

DIAGNOSIS AND THERAPEUTIC MANAGEMENT OF ORAL TUMOURS IN MURRAH BUFFALOES

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ABSTRACT

The present study was conducted on eleven Murrah buffaloes suffering from tumorous growth in oral cavity to evaluate the efficacy of surgical and chemotherapeutic treatment along with diagnosis by clinical, radiography and histopathological examination. Radiographic examination was done to observe the invasiveness of tumour, osteolytic changes, teeth displacement, calcification, or any other changes to undertake surgery accordingly. Histopathological examination revealed that all oral tumours were benign in nature like ameloblastoma, fibroma and myxoma. Vincristine sulphate and anthiomaline was administered as chemotherapeutic agents after surgical excision of the tumorous growth. Supportive therapy like liver tonics was also administered during the course of treatment to lower down the side effects of chemotherapeutic agents. Eight buffaloes recovered, two died while one buffalo had reoccurrence during follow up. Main aetiology behind death of the buffaloes was inappetance to long standing anorexia condition.

The present study concluded that most of the oral tumours in buffaloes were benign in nature and removal of tumorous growth followed by chemotherapy is successful in its treatment with less chance of reoccurrence.

Keywords: *Bubalus bubalis*, buffaloes, bovine oral tumours, vincristine sulphate, anthiomaline, ameloblastoma and myxoma

INTRODUCTION

Incidence of tumours in bovine has relatively increased and occupied second place after canine tumours (Marosfoi *et al.*, 2009). Oral tumours in production animals are generally rare, only sporadic occurrence is observed (Meuten, 2017). Tumours of odontogenic origin are common in cattle (Head *et al.*, 2002) and are mainly found at mandibular incisor region associated with the development of permanent incisor teeth (Tetens *et al.*, 1995). Ameloblastoma is the most frequently encountered odontogenic tumour and it have higher

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tendency to recur due to its local invasiveness (Gardner *et al.*, 2005). Odontoma arise from entire tooth bud and consisted of cement forming tumour like mass in cow (Dabas *et al.*, 2014). Odontogenic myxoma is a locally aggressive rare benign tumour that may arise in the maxilla or mandible and it accounts for 3 to 6% of all odontogenic tumours (Boffano *et al.*, 2011). Vincristine sulphate in combination with anthiomaline gives better result in verrucous, nodular and occult type of sarcoids in equine (Jaglan *et al.*, 2018). Vincristine sulphate is safe for most patients, but potential side effects can occur, as gastrointestinal alterations, myelosuppression and extravasation injury (Said *et al.*, 2009). Autohaemotherapy were found to be most effective with a cure rate 92% followed by anthiomaline (81%), oral administration of tuja extract (70%) and topical application of tuja ointment (57%) for papillomatosis in jersey cows (Kavithaa *et al.*, 2014).

The diagnosis and management of oral tumours in buffaloes immensely benefit the livestock farmers but scientific reports are scarce. So the present study was conducted to examine the efficacy of surgical and chemotherapeutic treatment for oral cavity tumours in Murrah buffaloes.

MATERIALS AND METHODS

The present study was conducted on eleven Murrah buffaloes having tumours of different origin in oral cavity. Surgical excision of the tumour was followed by chemotherapy. Vincristine sulphate (1 mg/ml) at the dose rate of 0.75 mg/m² body surface area intravenously at weekly intervals for 4 to 6 times and anthiomaline (Lithium Antimony Thiomalate) at the dose rate of 15 to 20 ml deep intramuscular injection on alternate

days for six times was administered. Ceftriaxone sodium as antibiotic at dose rate of 10 mg/kg body weight and meloxicam as analgesic at dose rate of 0.2 mg/kg body weight was administered for five days after surgery. Supportive therapy like liver tonics; vitamin C and B-complex was also administered during the course of treatment. For radiological examination large animal X-ray machine having maximum mA of 600 and KVP of 150 was used. The representative tissue samples from surgically excised tumourous growths were collected in 10% buffered formalin. After proper fixation the samples were subjected to routine histopathological examination by conventional procedure (Sharma, 2015). Sections with 4 to 5 µm thickness were cut and stained with haematoxylin and eosin (H&E).

RESULTS AND DISCUSSION

All the animals included in the study have tumourous growth in oral cavity of different origin. The average age, sex, site of growth and histopathological findings of tumourous growth are given in Table 1. The most common affected age group was 5 to 8 years and rostral mandibular region was the most common site. All tumours were hard in consistency except one, pinkish white in colour, 5 to 20 cm in size and irregular round to oval in shape. Similar findings were also observed by Meuten (2017). Gardner *et al.* (2005) also reported that odontogenic tumour occurs predominantly in the mandibular incisor region of bovine.

