

Rhabdomyosarcoma in the Canine Maxillofacial Area

Lakshmi Gandhi

Two dogs were diagnosed with maxillofacial rhabdomyosarcoma. Management with surgery and chemotherapy showed poor clinical response. The tumor tissues in both cases were observed around upper premolar teeth and CT examination in each case revealed extensive bony involvement of maxilla. Both cases were subjected to surgical excision of the tumor tissue, followed by chemotherapy. The outcomes of treatment of the both cases were poor because of the invasive nature of the tumor cells leading to the local lung metastasis. Both the dogs died within four months. The excised mass was confirmed histopathologically as Rhabdomyosarcoma which is a relatively rare entity.

KEYWORDS

Oral rhabdomyosarcoma, malignant tumor, soft tissue sarcoma, canine.

INTRODUCTION

Rhabdomyosarcomas spontaneously arising in skeletal muscles are rare in domestic animals [3]. The oropharyngeal region is the fourth most common site of malignant neoplasia in the dog [5]. The rhabdomyosarcoma is one of the soft tissue tumors seen in veterinary field. Although the number of cases is quite limited rhabdomyosarcoma has been reported to appear in the canine oral cavity. In humans, rhabdomyosarcoma is the most common soft tissue tumor in infants and children under 15 years of age, comprising about 50% of all childhood soft tissue neoplasms [2]. Rhabdomyosarcomas are classified into three

main types based on the histological features: pleomorphic, embryonal, and alveolar [2].

Rhabdomyosarcomas consist of large, pleomorphic, elongated tumor cells, so-called strap cells, which may show cross striation in their eosinophilic cytoplasm. These tumors tend to be locally invasive and can metastasize to the lungs, liver, spleen, kidneys, and adrenal glands. They tend to be diffused, infiltrative, and poorly circumscribed. Domestic animals with rhabdomyosarcomas have a broad age range with a mean age of 2-3 years³. There is no clear pattern of site prevalence except for high incidences of botryoid rhabdomyosarcomas in the urinary bladder of dogs [1,3,4].

Rhabdomyosarcomas can also be termed "botryoid" because of their grapelike appearance. Botryoid rhabdomyosarcomas have usually been reported in the bladder of large young dogs.

CLINICAL PRESENTATION & TREATMENT

We report two cases of canine rhabdomyosarcoma located in the oral cavity around premolar to molar teeth which resulted in poor prognosis and distant metastasis was observed in both the cases in the early clinical course.

Case 1 was a male German-Shepard with two week history of the swelling of the left maxillofacial that closely resembled the Case 2 in appearance. Neoplastic tissue around the upper premolar teeth could be identified in the oral cavity. The Physical examination revealed a firm, tan 2.5cm x 2cm ulcerated, protruding mass in the gingiva of the left maxilla at the level of the upper fourth premolar and first molar. A wedge biopsy sample of the mass was submitted for histopathological examination. Case 2 was a male mixed breed and was present

Head of Department,
Department of Oral and Maxillofacial Surgery,
Saraswati Dhanwantari Dental College and Hospital,
Parbhani, Maharashtra, India. 431401.

to veterinary hospital with a history of swelling in left maxillofacial area. The submandibular lymphnode was palpable. In the CT examination a large mass and a defect in the maxilla was observed. A biopsy of the lesion was performed in both the cases. The biopsy revealed that the mass to be a rhabdomyosarcoma. Cytological evaluation of the sub-mandibular lymphnode revealed tumor invasion.

