10.5005/jp-journals-10001-1039

ORIGINAL ARTICLE

Clinicopathological Study of Ameloblastomas: Case Study in Tribal Areas

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ABSTRACT

During the period of 10 years, we have received 19 ameloblastoma specimens for opinion. The purpose of this report is that many studies on ameloblastoma were published from western countries, but not a single study from this region, which is an area of tribal people. Hence, this study is taken up to analyze for various parameters, and to compared with the western countries studies and also to inform the new and rare findings which is not yet published that is, the malignant ameloblastoma metastasis in soft tissue with intercellular bridges. Specimens were processed for macroscopic and microscopic analysis by routine methods. Majority of analysis were similar to the western countries studies. Malignant ameloblastoma metastasis in soft tissue gave us surprise. Ameloblastoma in tribal people did not have differences with western countries, but we got a new thing which enriches the behavior of malignant ameloblastoma.

Keywords: Malignant ameloblastoma in soft tissue.

INTRODUCTION

Ameloblastoma is a lesion which continues to fascinate the pathologist by its diversity of microscopic features, but it is a rare tumor for general pathologist. Ameloblastoma is the most common benign odontogenic tumor (excluding odontomas). It can occur at any age, equally in both sexes with average age for this is 33 to 39 years.[1] On the basis of origin, ameloblastoma is divided into as intraosseous [which is more common (80%)] and an extraosseous.[2] Intraosseous ameloblastoma is more aggressive, but rarely metastasizes to other parts of body and becomes malignant due to: (1) long-term duration, (2) multiple surgical procedures, or (3) radiation therapy.[3,4] There are reports that intraosseous ameloblastoma gets metastasize to various parts of the body,[5-8] but no single report of soft tissue metastasize. Intraosseous ameloblastoma rarely turns into malignant, but at the metastasis site and the primary site it shows benign pattern of arrangement with malignant cellular features.[9-11]

MATERIALS AND METHODS

We have received ameloblastoma specimens (biopsy, surgical specimens and reference slides) for opinion, from Mamata Dental College, government and private hospitals in Khammam district and also, from the neighboring districts. After studying detailed macroscopic features like solid, gray-white tumor mass, whether the margin contains peripherally bone or whether, it is cystic. We processed the specimens for microscopic analysis by routine methods. Special stains were used as per our need, simultaneously, we got case sheets for clinical detailed analysis of various parameters.

RESULTS

Among all the specimens received for opinion during 10 years period, ameloblastoma specimens constitutes less than 0.001%. Oral cavity tumors received during this period were compared with ameloblastoma specimens and found that ameloblastoma constitutes 8% of all oral cavity tumors. Youngest patient was 21 years old, and oldest was 70 years old. Males were 11 (57.8%), whereas females are eight (42.1%), forming male to female ratio 1.5:1 (Fig. 1). Among 19 specimens of ameloblastoma, 18 specimens were intraosseous type and one was extraosseous. The most common site for intraosseous type was posterior mandible (80.6%). Majority of ameloblastoma specimens were multicystic seen in (76%) of specimens.

