

Management of ameloblastoma and its consequences

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Article Info

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Received: 11 August 2017
Accepted: 26 August 2017
Available Online: 5 September 2017

ISSN: 2224-7750 (Online)
2074-2908 (Print)

DOI: 10.3329/bsmmuj.v10i3.33539

Cite this article:

Khatun S, Alam MS, Azam MS, Sadat SMA, Jaman W. Management of ameloblastoma and its consequences. Bangabandhu Sheikh Mujib Med Univ J. 2017; 10: 182-84.

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A Journal of Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

Abstract

The study considered clinical prospective observation of 113 patients suffered from different variety of ameloblastoma. Among them, 75% female were more often affected. Half (27.1%) of the patient was treated by dredging, 58.8% dredging with carnoy's solution, and 33.9% by disarticulation with hemimandibulectomy using reconstruction plate. For the first five years, participants were recalled at every 3, 6 and 12 months, and then after every 2 years. 70% patients were drop out within 2 years and the rest of the patients had varying recurrence rate. The late recurrence recorded only one patient at 17 years of treatment by dredging 3 patients had unusual seedling (distance metastasis) in the lungs one patient in the leg and one patient with scalp. All this distance metastasis patents were treated by different modalities. The distance metastasis cannot rule out in any definite criteria. The study concluded that in case of carnoy's solution, the recurrence rate is slow and safe measure to manage the patient without mutilating surgery.

Introduction

Ameloblastoma is one of the most common tumors in odontogenic epithelium. Ameloblastoma with cytological differentiation is characterized ameloblastic carcinoma but metastasis is missing. However, ameloblastoma can metastasize to neighboring lymph node other inaccessible organs as lung, skin and so forth. Over 10 years metastatic tumor are observed after the 1st essential resection.¹

The most cases are diagnosed at the age of 30–60 years old.² Recent WHO grouping solid/multicystic, unicystic, desmoplastic and peripheral, limitation, and size of the tumors depends on age of the patient.³ There are two fundamental histopathologic designs; the follicular and plexiform without clinical significance.³ The plexiform variety containing cystic stroma.³ The follicular variety shows numerous islands of tumor cells in stringy stromal tissue. It was indicated the two variety represent 64.1% of 693 ameloblastomas.³

The expression of cell-multiplying markers, multiplying cell atomic antigen (PCNA), Ki-67 antigen and topoisomerase II, has been researched by immunohistochemistry implies to anticipate the organic conduct of neoplastic cells in different variety of ameloblastoma.^{3,4} Many study shows PCNA and Ki-67 hostile to gene were higher in the follicular variety with plexi-shape variety.^{3,6} Induction deduced IHC with the counter to poisomerase II immunizer to recognize multiplying cells in ameloblastoma.⁷

Kumamoto proposed that, incomprehensibly in ameloblastoma, the expression of p53 protein mirrored the multiplication action of neoplastic cells, as opposed to apoptosis.⁷

The study suggested that odontogenic epithelium, p21 protein articulation related with cell separation and apoptosis. Quantity of p21 protein predicting the organic conduct of ameloblastoma.⁸ The study also shows recurrences have been accounted from 1 to 45 years after enucleation.⁸

In asymptomatic patient, observation of CT scan at expanding at intervals of 5 years ameloblastoma, if untreated, can develop a substantial size and represent metabolic abnormalities.⁸ Moreover, reports have archived metastatic ameloblastoma to the lungs related with a para-neoplastic disorder causing hypercalcaemia. Deaths in patients with multiple surgical exploration have been encountered.⁸ Patients with uncontrolled ameloblastoma may extend into the focal sensory system. Recent reports for metastatic ameloblastoma demonstrate a disease free survival time 13 years.²

Materials and Methods

The empirical study was carried out at the present place as well as at Dhaka Dental College, Mirpur, Dhaka, Bangladesh over 17 years of follow-up conducted on 113 patients who were diagnosed as different variety of ameloblastoma. The patients were categorized



irrespective of age, extension of tumor mass, loss of cortical bone, socio-economic condition, with proper correlation of clinico-histopathological and radiological evaluation, special attention for the follow-up. Within two years, 70% patients were drop out from the study. The patients were treated by resection (segmental, marginal hemi and total resection) with disarticulation enucleation and curettage with or without carnoy's solution accordingly. Three patient included in this study had a history of multiple consecutive surgery by enucleation and curettage.

Results

Out of 113 patient addressed, conservative treatment by enucleation and dredging included 68 multicystic ameloblastoma and 45 unicystic ameloblastoma. In case of failure of treatment, 27.1% of patients were treated by disarticulation followed by reconstruction plate. From this 5 patients addressed, soft tissue recurrence occurred within two years of follow-up.

