

SURGICO-THERAUPIC MANAGEMENT OF AN AMELOBLASTOMA IN A RED KANDHARI BULLOCK

**¹Nakade S.N., ²*Chepte S.D., Siddiqui M.F.M.F., Karad N.M., ¹More S.D.,
¹Bontalwad G.M. and ¹Ghuge A.R.**

Department of Veterinary Surgery and Radiology

College of Veterinary and Animal Science, MAFSU, Parbhani

¹M.V.Sc. Scholar, Vet. Surgery and Radiology

²Associate Professor, Vet. Surgery and Radiology

E-mail: drsharadchepte512@gmail.com (*Corresponding author)

Abstract: A 5-year-old Red Kandhari bullock was presented to the VCC, COVAS, Parbhani Maharashtra with history of mango sized mass at right lateral maxillary region. The mass interferes in prehension, mastication and leads to reduced appetite. Clinical and radiological examination revealed radiopaque tumorous mass. The mass was approached laterally and radical surgery was performed. Post-operatively antibiotics and analgesics were administered along with Vincristine sulphate IV. Histopathological examination of tissue revealed Ameloblastoma. The animal owner was advised for soft diet and intravenous fluid therapy.

Keywords: Bullock, Ameloblastoma, Radical Surgery, Vincristine sulphate.

Introduction

The overall incidence of tumors in bovines is relatively high, after canines, they can occur in various locations including the mandible or maxilla. (Marosfoi *et al.* 2009). Among domestic animals, oral tumors have been reported in cattle, horses, dogs and cats, with the highest incidence in cattle (Moulton 2017). Oral tumors hinder normal feeding by affecting the chewing process, both due to their position and the pain they generate in surrounding regions. At times, animals avoid eating, leading to both production losses and economic impact for farmers. (Tyagi *et al.* 1993). The tumour usually occurs in youngs, but adult animals may also get affected. Tumours are mass like lesions interfering with mastication in cattle. (Head *et al.* 2002). Epithelial odontogenic neoplasms account for <1% of oral neoplasm in many species. (Gorlin *et al.* 1962). The most odontogenic tumours develop in cattle near two years of age. (Tetens *et al.* 1995). These tumours occurs predominantly at rostral mandible region and involving incisor in bovine and metastasized rarely. (Gardner *et al.* 1996, Gharagozlou *et al.* 2007). Oral tumors in cattle are primarily benign, moreover, fibromas, ameloblastomas, and myxomas encountered frequently as compared to fibromatous epulides, adenomas, and papillomas. (Kumar 2019).

Ameloblastoma is the most prevalent odontogenic neoplasm, arising from the dental lamina epithelium. It predominantly occurs in the posterior mandible (80%), with a smaller incidence in the posterior maxilla (20%) (Brown and Brayn 2015). Ameloblastoma has a significant tendency to recur, particularly if it is not completely removed (Regezi *et al.* 1978). Managing ameloblastoma is contentious due to its distinctive biological behavior, including slow growth, local invasiveness, and a high recurrence rate (Shatkin *et al.* 1965).

History

A five years old Red kandhari bullock weighing about 450kgs was presented to Veterinary clinical complex college of Veterinary and Animal Science, MAFSU, Parbhani with body condition score 3.5/5. The bullock has Mango sized mass laterally on right side of mandible with profuse salivation, difficulty in prehension and reduced appetite (Fig.1).

Diagnosis

On palpation the mass was hard without any pain, on per-oral examination a well separated encapsulated mass involving gums was evident. It was decided to undertake radiographical examination to assess invasiveness, osteolytic changes, calcification, teeth displacement or any other changes. On radiological examination radiopaque mass with displacement of neighbouring teeth without any bone involvement was noticed (Fig.2).