Radiographic examination revealed osteolytic changes (Figure 1) in 45%, tooth displacement in 78% and calcification in 11% oral tumourous growth respectively. A similar finding

was also observed by Sharma *et al.* (2010) who reported that radiographic findings in metastatic tumours of jaw may range from the absence of any manifestation to a lytic or opaque lesion with ill-defined margins. Odontoma on crown root of normal teeth is giving appearance of many displaced or extra teeth (Dabas *et al.*, 2014). Calcified deposits are seen in approximately 78% of adenomatid odontogenic tumour (Toida *et al.*, 1990).

Histopathology of all the tumourous growths revealed that these tumours were benign in nature. Ameloblastoma, fibroma and myxoma were the common types of oral tumours. Some tumourous growths were mixed in origin like fibromyxochondroma. Sharma (2015) also found ameloblastoma and fibroma as the most

common tumour of the oral cavity in bovine in a retrospective study of bovine tumours in between 2004 to 2014 in Haryana state. Gardner *et al.* (2005) observed that ameloblastoma occurs predominantly in the mandibular incisor region of bovine. Microscopically, ameloblastoma was characterized as peripheral layer of tall columnar cell with elongated nuclei enclosing multiple cells resembling stellate reticulum of the enamel organ (Figure 2). Similar finding was reported by Chavan *et al.* (2014). Microscopically, fibroma was characterized by interlacing bundles of fibrocytes accompanied with collagen fibres arranged in whorl like structure and neoplastic cells were spindle shaped with ovoid to elongated nuclei (Figure 3) as observed by Raval *et al.* (2017). However, myxoma

Table 1. Detailed clinical history, site of growth and histopathological diagnosis.

Sr. No.	Animal species	Age (Years)	Sex	Site of growth	Histopathological diagnosis
1	Buffalo	5	F	Lower lip	Papilloma
2	Buffalo	7	F	Right mandibular gingiva	Ameloblastoma with fibroma
3	Buffalo	3.5	F	Rostral mandible	Ameloblastoma
4	Buffalo	7	F	Rostral mandible	Ameloblastoma
5	Buffalo	6	F	Rostral mandible	Ameloblastoma
6	Buffalo	7	F	Rostral mandible	Myxoma
7	Buffalo	7	F	Rostral mandible	Fibroma
8	Buffalo	6	F	Right mandibular gingiva	Fibromyxochondroma with actinomycotic granuloma
9	Buffalo	9	F	Rostral mandible	Fibromyxoma
10	Buffalo	5	F	Rostral mandible	Granulation tissue with hyperplastic epithelial cells
11	Buffalo	10	F	Rostral mandible	Ameloblastoma



Figure 1. Radiograph (lateral view) showing osteolytic changes with teeth displacement in oral tumour mass at rostral mandible region.

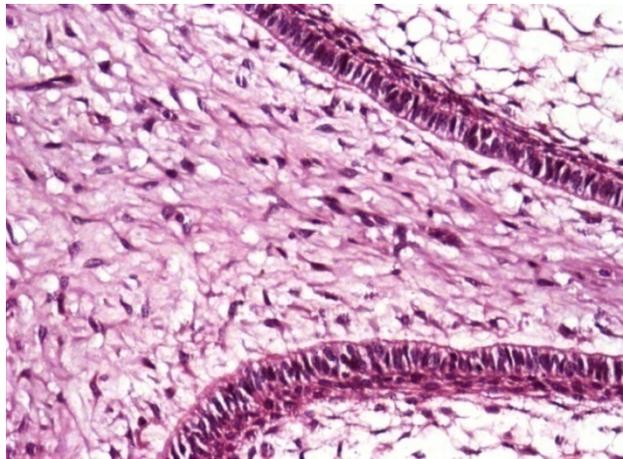


Figure 2. Oral cavity tumour growth showing peripheral layer of columnar cell with elongated nuclei enclosing multiple cells resembling stellate reticulum of the enamel organ characteristics of ameloblastoma (H&E 400X).