In dogs, sarcomas have been associated with radiation, trauma, and parasites (*Spirocerca lupi*). Most sarcomas are solitary in the older dog or cat and no definite sex or breed predilection is known except for synovial sarcomas, in which the ratio of males: females is 3:2.5. Rhabdomyosarcoma may occur in animals as young as 4 months. No metastatic lesion was noted by thoracic radiography. Surgical removal of the mass was done. Rifampicine (250mg) was administered locally. Parental antibiotic therapy was followed for five days postoperatively. Both the cases showed rapid growth and regional lymph node involvement, tumor recurrence after surgery and distant metastasis. The second dog was given chemotherapy with a local control of the lesion and distant metastatic lesions. Combination of antineoplastic drugs such as Vincristine and cyclophosphamide were given. The tissue samples from both dogs were fixed in 10% phosphate-buffered formalin and processed routinely for light microscopic examination. Replicate sections of the tumors were also stained using phosphotungstic acid-hematoxylin (PTAH) and periodic acid-Schiff (PAS) methods. These sections were used for immunohistochemical identification of vimentin, desmin, skeletal muscle actin, and cytokeratin (AB 1 /AE3). The standard avidin-biotin-peroxidase technique and commercially available antibodies for each protein were used. The typical histological features of the both the cases contained loosely arranged and fleshy cells. The nuclei of the cells were hyperchromatic and cytoplasm were deeply eosinophilic. These characteristics of the tumor cells were compatible with those of the rhabdomyoblasts. The tumor cells had round to ovoid, hyperchromatic to occasionally vesicular

nuclei and small to moderate amounts of cytoplasm.

DISCUSSION

In the veterinary field, rhabdomyosarcoma has been reported less frequently in comparison with human medicine, the predisposing sites of the tumor seem to differ from human cases. Laryngeal and cardiac rhabdomyosarcomas have been known to occur in dogs, as well as in the bladder known as a botyrioid tumor [1,6,8,9,10,13,14,15]. Other studies on canine cases observed the tumor in the tongue [11]. These two cases showed closed resemblance in the developing location of the upper premolar area. The muscle tissues of origin of muscle tissues of the origin of these tumors also remained unclear. Prognosis of rhabdomyosarcoma, seemed to be poor [11]. The rapid growth of tumor tissue included invasion into the maxilla in the early clinical course. In CT examination, showed the destruction of the bony tissues adjacent to the tumor. In order to give an appropriate prognosis, a histopathological examination of the tissue is required before starting treatment. Canine soft tissue sarcomas have been treated with various treatment forms mainly consisting of surgery, radiation therapy and chemotherapy [12]. Surgery alone or in combination with radiation therapy are used to treat the tumor at its original location, and chemotherapy is usually used to prevent or at least slow down the process of metastasis in pets diagnosed with tumor known to be highly aggressive. Survival period was poor in both the cases. Both the dogs died within 4 months after surgery. Rhabdomyosarcoma is a malignant soft tissue tumor found most often in children. The most common sites are the structures of the head and neck, the urogenital tract, arms and legs. Symptoms vary depending on location of the tumor. Incidence of soft tissue sarcomas is a diverse group of cancers that collectively comprise 15% of all "skin" and subcutaneous cancers in the dog. In dogs, sarcomas have been associated with radiation, trauma, and parasites (*Spirocerca lupi*). Early diagnosis is important because rhabdomyosarcoma is an aggressive tumor that spreads quickly. Soft

tissue sarcomas tend to have several important common features in regard to their biologic behavior:

- I. They may arise from any anatomic site in the body.
- II. They tend to appear as pseudoencapsulated fleshy tumors but have poorly defined histologic margins or infiltrate through facial planes.
- III. Local recurrence is common after conservative surgical excision.
- IV. Sarcomas tend to metastasize through hematogenous methods in up to 25% of cases. Regional lymph node metastasis is unusual (except for synovial cell sarcoma).
- V. They generally have a poor response to chemotherapy and radiation therapy for measurable disease.

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*Address for correspondence:

Prof. Dr. Lakshmi Gandhi, MDS

Head of Department, Department of Oral and Maxillofacial Surgery, Saraswati Dhanwantari Dental College and Hospital, Parbhani. Maharashtra 431401, India.

e-mail: lakshmigandi@yahoo.co.in

FIGURES

Fig. 1. Rhabdomyosarcoma



Fig. 2. Excised Tumor Mass



Fig. 3. Appearance of neoplastic cells, HE, x400