Treatment

Radical surgery was planned, animal was restrained in standing position (Fig.3). The Bullock was sedated with xylazine @ 0.01mg/kg IM along with anticholinergic agent atropine sulphate @ 0.25mg/kg IM to reduce salivation. Mental nerve block of affected right lateral side was achieved by using 2% Lignocaine HCL. Site was prepared aseptically and longitudinal incision was taken by avoiding stensons duct. Mass was separated carefully from its maxillary attachment without damaging the capsule. Tumorous mass (12cm × 9 cm) was pinkish red in colour with fragile consistency (Fig.4). Oral cavity was irrigated with Normal Saline Solution, the oral mucosa was sutured with catgut No.0 in interlocking suture pattern. Muscles were closed by catgut no.1 using interrupted suture pattern and Skin was opposed by interrupted suture pattern with nylon (Fig.6). Postoperatively Inj. Streptopenicillin 5gm IM for 4 days along with inj. Meloxicam @0.2mg/kg SC for 4 days along with fluid therapy for 7 days with soft diet. To avoid reoccurrence of tumorous mass IV Vincristine Sulphate (1mg/ml) (at the dose rate of 0.75mg/m² body surface area at weekly interval for 3 weeks was given (Kumar *et al.* 2019, Gardner *et al.* 2005).



Fig. 1 Bullock with protruded mass laterally.



Fig. 2 AP Radiograph shows presence of radiopaque mass right laterally on maxillary region.



Fig. 3 Surgical excision of tumorous mass.



Fig.4 Capsulated Mass separated from skin



Fig. 5 After extirpation.



Fig. 6 Surgical site after suturing.

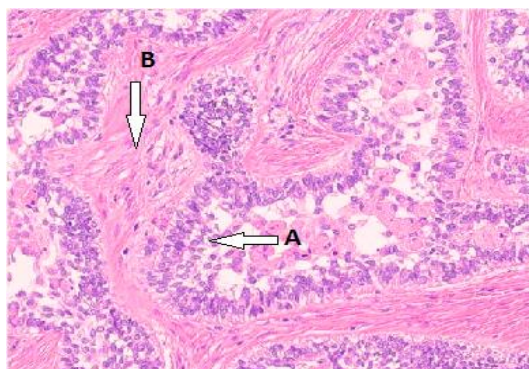


Fig. 7: Histopathological examination indicates Follicular Ameloblastoma with islands of odontogenic epithelium (A) surrounded by fibrous tissues (B). H&E $\times 200$.

Pathological findings

Histopathological examination showed discrete islands of tall columnar, palisading basal cells with apical nuclei (reverse polarization), Suggestive of ameloblastoma (Fig.7). (Chavan *et.al.*,2014); (Kumar *et.al.*,2019). There are two basic histopathologic patterns of ameloblastoma; the follicular and plexiform (Theon *et.al.*,1993). So in present case it was follicular type of ameloblastoma.

Case Discussion

As mentioned earlier most prone site for affection of ameloblastoma is maxilla followed by mandible. In this case it was located right laterally on maxilla. Tooth displacement due to tumour expansion is much more common than root resorption. (Philipsen *et.al.*,1991). Similar displacement of tooth from their normal anatomical position was revealed which were easily palpable and further confirmed in x-ray examination. Chemotherapeutic drugs can be administered as a sole treatment in small size tumour, but larger tumours must be surgically debulked prior to drug treatment (Kumar *et.al.*,2019, Theon *et.al.*,1993, Theon *et.al.*,1997). As mentioned above chemotherapy plays vital role to avoid recurrence of tumor, so it's necessary to go with chemotherapy inj. Vincristine Sulpahte intravenously for 4 to 6 times at interval of one week (Kumar *et al.*2019, Gardner *et al.* 2005).

Conclusion

Oral tumors have major impact on animal production as well as economy of farmer. The surgical management reduces animal suffering which ultimately leads to overcome production and economical losses. Along with surgical management of tumor post operative anti-neoplastic therapy (chemotherapy) is recommended to minimise the recurrence.

