Brief communication

# Ameloblastoma of the jaws in Ethiopia

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**Abstract**: The incidence of jaw tumours, including ameloblastoma, has been reported to be high in Africa. To determine the relative frequency of ameloblastoma in Ethiopia, its distribution by age, sex, site of growth, and histologic subtypes, a retrospective descriptive study was conducted for the period of November 1967 to December 1997 in the Department of Pathology of a referral hospital, Faculty of Medicine, Addis Ababa University. Based on histopathologic surgical biopsy results, there were 4o male and 24 female patients; the youngest was an eight-year-old boy and the oldest a seventy-oneyear-old woman and the mean age was 30.5 years. Of the 64 histologically proven cases of ameloblastoma, 50 were localized to the mandible and 13 involved the maxilla. A twenty-seven-year-old woman had ameloblastoma occurring in both the mandible and the maxilla. A fifty-three-year-old woman, originally diagnosed as having basal-cell-carcinoma of the gingiva, was considered to have peripheral ameloblastoma. Follicular, plexiform, acanthomatous, angiomatoid, and mixed histologic patterns were seen in this material. Complex histologic subtypes and malignant ameloblastoma were not observed in this series. The average occurrence of ameloblastoma in this material was 2.1 per year. Various prognostic factors related to ameloblastoma were reviewed from the medical literature. There is need for the establishment of a National Cancer Registry to determine the magnitude of ameloblastoma and other neoplasms in Ethiopia. [*Ethiop. J. Health Dev.* 1999;13(2):163-167]

## Introduction

Ameloblastoma is the most frequent odontogenic benign but locally invasive neoplasm consisting of proliferating odontogenic epithelium with various amounts of surrounding fibrous tissue (1). Clinically, ameloblastoma is classified into three types that exhibit different biologic behaviour: (a) the typical intraosseous solid or multicystic ameloblastoma which tend to invade the inter trabecular spaces of cancellous bone, (b) the unicystic ameloblastoma often diagnosed after enucleation occurring in a younger age group usually in the second decade, and (c) the rare peripheral ameloblastoma which appears to arise from either remnants of the dental lamina within the gingiva or from the surface epithelium lacking the invasive nature of intra osseous ameloblastomas (2,3,4,5,6). Ameloblastoma most often appears near the ramus of the mandible a as small painless

slowly growing mass (7,8). In the absence of treatment, the tumour may attain a large size, particularly in less developed countries, causing facial deformity which urges the patient to seek medical advice (9). The tumour may occur at any age but the peak reported incidence was in the $4^{th}$ decade (10). The histological appearance of ameloblastoma is typical but exhibit varied histological patterns. Ameloblastoma is called malignant only if it demonstrates metastasis (11) and it shows a high recurrence rate if not removed adequately (12). This study was undertaken to provide data on relative frequency, age, sex, site of growth, and the histopathology of ameloblastoma diagnosed in the Department of Pathology of a

referral hospital, Faculty of Medicine, Addis Ababa University in Ethiopia during 1967 to 1997 with a review of the literature on prognostic factors.

**Methods**

Clinical records from the surgical request forms of the Department of Pathology, Faculty of Medicine, Addis Ababa University, were reviewed for the period of November 1967 to December 1997. The pathologic materials included biopsy materials, jaw tumours with a surrounding margin of normal bone and a completely resected tumour bearing areas of the jaw histologically proven as adamantinoma or ameloblastoma and basal cell carcinoma in the soft tissues covering the tooth bearing parts of the jaws were analysed. The Department renders pathology services to hospitals within and outside Addis Ababa processing approximately 4000 specimens per year. Duplicate registrations and all other odontogenic tumours were removed from the study. The histomorphological features of the 63 histologic slides of jaw ameloblastoma and one histologic slide of basal cell carcinoma of the gingiva were re-examined using the histologic typing of odontogenic tumours, adopted by the World Health Organization, No. 5, 1971. (1). All 63 cases fulfilled the histologic criteria of ameloblastoma. One case originally diagnosed as basal cell carcinoma of the gingiva was changed to extraosseous ameloblastoma according to a review of the medical literature on ameloblastom (4,5,6). Formalin-fixed, paraffin-embedded, and Haematoxylin-Eosin stained sections were used in all the 64 cases. All cases were analyzed according to age, sex, site of growth, histopathologic pattern, and yearly occurrence

of ameloblastomas. The prognostic factors related to ameloblastoma were reviewed from the medical literature (4,5,6). A descriptive statistical method was employed to analyse the data.

**Results**

The yearly average occurrence of ameloblastoma in this series was 2.1. Of the 64 patients who had ameloblastoma, 40 were male and 24 were female giving a male to female ratio of 1.67:1. The youngest was eight years and the oldest seventy- and the average age was 30.5 years. Fifty of the 64 histologically proven cases of ameloblastoma were localized to the mandible while thirteen were in the maxilla. A twenty-seven-year-old woman had ameloblastoma involving both maxilla and mandible. A fifty-three-year-old woman originally diagnosed as having basal cell carcinoma of the gingiva was reasonably considered as peripheral extra osseous ameloblastoma (Table 1). Microscopically, ameloblastoma appeared bland, exhibiting follicular, plexiform, acanthomatous, angiomatoid, and mixed patterns (Table 2). Other patterns (granular cell, clear cell, sideroid ameloblastoma, dentinoid ameloblastoma, desmoplastic, papilliferous, etc) and malignant amelblastoma were not seen in this

