perforations occurred tumour tissues were no longer confined within the jaw bones but were disseminated into the overlying soft tissues in the oral cavity or the face. Any breach in the integrity of the oral or surface epithelium would thus result in the tumour being easily infected by microorganisms. Because most ameloblastomas do not give rise to pain, many Malaysian patients did not seek early treatment, even though variable degrees of facial swelling and even deformity were evident in some cases. Some tumours were allowed to attain huge dimensions (Fig 4).

In conclusion, ameloblastomas in Malaysians show four common radiological features: cortical plate expansion, corticated scalloped margin, multiloculation and resorption of tooth roots adjacent to the lesions. Although very often a diagnosis of an ameloblastoma may intelligently be made with only the aid of radiographic features, one should never rely on it alone. All such lesions should be biopsied and an accurate histologic diagnosis obtained before definitive treatment is commenced.

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