References

- [1] Marosfoi L, Baba AI, Catoi C. Morphological study of bovine tumours. Bulletin UASVM. 2009; 66:1.

- [2] Moulton JE. Tumors in domestic animals. 5th ed. (University of California Press, Berkeley), 2017, 499-601.
- [3] Tyagi RPS, Singh J. Ruminant Surgery. 1st ed. CBS Publishers and Distributors, New Delhi, 1993, 418.
- [4] Head KW, Else RW, Dubiezlig RR. Tumors of the alimentary canal. In: Meuten, DJT (Ed.), Tumors in domestic animals. (4th. Edn.), Iowa, Iowa State Press, 2002; 402-404.
- [5] Gorlin RJ, Pindborg JJ, Clausen FP, Vickers RA. The calcifying odontogenic cyst- a possible analogue of the cutaneous calcifying epithelioma- an analysis of fifteen cases. Oral Surg Oral Med Oral Pathol. 1962; 15:1235-1243.
- [6] Tetens J, Ross MW, Sweeney RW. Rostral Mandibulectomy for treatment of an ameloblastic fibro – Odontoma in a cow. Journal of American Veterinary Medical Association. 1995; 12:1616-1617.
- [7] Gardner DG. Ameloblastic fibromas and related tumors in cattle. Journal of Oral Pathology and Medicine. 1996; 25(3):119-24.
- [8] Gharagozlou MJ, Hekmati P, Ashrafihelan J. A clinical and histopathological study of ocular neoplasms in dairy cattle. Vet. Arhiv. 2007; 77:409-426.
- [9] Kumar S. Studies on diagnosis and management of oral tumours in bovine. Ph.D. thesis submitted to Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar (Haryana), 2019.
- [10] Brown NA, Brayn B. Ameloblastoma: a review of recent molecular pathogenetic discoveries. Biomarker Cancer. 2015; 7(2):19-24.
- [11] Regezi JA, Kerr DA, Courtney RM. Odontogenic tumors: analysis of 706 cases. Journal of Oral Surgery. 1978; 36(10):771-8.
- [12] Shatkin S, Hoffmeister FS. Ameloblastoma: A rational approach to therapy. Oral Surg. Oral. Med. Oral. Pathol. 1965; 20:421-35.
- [13] Chavan CA, Kaore MP, Ingle AD, Kurkure NV, Akhare SB, Bhandarkar AG. Immunohistochemical study of a rare case of bovine ameloblastoma. Indian Journal Veterinary Pathology. 2014; 38(4):275-277.
- [14] Kumar S, Bisla RS, Singh P, Jakhar KK. Pathological studies and therapeutic management by vincristine sulphate for oral tumours in bovine. The Pharma Innovation Journal. 2019a; 8(4):836-839.

- [15] Theon AP, Pascoe JR, Carlson GP, Krag DN. Intratumoral chemotherapy with cisplatin in oily emulsion in horses. *Journal of Animal Veterinary Medical Association*. 1993; 202:261.
- [16] Philipsen HP, Reichart PA, Zhang KH, Nikai H, Yu QX. Adenomatoid odontogenic tumor: biologic profile based on 499 cases. *Journal of Oral. Pathol. Med*. 1991; 20(4):149-158
- [17] Theon AP. Cisplatin treatment for cutaneous tumours. In: *Current Therapy in Equine Medicine*, 4th ed, (N.E. Robinson, ed), WB Saunders Ltd, Philadelphia USA, 1997, 372-377.
- [18] Kumar S, Bisla RS, Singh P, Jakhar KK. Pathological studies and therapeutic management by vincristine sulphate for oral tumours in bovine. *The Pharma Innovation Journal*. 2019a; 8(4):836-839.
- [19] Gardner DG, Heikinheimo K, Shear M, Philipsen HP, Coleman H. World Health Organisation classification of tumors—pathology and genetics of head and neck tumors. Lyon, France: IARC press, 2005, 296-300.