Maxillofacial rhabdomyosarcoma in the canine maxillofacial area

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Abstract

Juvenile rhabdomyosarcomas were diagnosed in two young dogs based on the results of histopathology, phosphotungstic acid-hematoxylin stain, immunohistochemistry, and the age of the dogs. One dog, an 2yrs germanshepard had tumor mass in the maxillary premolar teeth gingiva . Histologically, the gingival mass was an alveolar type of rhabdomyosarcoma . The other dog, a 1.5-year-old Basset Hound, had alveolar type of rhabdomyosarcoma involving the premolar to molar teeth region and CT examination in each case revealed extensive bony involvement of maxilla .temporal muscles, with metastasis to the regional lymph node and lungs. A diagnosis of solid-pattern alveolar rhabdomyosarcoma was made on the basis of morphologic and immunohistochemical staining for desmin. Alveolar rhabdomyosarcoma should be considered in the differential diagnosis of tumors in juvenile dogs, especially when cytologic findings reveal round, undifferentiated cells. Both the cases were subjected to surgical excision of tumor tissue followed by chemotherapy. Both the dogs died within two months of the admission.

Key words: Canine, Oral Rhabdomyosarcoma, Malignant tumor, Soft tissue sarcoma

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Introduction

Rhabdomyosarcomas spontaneously arising in skeletal muscles are rare in domestic animals [1] .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 neoplasm [2,3]. Rhabdomyosarcomas are classified into three main types based on the histological features: pleomorphic, embryonal and alveolar [1]. Domestic animals with Rhabdomyosarcomas have a broad age range with a mean age of 2-3 years [1,4,5]. There is no clear pattern of site prevalence.

Rhabdomyosarcomas can also be termed as "Botryoid" because of their appearance of grape Like appearance. In this report, we describe juvenile Rhabdomyosarcomas in two young dogs an 2yrs germanshepard had tumor mass in the left maxillary premolar teeth gingiva . Histologically the gingival mass was an alveolar type of rhabdomyosarcoma. At the follow-up examination 2 weeks later, the owner described a left maxillary swelling that had been rapidly growing for the last 3 days. Physical examination revealed a firm, 2.5 x 2cm ulcerated, protruding mass in the gingiva of the left maxilla at the level of the upper first premolar to first molar. A wedge biopsy sample was submitted for histopathological examination.

Dog No.2 was a 3 yr old male Boxer with a 1-month history of progressive left Swelling in the left maxillary molar teeth gingiva .Physical examination revealed a firm,1.5 x 2cm diameter swelling and firm enlargement of a left submandibular lymphnode was noted. In the CT examination, a large mass and defect in the maxilla was observed. A biopsy of the leasion was performed Cytology revealed an atypical population of round cells of undetermined origin. A diagnosis of alveolar rhabdomyosarcoma was reached via histopathology and confirmed with positive immunohistochemical staining for desmin. Cytological examination of the submandibular lymphnode suggested tumor invasion. 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 with phosphotungstic acid-hematoxylin and periodic acid-

Fig-1. Gross appearance of tumor

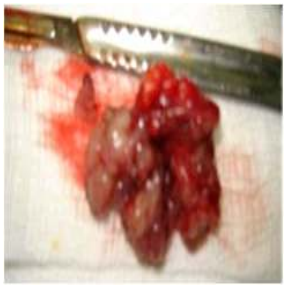

Fig-2. Photograph of the specimen postoperatively .

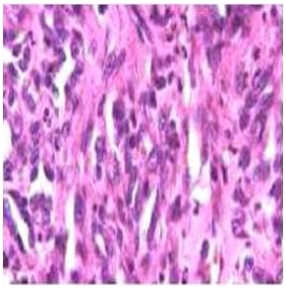

Fig-3. Appearance of neoplastic cells, HE, x400.

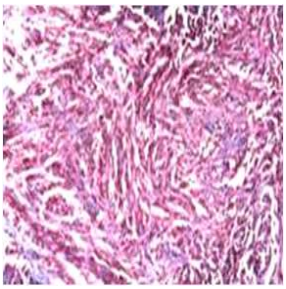

Fig-4. Appearance of neoplastic cells

Schiff methods and used for immunohistochemical identification of desmin, skeletal muscle actin, and cytokeratin (AB 1 /AE3). Histologically, the gingival mass of dog No. 1 was a locally invasive neoplasm with multiple areas of necrosis and haemorrhage.The neoplasm consisted of round to fusiform cells grouped into a lobular pattern by prominent fibrous septa. The tumor cells had round to ovoid, hyperchromaticto occasionally vesicular nuclei and small to moderate amounts of cytoplasm. Mitotic activity was moderately high. The gingival neoplasm had histologic characteristics of an alveolar type of rhabdomyo-sarcoma. Based on the age of both dogs and the histopathology and immunochemistry results, the tumors were diagnosed as juvenile rhabdomyosarcomas of different histologic types. Immunohistochemical detection of muscle-Specific antigens has been valuable for diagnosing poorly differentiated rhabdomyosarcomas lacking the characteristic light microscopic cross-striations or ultra-structural sarcomeric feature [4,6,7]. Surgical removal of the neoplastic tissue was done. General anesthesia was maintained by ketamine HCl 10% (Alfamine¨,10 mg/ml, Alfasan) following premedication with xylazine 2% (Alfazyne¨, 20 mg/ml, Alfasan). The region was prepared for the operation on routine basis. The mass was removed through a blunt dissection. Rifampicine¨ (250 mg) was administered locally. The wound was protected. Parenteral antibiotherapy was followed for 5 days postoperatively.