**Discussion**

Tumours of the jaw, including ameloblastoma, seem to be more frequent in Africa than in other parts of the world (7,8,9,13). A collection from large series of ameloblastoma cases from all parts of the world, shows that its occurrence was estimated to be about 1-2% of all tumours and cysts of the jaw(11). Larsson and Almeren reported the yearly incidence rate of ameloblastoma to be between 0.13 and 0.63 cases per million Swedish population during 1958-1971(11). Ameloblastomas constituted 56% of the odontogenic tumours among a total of 81 primary tumour and tumour-like lesions of the mandible seen at the Hindu University Hospital, Banaras, as reported by Khanna et al (14). The average yearly occurrence of ameloblastoma in this study was 2.1. Anand et al in their review of 256 patients with tumours of the jaw in West Africa found 49 cases of

ameloblastoma of the mandible and maxilla whose ages ranged from 12 to 62 years with mean age of 33 years; more males affected than females (8). Singh and Cook in their 17 cases of ameloblastoma of the jaws, the youngest patient was 13 and the oldest was 50 with mean age of 33 years; female patients predominated by a ratio of 6:3 (13). Of the 177 ameloblastomas reported in the Mayo Clinic series through 1993, most patients were above 40 years old. The youngest patient to have ameloblastoma recorded was seven years old. More female patients than male are affected by a ratio of 4:3 (10). Seh dev et al in their review of 95 cases of ameloblastoma of the mandible and maxilla, the youngest patient was a 10-year-old girl and the oldest a 78-year-old man, and two-thirds of the tumours occurred in patients between 31 and 60 years of age. There were 44 males and 51 females (15). Larsson and Almeran in their analysis of 31 cases of ameloblastoma of the jaws, the youngest was two and the oldest 93-years old with mean of 50.5 years and with over all predominance of males over females (11). In the present series of 63 cases of ameloblastoma of the mandible and maxilla and one case of extraosseous ameloblastoma, the age group most affected was 30-39 years. The youngest was an eight-year-old male and the oldest a 71-year-old woman with mean age of 30.5 years male patients predominated by a ratio of 6:3. These findings correspond to most of the published reports (11-14). In most of the reported series, ameloblastoma of the jaw occurred in the mandible, consistent with the present study (2,7-9,13,16). There was no published report of ameloblastoma involving both mandible and maxilla which was observed in a 27-year-old woman in the present series. Basal cell carcinomas of the gingiva are now considered as extraosseous ameloblastomas (4,5). The histomorphologic appearance of ameloblastoma is typical but exhibit varied histologic patterns (11), the two predominant patterns being follicular and plexiform. Only follicular, acanthomatous, plexiform, angiomatoid and mixed patterns of these were seen in this material. The other histologic sub-types (Granular-cell, clear-cell, desmoplastic papilliform, dentinoid, etc) reported in the literature were not observed in the present series (7,11,20,21). Metastatic dissemination in ameloblastoma is rare but it does occur. The majority of cases have been preceded by several local recurrences (17-20). In the present material, malignant ameloblastoma or its metastatic deposit were not diagnosed. High recurrence rate was observed in patients with ameloblastoma treated with curettage or enucleation; in the multilocular type than in the unilocular type, and in patients aged above 20 years (4,12,15,21). In another study curettage and local excision were recommended in the age group of 0-9 years in patients with mandibular ameloblastoma. The results of curettage are very poor for maxillary ameloblastomas (15). Patients with extra osseous ameloblastoma had better prognosis due to lack of persistent invasiveness as intra osseous type (4). Follicular ameloblastomas have shown a higher recurrence rate after surgery (5). Amelobastomas in the maxilla occur in an older age group and have a poorer prognosis possibly due to earlier spread into extra osseous soft tissues (22-24). There is a need for the establishment of a National Cancer Registry to determine the magnitude of jaw tumours, including ameloblastoma in Ethiopia as has been noted in other parts of Africa.

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Table 1. **Distribution of age, sex site of growth of ameloblastoma diagnosed in the Department of Pathology, Faculty of Medicine, Addis Ababa University between 1967 to 1997.**

| Age | Sex | | | Site of Growth | | | Total |
|---|---|---|---|---|---|---|---|
| | M | F | Total | Mandible | Maxilla | Extraosseous | |
| -9 | 2 | | 2 | 1 | 1 | | 2 |
| 0-19 | 7 | 4 | 11 | 8 | 3 | | 11 |
| 0-29 | 10 | 4* | 14 | 11* | 3* | | 14 |
| 0-39 | 8 | 9 | 17 | 15 | 2 | | 17 |
| 30-49 | 11 | 4 | 15 | 13 | 2 | | 15 |
| 40-59 | 2 | 1 | 3 | 2 | | 1 | 3 |
| 60-69 | | 1 | 1 | | 1 | | 1 |
| 70+ | | 1 | 1 | | 1 | | 1 |
| Total | 40 | 24 | 64 | 50 | 13 | 1 | 64 |

*A 27 –Year- old woman had ameloblastoma involving both maxilla and mandible,

Table 2. **Distribution of ameloblastoma according to histologic subtype diagnosed in the Department of pathology, faculty of medicine, Addis Ababa University between 1967 to 1997**.

| Histologic subtype | Total No. |
|---|---|
| Folicular | 21 |
| Acanthomatous | 14 |
| Folicular and plexiform | 16 |
| Plexiform | 12 |
| Angiomatoid | 1 |
| Total | 64 |