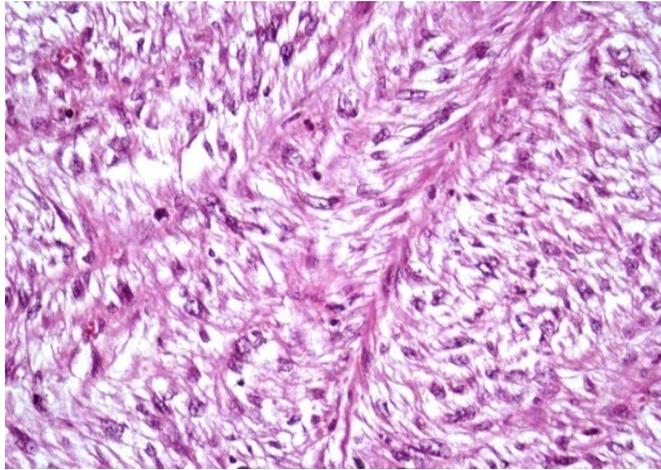


Figure 3. Oral cavity tumour growth showing whorls and interlacing bundles of fibroblasts and collagen fibres characteristics of fibroma (H&E 400X).

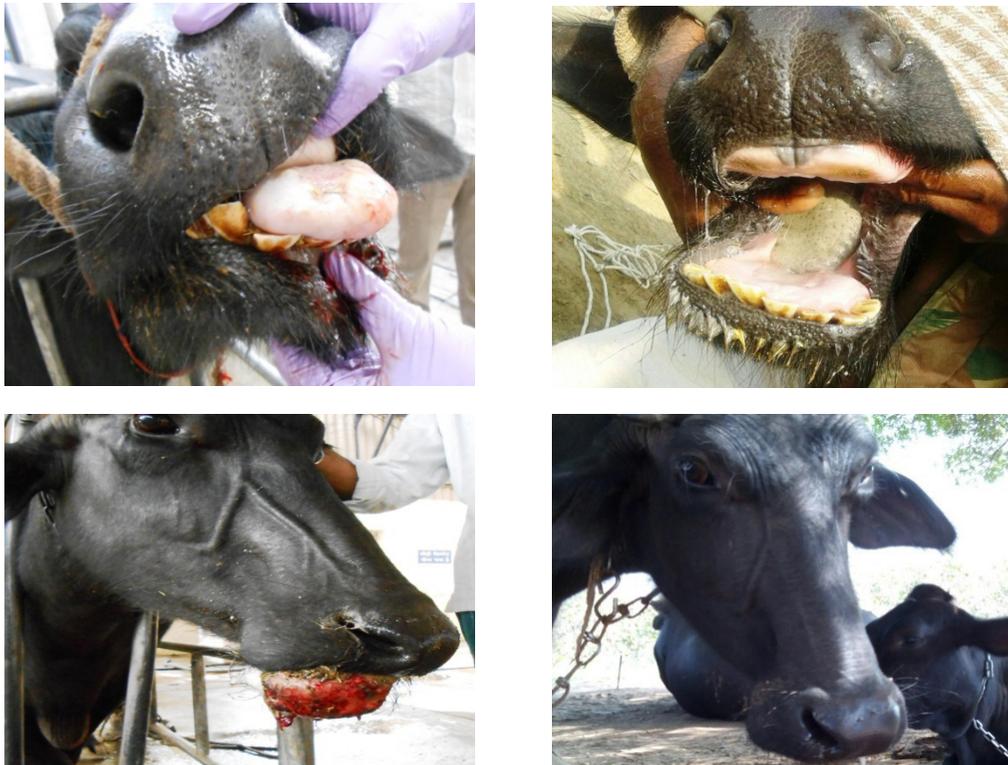


Figure 4. Gross photograph of oral cavity tumour before and after treatment in Murrah buffaloes.

was characterized by stellate cells dispersed in abundant mucoid ground substance as observed by Sharma (2015).

Surgical intervention was done along with the chemotherapeutic agents for these oral tumours. Eight buffaloes recovered well, two died and one animal shown reoccurrence during the course of treatment and post operative follow up (Figure 4). Main aetiology behind death of the animals was anorexia after chemotherapeutic treatment and surgical stress. Surgical intervention in the oral cavity might have aggravated the condition. Inappetance to anorexia condition was seen in most of the animals and administration of liver tonics during the course of treatment lowered down side effects. Chemotherapeutic drugs were effective as a sole treatment for small size of tumour, but it was recommended that larger growths were surgically debulked prior to chemotherapeutic treatment (Theon, 1997). Jaglan *et al.* (2018) revealed surgical intervention along with vincristine sulphate gave better result in fibroblastic and malignant form of sarcoids in equine than chemotherapy alone. Das and Das (2000) observed the side effects of vincristine sulphate and reported digestive alteration, decrease food intake, diarrhoea and constipation.

The present study concluded that most of the oral tumours in Murrah buffaloes are benign in nature and removal of tumourous growth followed by chemotherapy is successful in its treatment with low incidence of reoccurrence.

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