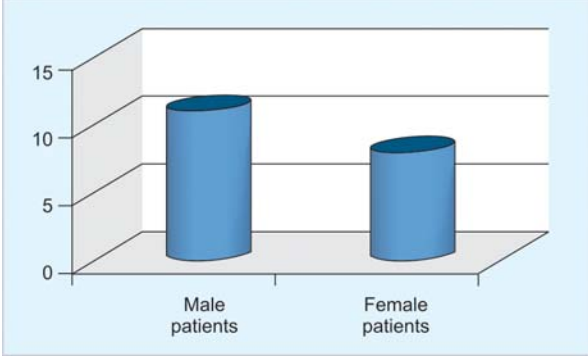


Fig. 1: Sex incidences

Microscopically

Both, intraosseous and extraosseous ameloblastoma had similar microscopic morphology. Follicular patterns were seen in 11 (57.89%) specimens, whereas two mixed patterns were seen in five (26.31%), and three to four mixed patterns were present in three (15.78%) individual specimens (Fig. 2). Lymph node invasion was seen in three specimens. We got six various histologic patterns of ameloblastoma, of which follicular pattern showed palisading tall columnar cells with round to oval nuclei, which were hyperchromatic. The palisade cells had nucleus away from basement membrane with subnuclear vacuole and at the central part polyhedral loosely arranged cells (stellate reticulum) were present. The plexiform pattern had irregular strands of epithelium which is bordered by columnar cells, other patterns like, basolid, granular and karatinaceous were seen in the single tissue, whereas desmoplastic variant was seen in two mixed pattern. Stroma was moderate in majority of specimens, which was collagenized. Neoplastic epithelium proliferated in this collagen fibrous stroma. Zone of hyalinization of collagen was seen, chronic inflammatory infiltrates were present in the stroma of few specimens. One patient, who was 70 years old male, was been operated for intraosseous ameloblastoma long back (detailed history not available) and was on radiotherapy. He had recurrence, we received two edge biopsies of that patient (our Histopathology ID no. 1885/09) that is, one from the previously operated primary site (posterior mandible) recurrence and another is from the posterior aspect of right scapula. Radiology report says, scapula is free from tumor mass, our keen microscopic examination ruled out basal cell carcinoma. Hence, we reported it as malignant ameloblastoma in soft tissue due to metastasis from primary recurrence site, under low power, both, primary site recurrence tissue and at the soft tissue showed the follicular pattern of ameloblastoma, but, at high power, there were malignant features with intercellular bridges (Figs 3A to C).

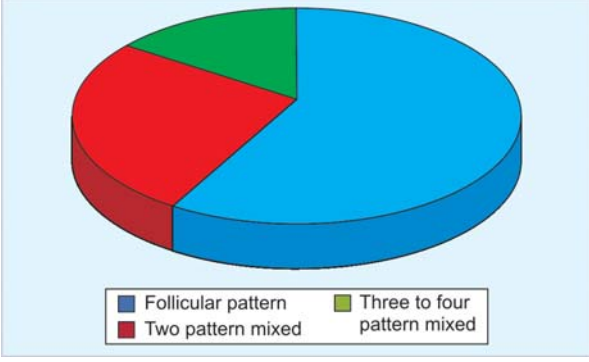
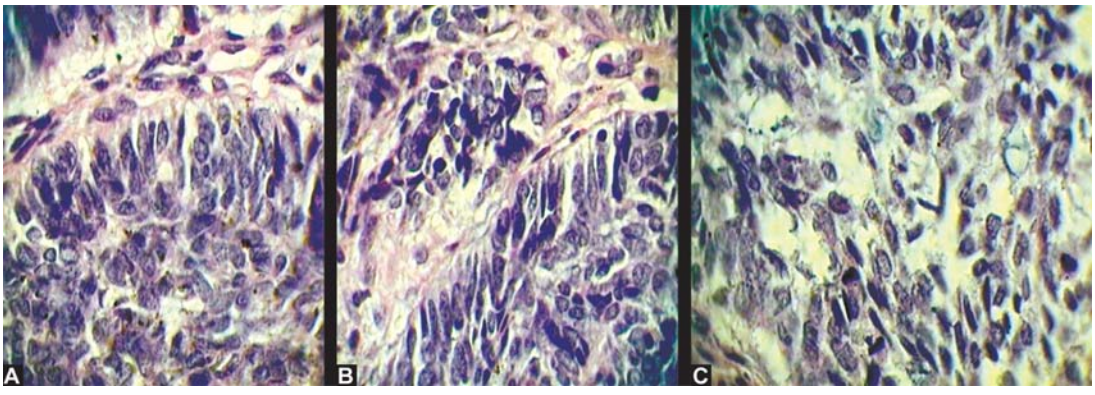


Fig. 2: Microscopic pattern seen in all 19 cases

DISCUSSION

Waldron CA et al (1987),[12] Kessler HP et al (2003),[2] studied on ameloblastoma for various parameters, which we followed. Majorities of our parameters were similar to the above studies, except male to female ratio, which we found is 1.5:1, which is on higher side. Kunze E et al (1985),[5] Laughlin EH (1989),[6] Phillips SD et al (1992),[7] studied widely, on metastasis of ameloblastoma, they found metastasis in lung, lymph node, liver, bone, and central nervous system. Zwahlen LJ et al (2003)[8] study reported that maxillary malignant ameloblastoma had secondary metastasis deposits in the myocardium. We got three specimens of lymph node metastasis and a case of malignant ameloblastoma metastasis in the soft tissue. We did not get specimens from lung, liver, bone and central nervous system, the reason for this, may be, nonavailability of facilities for the clinicians, or, may be due to, incapacity of patients for additional financial burden. So, no comment on these sites