Discussion

Juvenile rhabdomyosarcomas are the second most common malignant head and neck tumors (1 8%), following lymphosarcomas ('l0%), in the human pediatric population About 7 5 % of the human juvenile rhabdomyosarcomas are embryonal in type, and the remaining 20% are the alveolar type [3] . The most common site of involvement in the oral cavity is the tongue followed by the soft palate, hard palate, and buccal mucosa. In our both the cases the buccal mucosa, maxillary alveolar ridge, and hard palate were all involved. The soft tissue was more damaged than the bone, suggesting that the tumor primarily originated in the buccal mucosa. Only two juvenile rhabdomyosarcomas involving the oropharyngeal tissues of dogs have been reported previously, and both were alveolar types [8,9] .

The biological significance of different histologic types of juvenile rhabdomyosarcomas is unknown. In dogs, the alveolar rhabdomyosarcoma may be more common than the embryonal type, but larger samples sizes are needed to determine the relative frequencies and biological behavior of different types of this tumor Rhabdomyosarcomas should be considered as a differential diagnosis for tumors in the head and neck region of juvenile animals. More number of cases need to be studied to evaluate biologic behavior, incidence, and prevalence of the tumor in animals. In dogs, sarcomas have been associated with radiation, trauma, and parasites (*Spirocerca lupi*). Most sarcomas are solitary in the older dog and no definite sex or breed predilection is known except for synovial sarcomas, in which the ratio of males to females is 3:2.5. Early diagnosis is important because rhabdo-myosarcoma is an aggressive tumor that spreads quickly. Sarcomas tend to have several important common features in regard to their biologic behavior. They may arise from any anatomic site in the body. They tend to appear as pseudoencapsulated fleshy tumors but have poorly defined histologic margins. Local recurrence is common after conservative surgical excision.

Sarcomas tend to metastasize through hemato-genous methods in up to 25% of cases. Regional lymph node metastasis is unusual (except for synovial cell sarcoma). They generally have a poor response to chemotherapy and radiation therapy. Canines soft tissue sarcomas have also been treated with various treatment forms mainly consisting of surgical and radiation therapy. In this report both the cases were treated surgically, which could reduce tumor volume.

Surgery has been considered as main treatment for the treatment for soft tissue sarcomas. In addition to that swelling of the regional lymphnodes were observed ,at first admission, which is suggestive of aggressive nature of the tumor. These findings indicated that the surgery alone would not be an appropriate treatment form against canine rhabdomyosarcoma. In general post-operative radiation therapy has been considered acceptable form of treatment.

Conclusion

It is concluded, that in dogs, any swelling should be carefully examined and treatment outcomes should be regularly followed up. High degree of suspicion, early diagnosis, and a multidisciplinary treatment approach would be of great importance in such cases. The initial management of any tumor is critical to a satisfactory outcome of the disease.

References

1. Hulland TJ (1990) Tumors of muscle. In: *Tumors in Domestic Animals*, ed. Moulton JE, 3rd ed., pp. 88-101. University of California Press, Berkeley, CA.
2. Enzinger FM and Weiss SW (1988) Rhabdomyosarcoma. In: *Soft Tissue Tumors*, ed. Stamathis G , 2nd ed., pp. 448-488. CV Mosby, St. Louis, MO.
3. MacArthur CJ, McGill TJ I , Healy GB (1992) Pediatric head and neck rhabdomyosarcoma. *Clin Pediatr* 31:66-70.
4. Andreasen CB, White MR, Swayne DE, Graves GN (1988) Desmin as a marker for canine botryoid rhabdomyosarcomas. *J Comp Pathol*,98:23-29.
5. Kelly DF (1973) Rhabdomyosarcoma of the urinary bladder in dogs. *Vet Pathol*, 10:375-384.
6. Seidal T, Kmdbolm LG, Angervall L (1988) Alveolar and poorly differentiated rhabdomyosarcoma. A clinicopathologic, light-microscopic, ultrastructural and immunohi s to chemical analysis. *Acta Pathol Microbiol Immunol Scand*, 96~825-838.
7. Seidal T , Walaas L, Kindblom LG, Angervall L (1988) Cytology of embryonal rhabdomyosarcoma: a cytologic, light microscopic, electron microscopic, and immunohistochemical study of seven cases. *Diagn Cytopathol*,4:292- 299.
8. Peter CP, Kluge JP (1970) An ultrastructural study of a canine rhabdomyosarcoma. Cancer 26: 1280-1 288.
9. Seibold HR (1974) Juvenile alveolar rhabdomyosarcoma in a dog. *Vet Pathol*, 11:558-560.

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