Explor Anim Med Res,
Vol. 11, Issue - 1, 2021, p. 123-126
DOI : 10.52635/EAMR/11.1.123-126

ISSN 2277- 470X (Print), ISSN 2319-247X (Online)
Website: www.animalmedicalresearch.org

Short Communication

SURGICAL MANAGEMENT OF SPINDLE CELL TUMOUR IN THE CAVITA ORIS OF A DOG – A CASE REPORT

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Received 6 August 2020, revised 12 December 2020

ABSTRACT: Spindle cell neoplasms are characterized by the presence of spindle-shaped cells in histopathology sections. A two years old male German shepherd dog was presented with the history of epistaxis, firm and smooth exophytic mass on the palate, and dysphagia. Physical examination of the mass revealed that, it was pedunculated, diffused throughout palate and root of the growth was located between the hard and soft palate. Blood sample was collected for the analysis of haemato-biochemical parameters. Surgical correction was performed under general anaesthesia using xylazine hydrochloride and glycopyrrolate as pre-anaesthetic and propofol as the induction agent. Tumour mass was removed by marginal excision and bleeding was arrested with electrocautery. Postoperatively the animal was treated with antibiotics and anti-inflammatory drugs. Excised tissue sample was processed and subjected to standard histopathological examination. Histopathology revealed multiple clumps of neoplastic cells in deep mucosa. The cells were predominantly of spindle shaped with vesicular to hyperchromatic, fusiform nuclei with the presence of mitotic figures. Areas of necrosis in mucosa were also evident. The findings were suggestive of canine spindle cell tumour. No recurrence was reported within 5 months of surveillance period after surgery.

Key words: German Shepherd, Spindle cell tumour, Histopathology, Oral cavity, Marginal excision, Electrocautery.

Oral tumours in dog's accounts for 7% of all tumours (Priester and McKay 1980). The highest incidence of commonly occurring neoplasm in canine were observed at the age group between 9-12 years followed by 6-9 years, 12-15 years, 3-6 years, and 0-3 years respectively (Kumar *et al.* 2011, Majie *et al.* 2013). Some breeds have a higher risk of developing oral tumours, and these include Cocker Spaniel, German shorthaired Pointer, Weimaraner, German Shepherd, Golden Retriever, Gordon Setter, miniature Poodle, Chow Chow, and Boxer (Todoroff and Brodey 1979).

In the oral cavity the neoplasms can be of epithelial, mesenchymal and odontogenic in origin. Mesenchymal tumours with histological resemblance and similar biological behaviour are generally described as soft tissue sarcoma (Liptak and Forrest 2007). The classification of this group of tumours based on their cells of origin is not always possible. The term spindle cell tumour is used to describe a subset of soft tissue sarcoma because of the morphological similarity produced from several different cell lines (Williamson and Middleton 1998). The subset of connective tissue tumours includes fibrosarcoma, Schwanoma, neurofibroma, peripheral nerve sheath tumour and hemangiopericytoma (Liptak and Forrest 2007). Most of the tumours are slow growing and not fatal. Animal with oral tumours are usually presented in a late stage because the mouth is not regularly checked by the owner or veterinarian.

The most common symptoms exhibited by animals with these tumours include halitosis, ptyalism, exophthalmos, weight loss, epistaxis, bloody oral discharge, dysphagia (Kosovsky *et al.* 1991). These masses which are pseudo encapsulated and with poorly defined margin have a tendency to recur following conservative surgical correction (Liptak and Forrest 2007). The present report describes the surgical excision of the spindle cell tumour in the oral cavity.

Case study

A two-year-old male German shepherd dog was presented with a complaint of growth on the palate, epistaxis, and dysphagia. The symptoms were noticed since 1 week. On

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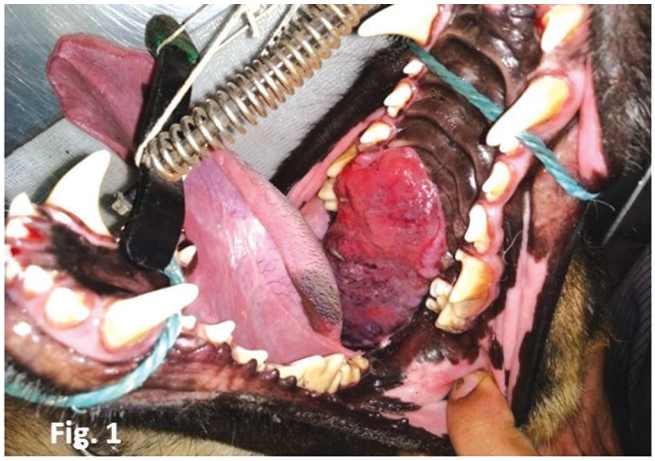

Fig .1. Firm and smooth exophytic mass on the palate.

observation the animal was active and alert. On general clinical examination all of the physiological parameters were found to be within the normal range.