Figs 3A to C: This microphotograph is taken from soft tissue biopsy. (A and B) shows palisading columnar epithelium with reverse polarized nucleus, and the subnuclear vacuole in the cytoplasm. Intercellular bridges are seen in the palisade epithelium. The neoplastic cells are atypical, having pleomorphic hyperchromatic nuclei, (C) shows increased atypical mitosis in the stellate reticulum

metastasis. Gardner DG (1977)[13] made it clear that to diagnose ameloblastoma, main trouble shooter is basal cell carcinoma (BCC). As, BCC is the most common tumor than ameloblastoma. But, we feel that keen microscopic differentiation of both tissues is essential because both have similar microscopic architecture at low power.

Hundeiker M, Berger H (1968),[14] Reidbord HE et al (1971),[15] said that in solid variant of BCC, epidermis and dermis show presence of various size and shapes of tumor masses, which are having attachment with epidermis (90%), but at periphery of tumor mass, tumor cells show palisading arrangement. Mehregan AH (1983),[16] study says, if, solid type BCC infiltrates (aggressive) then basiloma cells are arranged in elongated strands with little or no palisading of cells, but, cells and nuclei are pleomorphic. Lang PJ Jr, Maize JC (1986),[17] says these basiloma cells and nuclei have great variation in size and shape. Rupec M et al (1975),[18] said that cells of BCC are also called as basiloma cells, which have large, oval, elongated nucleus with little cytoplasm, but nuclei resembles those of basal cells in the epidermis and these cells have increased nuclear and cytoplasm ratio, and also these cells do not show presence of intercellular bridges.

In our present study, the soft tissue tumor mass was free from epidermis and dermis. Weedon D (1975),[19] said, BCC usually do not get metastasis, but, can rarely (0.01%). Warmuth BM et al (1970),[20] said, no one specific histologic type of BCC have potentiality to metastasize.

Weedon D et al (1979),[21] said that stroma around BCC tumor island shows, retraction, called as lacunae, which is typical for some BCC, and this helps to differentiate with other tumors. We did not get retraction/lacunae in stroma. Reichart PA et al (1995)[1] study says, follicular type of ameloblastoma has highest rate of recurrence. We got one recurrence specimen which was having follicular pattern and that turned into malignant.

Vickers RA, Gorlin RJ (1970),[22] study statement says, under high power, ameloblastoma tissue at periphery shows, presence of palisading tall columnar cells, having round to oval nuclei, which are hyperchromatic and pleomorphic. The palisaded cells have nucleus away from the basement membrane with subnuclear vacuole. At the central part, polyhedral loosely arranged cells (stellate reticulum) are present.

Kessler HP et al (2003),[2] says, stroma in ameloblastoma will be moderate to dense, the neoplastic epithelium proliferates in this collagenized fibrous stroma. The proliferating epithelium exerts inductive effect on the surrounding stroma, so, zone of hyalinization of collagen seen adjacent to the neoplastic epithelium, where, fibroblasts almost not present. Corio RL et al (1987),[9] said that malignant ameloblastoma is rare entity, that is, less than 1%, where ameloblastoma shows malignant features. So, to say malignant ameloblastoma, it should have ameloblastic features with malignant microscopic features at both primary and metastasis site. We had these features but, with intercellular bridges in the palisading epithelium. We got a case of soft tissue metastasis. These indicate that behavior of ameloblastoma is still fascinating, in future days we may add new things to this wonderful neoplasm.

CONCLUSION

I am satisfied with the study on ameloblastoma, which did not show so much differences in the tribal and western countries people, the malignant ameloblastoma behavior is like other malignant tumors. So, we can get secondary metastasis of malignant ameloblastoma, anywhere in the body parts.

ACKNOWLEDGMENT

I am grateful to the patients and clinicians for sending the specimens for opinion, which I have utilized to analyse for the various parameters. With their help, I am reporting the rare and new.

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