

# Oropharyngeal Cancer (tumors of the mouth) by Pamela A. Davol

Oropharyngeal tumors account for about 6% of all tumors occurring in the dog. There are a number of different types of tumors that may develop in the oral cavity of the body. Among them, the most common is melanoma followed by fibrosarcoma, squamous cell carcinoma and adenocarcinoma. Melanoma involves tissues of the gums most frequently, followed by the tongue, lip and palate. Soft tissue tumors will sometimes invade the jawbones. This is particularly the case of osteosarcomas. Cocker Spaniels have an increased incidence for melanoma compared to other breeds, and there may be a slight predominance for this tumor-type to occur in males.

## Average Age Of Onset

Cancerous lesions of the oral cavity may present at any age with the highest frequency occurring between the ages of 7-11 years.

## Cause

A tumor virus, called papillomavirus, is suspected of playing a role in oncogene activation associated with the development of carcinomas and sarcomas of the oral cavity. Dogs with oral and ocular papillomas (benign tumors) reportedly are at increased risk to developing malignant tumors. Dogs living in the city are at higher risk to developing malignancies associated with the

tonsils. One study found a significant increase of risk for sinonasal tumors in pet dogs in homes using indoor coal or kerosene heaters suggesting strong evidence for environmental carcinogens in the development of oropharyngeal cancers.

## Symptoms

Unfortunately, malignancies of the oral cavity are not often found until the disease is in an advanced stage. Increased salivation, difficulty chewing, loss of appetite, weight loss, difficulty swallowing, bad breath, and bloody saliva are all symptoms of oropharyngeal cancers. Tumors involving the tonsils or the base of the tongue may also cause difficulty breathing. Loose teeth in an otherwise healthy mouth may also signal the presence of bone lesions. Sarcomas may present as ulcerating mass lesions, however, carcinomas may be less obvious in terms of detection.

## Diagnosis

Dogs presenting with tumors of the oral cavity must undergo biopsy of the lesion for identification of tumor-type.

Additionally, x-rays of the local and surrounding area of the tumor as well as films of the chest are usually required to determine extent of the spread of the disease. Many melanomas and some carcinomas will have already metastasized to the lungs by the time the dog is identified as having an oral tumor. Additionally, it is not uncommon for tumors of the soft tissues of the mouth to invade underlying bone. Regional lymph nodes should be examined for possible

involvement, and suspicious nodes should be biopsied by fine-needle aspiration for evidence of malignant cells. Computed tomography (CT) may be valuable for determining the extent to which the nasal cavity may be involved.

## Treatment

Surgery involving the removal of portions of the effected upper (maxillectomy) or lower (mandibulectomy) jaw results in average survival times of 8 or 11 months, respectively. The best outcomes are reported for radical excision in which an average of at least 2-cm of surrounding normal tissue is removed with the diseased tissue. In the cases of incomplete excision or inoperable tumors due to wide spread invasion, radiation therapy may provide palliative control of some radiation-responsive tumors. Radiation therapy may be combined with chemotherapy, however, no significant advantage of providing longer survival has been observed for this combination compared to radiation therapy alone. For chemotherapy alone, squamous cell carcinomas are moderately responsive to Cisplatin or Carboplatin, and sarcomas demonstrate a 30-50% response rate to Doxorubicin treatment.

## Prognosis

Early detection, when oropharyngeal tumors are less than 2 cm in diameter, provides a better outlook for therapeutic response and long-term prognosis since likelihood of metastasis increases with the size of the primary tumor. Melanomas of the oral cavity are usually resistant to radiation

therapy and carry a poor prognosis due to the high incidence of metastases associated with this tumor-type. Average survival following therapy for melanoma is about 8 months. Fibrosarcomas present more problems associated with local invasion than with distant metastases. Additionally, this tumor-type appears to be extremely resistant to local control when it occurs in dogs under the age of 2 years. In general, however, fibrosarcomas are responsive to radiation therapy with control of tumors lasting an average of 12 months. Greater tumor control has been observed in dogs treated with a combination of radiation therapy and local hyperthermia (heat therapy). Most successful treatment regimens combine surgery with radiation therapy (before or after surgical excision) and chemotherapy.

Squamous cell carcinomas are locally invasive with preponderance toward invading underlying bones, however, metastases associated with this tumor-type are rare in the dog. Average survival of dogs treated with surgery and radiation therapy is a little over 1 year. An exception to this occurs when this tumor-type develops in the tonsils. Average survival decreases dramatically (to about 4 months) even with surgery and radiation therapy, and is associated with the increased tendency of the tumor to metastasize from this location. Addition of Cisplatin or Doxorubicin to the standard treatment regimen may assist to prolong survival.

Osteosarcomas of the oral cavity bear a particularly dismal prognosis due to both local invasiveness and high incidence of metastases. Average survival of dogs undergoing treatment

with surgery and radiation is about 4-5 months. Addition of chemotherapy to the treatment regimen may further increase anticipated survival of dogs with this tumor-type (see next section).

## Prevention

The increased incidence for dogs with papillomas to develop oropharyngeal tumors combined with the decreased incidence of these tumors in dogs immunized against papillomavirus provides strong evidence that predisposition to oral cavity tumors is virally induced. Additionally, it has been found that dogs who are immunosuppressed due to therapy with glucocorticoids show increased risk to infection with the papillomavirus. Therefore, factors such as viral infection and immunosuppression combined with environmental carcinogens may be the most common events leading to development of oropharyngeal tumors.

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