The dog was subjected to detailed physical examination. A diffused firm mass could be observed on the hard and soft palate. The exophytic mass was smooth, reddish brown, pedunculated and closely mimicking exuberant granulation tissue (Fig.1). Parotid lymph node was normal in size.

Surgical management

Surgical site was prepared aseptically with diluted povidone iodine (1%w/v) prior to surgery. The dog was sedated with an intramuscular injection of xylazine hydrochloride at the dose rate of 1 mg/kg body weight and glycopyrrolate as an anticholinergic was given at the rate of 0.02 mg/kg body weight. General anaesthesia was achieved with propofol at the dose rate of 5 mg/kg body weight as injection followed by continuous drip to effect. The animal was placed on lateral recumbency. Cefotaxim at the rate of 25 mg/kg body weight intramuscularly was administered as prophylactic antibiotic therapy. Animal was restrained with head tilted to right. Mouth gag was placed in order to perform surgery comfortably.

Using Babcock forceps, the edge of the tumour mass was held so that the root of tumour mass could be identified. The tumour mass had diffusely spread throughout the palate and the root was identified to be in the junction between hard and soft palate. Tumour mass was excised carefully and bleeding was arrested with electro-cautery (Fig.2). Post operatively, boric acid – glycerine paste was applied over the site. Cefotaxim was administered intramuscularly at the rate of 25 mg/kg body weight for 5 days along with meloxicam at the rate of 0.5mg/kg intramuscularly for 3 days.

The owner was advised to apply boric acid – glycerine paste daily at the site of incision and to follow a semifluid diet for 7 days to facilitate healing. Animal started feeding normally from tenth day postoperatively and no recurrence reported with in the surveillance period of 5 months.

Histopathology

The excised tumour mass was preserved in 10% buffered formalin after surgery and it was later processed in routine manner and stained using Haematoxylin and Eosin (H and E). Histopathological examination of stained tissue section revealed mucosal dysplastic changes at multiple foci. Areas of necrosis in mucosa were also evident. Sub-mucosa showed strands of islands of spindle shaped neoplastic cells with hyperchromatic fusiform nuclei and intense eosinophilic cytoplasm. Multiple clumps of neoplastic cells were observed in deep mucosa. The cells were predominantly of spindle shaped with vesicular to hyperchromatic, fusiform nuclei (Fig. 3). Mitotic figures were occasional. Few neoplastic cells were polygonal in shape. The condition was diagnosed as malignant spindle cell neoplasm.

Haematological examination revealed neutrophilia while other parameters were found with in the normal range (Table 1).