Table I

Characteristic of ameloblastoma with their recurrence and metastasis

Procedure	Number of patient	Metastatic site	Duration of recurrence
Enucleation and curratage	35	Involvement of lungs (2 patients), and leg (1 patient)	Local tissue recurrence in 10 patients within 2-5 years, 3 patients showed metastasis to lungs within 2-4 years, 1 patient metastasis to the leg after 17 years
Enucleation and dredging	17		Repeated dredging performed up to 5-10 years for the rest of the patients but no recurrence
Enucleation and use of cornoy's solution	30	-	4 patients recurrence local tissues within 4-8 years
Disarticulation- followed by bone grafting	3		1 patient after 7 years
Disarticulation followed by radiotherapy	1	Scalp	8 times repeated recurrence occurs every one year of resection then radiotherapy was implemented
Disarticulation followed by reconstruction plate	24		4 patients addressed soft tissue recurrence within 3-7years of surgery
Histopathology of lymph node	3	Submandibular lymph node(3 patients)	3 patients have positive findings

Case 1: The surgical procedure of the patient with unilateral unicystic ameloblastoma was performed at the age of 17 years. The recurrence occurred following six month after initial procedure. Repeated same surgical procedure followed up to 5 years and aggressiveness increases with evidence of cortical bone losses with soft tissue involvement five cycle radio therapy is being implemented. Afterwards the ameloblastic tissue grows vigorously with increase of aggressiveness with the CT-scan findings heterogeneously enhancing mixed density mass is noted in the right ethmoid sinus and right parapharyngeal space with the destruction of adjacent bone. Cystic degeneration was noted within the lesion. Another large lobulated mass with central necrosis was noted in the right side of the scalp with scalloping of underlying skull bones. Both eyeballs and visualized portion of brain were unremarkable. After vigorous resection of the tumor mass the patient was even full and no recurrence occurred in 5 years follow-up, complete procedure was carried out for 23 years.

Case 2: The patient with bilateral unicystic ameloblastoma at the age of 9 years same surgical procedure was performed up to 12 years. The ameloblastic tissue grows such a drastic manner that the whole of oral cavity was covered by the ameloblastic tissue and patient suffered from suffocation artificial ventilation is needed for his survival, afterwards due to repeated surgical procedure patient died with developed of hypokalemia.

Case 3: Three patients with multicystic ameloblastoma after enucleation and curettage no evidence of local recurrence is noted in first surgical procedure but metastasis in the lungs noted 2 years after surgical procedure (desmoplastic variety) second patient metastasis in the lungs after 5 years of primary treatment and third metastasis in the leg after 17 years of primary treatment.

Thirty patients treated by enucleation with cornoy's solution 4 patients noted recurrence after 5 years of primary treatment. Rests of the patients recovered. Three patients treated by disarticulation with bone grafting among them one patient having recurrence in the grafted bone after 7 years of surgery.

Seventeen patients were treated by enucleation and dragging repeated procedure was performed from 5 -10 years (Table I).

Discussion

In this study, there were 40% local recurrence and 2.8% distant metastasis in case of enucleation and curratage. In the use of cornoy's solution, 1.2% recurrence was documented. In case of disarticulation followed by bone grafting 0.3% recurrence occurs in grafted bone. Disarticulation followed by

radiotherapy 100% recurrence encountered. Recently 3 patient's lymph node histopathology shows 100% positive result compatible with the different study. Recent experimental opinion regarding management of ameloblastoma has greatly changed. The entire recent researcher shows the special emphasis over histopathological evaluation gene analysis tissue typing and safety resection margin 1.5-2 cm aside from the radiological limit.¹⁰

A current systematic overview demonstrated that the enucleation of unicystic ameloblastoma resulted in the greatest recurrence rate; and also the lowest recurrence rate was linked with resection with the tumor.¹¹ Enucleation on its own yielded 30.5% recurrence rate, associated with a recurrence rate of 18% regarding drudging,¹² 16% regarding enucleation with application Carnoy's solution and 3.6% for resection. Three histologic varieties of unicystic ameloblastoma are mentioned within the literature.¹³ Within the first kind, luminal ameloblastoma, the actual tumor is limited to the luminal surface of the cyst.^{11, 13} In the second kind, which is intraluminal ameloblastoma, tumor nodules project from the cystic lining into the lumen of the cyst. In the third type, mural ameloblastoma, the fibrous wall structure of the cyst is penetrated with tumor nodules. The third kind is regarded as probably the most hostile, with a recurrence rate as high as 35.7%. Various possibilities happen to be documented between different locations of the unicystic ameloblastoma relating to its spreading potential. It has been seen that the tumor nodes in the cyst wall have higher proliferating cell nuclear antigen. This particular breakthrough offered a biologic groundwork to advocate a much more revolutionary surgical removal as the therapy of choice for unicystic ameloblastoma. It was recommended that unnecessary resection of the mandible constituted an extreme procedure.¹¹ As recurrence reported from one to 45 years after inoculation.^{14, 15}

Conclusion

The study concluded irrespective of recurrence, the management of ameloblastoma has been greatly changed. Bizarre characteristic of the ameloblastic tissue requires further evidence based research with special emphasize on the evaluation of p53, p21 protein with analysis of CD10, KI67 antigen leveling index clinical, immuno-histopathological correlation with long-term follow-up.

Conflict of interest

There was no conflict of interest.

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