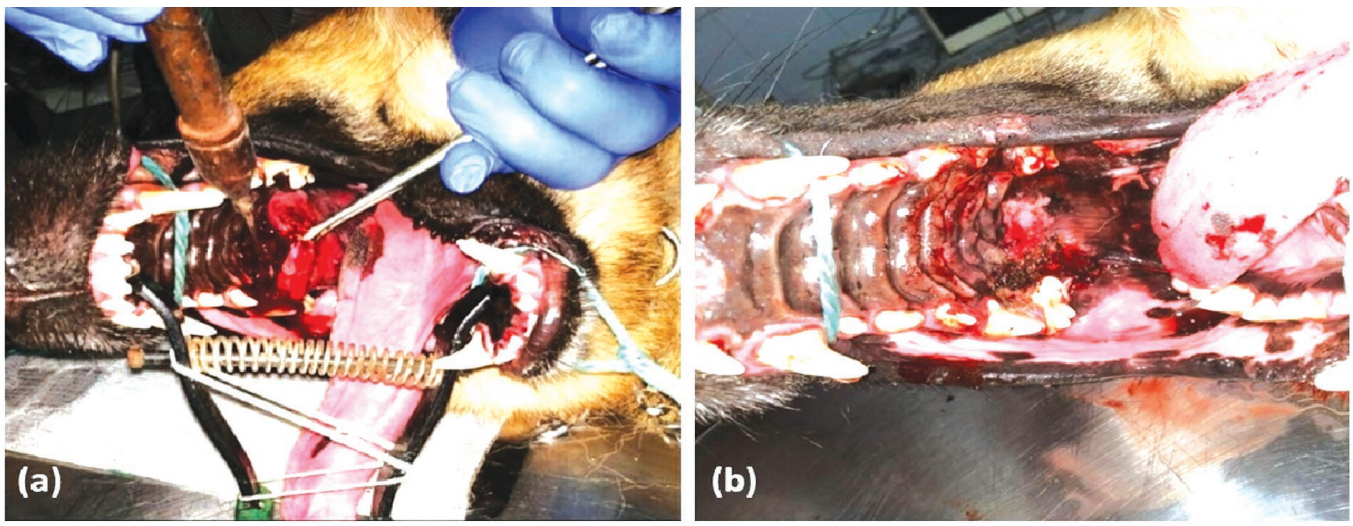

Fig. 2. (a) Arresting bleeding using Electrocautery, (b) Palate after removal of mass.

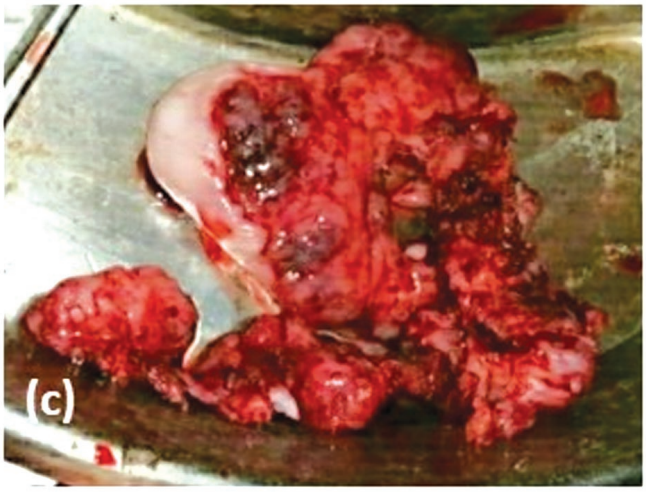

Fig. 2 (c) Removed tumour mass.

Discussion

Spindle cell tumours are tumours that consist of spindle-shaped cells in the histopathology and they can affect the oral cavity. It is not always possible to differentiate it from other similar microscopic simulates (Lewis 2008). This tumour is more common in larger breeds of dog. Although there is difference in histological features, soft-tissue sarcomas are grouped because of some important biological behaviour pattern they share. According to Withrow (2007), the common features include ability to grow from any anatomical site in the body, tendency to appear as pseudo encapsulated tumours with poorly defined margins, infiltration through fascial planes, metastatic property through haematogenous routes, poor response to chemotherapy and radiation therapy in cases where tumour is large and have chance of recurrence after conservative surgery. The treatment protocols for the oral tumours are based on the type of the tumour, extent, age of animal, site, health and treatment limitations (Shafiuzama *et al.* 2016). Conservative excision of the mass will leave microscopic parts of tumour behind, resulting in local recurrence and may adversely affect the optimal treatment protocol (Ehrhart 2005). Improper resection of the higher-grade soft tissue tumour has been consistently shown to adversely affect the outcome for patients resulting in a requirement for further more aggressive surgery, adjuvant radiotherapy or both, or by making further treatment impossible (Bacon *et al.* 2007).

The outcome from the study conducted by Chase and co-workers (2009) in 104 dogs pointed out that spindle cell tumours recurred locally in 27·9 % and 21·7% died of tumour related causes. Most deaths were unrelated to sarcoma (60·2%) or unknown (18%). Survival or tumour recurrence were not significantly related to tumour size, location or degree of surgical resection. Tumour grade and stage cannot be defined by physical examination alone. One of the first papers that describes the importance of aggressive surgical management for all soft tissue tumours by Williamson and Middleton (1998) states that 40 per cent of all cases experienced tumour recurrence within three years of surgery.

The surgical approach has been classified according to the extent of the wound margins, they include intra-capsular (when the tumour is surgically penetrated); marginal (when the tumour is excised just outside); wide (when a portion of normal tissue is left around the tumour); and radical (when an entire anatomic segment is removed). These tumours often recur locally after surgical removal but spread to other parts of the body is rare. It is evident that tumour biology determines the patient outcome than extent of surgery (Bacon *et al.* 2007). Although wide surgical excision can achieve local cure for many cases of soft tissue sarcoma, the extensive dissection and reconstruction that may be necessary to close the resultant defect can result in significant morbidity (Aper and Smeak 2003). Tumour volume has been reported as an indicator for the local recurrence and metastasis in humans, but similar findings have not been identified for the dog (Heller *et al.* 2005).

In conclusion, it can be said that the histopathological examination revealed dysplastic changes and necrosis in

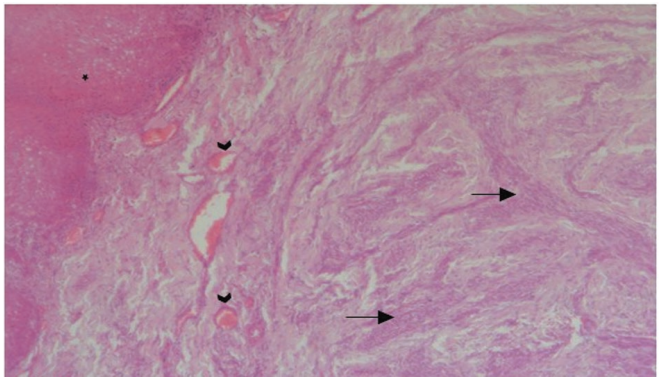

Fig. 3 (a) Islands of neoplastic cells.
[With hyperchromatic fusiform nuclei and intense eosinophilic cytoplasm in sub-mucosa (arrows), area of necrosis in mucosa (star), increased vascularity (arrow head) (H&E, 100X)].

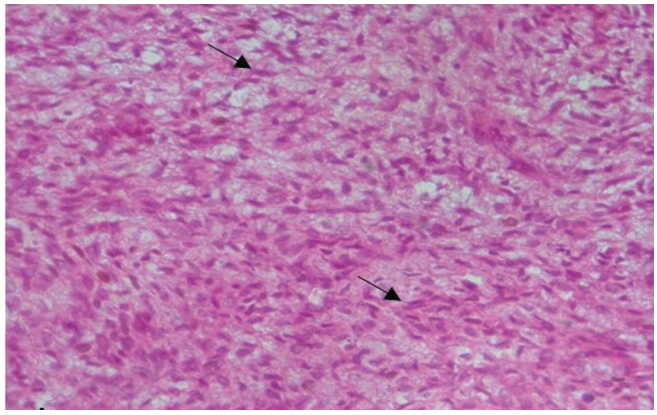

Fig. 3 (b) Spindle shaped neoplastic cells with vesicular to hyperchromatic nuclei (H&E, 400X).

Table 1. **Haemato-biochemical parameters.**

Parameters	Patient value	[a]Normal range	Remarks
TEC (10^6/uL)	7.6	5.0-7.9	Normal
Haemoglobin (g/dl)	13.8	12-19	Normal
TLC (10^3/uL)	12	5.0-14.1	Normal
Neutrophil (%)	88	58-85	Neutrophilia
Monocytes (%)	2	2-10	Normal
Eosinophil (%)	1	0-9	Normal
Basophil (%)	0	0-1	Normal
Lymphocytes (%)	9	8-21	Normal
Packed cell volume (%)	38	35-57	Normal
Platelets (10^3/uL)	560	211-621	Normal
Alkaline phosphatase (u/L)	73.42	1-114	Normal
Creatinine (mg/dl)	0.59	0.5-1.7	Normal
SGOT (u/L)	13.65	13-15	Normal
SGPT (u/L)	20.86	10-109	Normal
Total protein (g/dl)	7.04	5.4-7.5	Normal
Urea (mg/dl)	25.76	8-28	Normal

mucosa at multiple foci. Sub-mucosa showed strands of islands of spindle shaped neoplastic cells with hyperchromatic fusiform nuclei and intense eosinophilic cytoplasm. Multiple clumps of neoplastic cells were observed in deep mucosa with occasional mitotic figures. These histopathological findings were suggestive of canine spindle cell tumour. Treating spindle cell tumours depends upon the extent of the tumour development. If the tumour is highly developed, surgical excision and other therapeutic agents also be required to prevent the recurrence.

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***Cite this article as:** Jisna KS, Sivaprasad MS, Davis J, Sharun K, Anoopraj R, Prabhakaran DM (2021) Surgical management of spindle cell tumour in the cavita oris of a dog – a case report. Explor Anim Med Res 11 (1): 123-126. DOI : 10.52635/EAMR/11.1.123-126