

Oral Malignant Melanoma in a Labrador Retriever

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Abstract : A 12-year-old, intact male Labrador Retriever was admitted to the Veterinary Teaching Hospital of Konkuk University for the evaluation of bleeding mass in the oral cavity. The mass was first noted 2 years ago and has been growing up to a size of 5×6 cm. On complete blood count(CBC), leukocytosis and mild anemia were observed. Pulmonary metastasis was found in the thoracic radiographic examination. Blackish necrotic oral mass at the left mandibular area was diagnosed as a malignant melanoma based on the histopathological examination. Thus hemimandibulectomy and chemotherapy (carboplatin) were performed. The patient eventually died due to severe secondary infection 3 months after the last treatment.

Key words : malignant melanoma, chemotherapy, neoplasia, dog.

Introduction

Melanomas are the most common malignant oral neoplasms in dogs^{2,3}. They grow rapidly and frequently recur, and 70-90% metastasize to regional lymph nodes^{2,5}. These tumors are normally characterized by round to spindle-shaped anaplastic melanocytic cells that show junctional activity and often infiltrate the underlying submucosa^{6,10,11}. In a canine melanoma cell line, carboplatin had marked in vitro cytotoxicity in short-term growth assays⁷.

The objective of the case reported here was to evaluate the treatment efficacy in dogs with oral malignant melanoma.

Case Presentation

A 12-year-old, intact male Labrador Retriever was referred to the Veterinary Teaching Hospital of Konkuk University due to a bleeding firm mass involving left mandibular area of the oral cavity. The mass was first noted two years ago and has been continuously growing.

On physical examination, the dog has oral ulceration secondary to trauma over the mass and severe gingivitis. The mandibular lymph node was swollen and left hind limb was lamed. The size of mass was measured approximately 5 cm in diameter. It was faintly pigmented and protruding between two left incisors (Fig 1).

A complete blood count (CBC) (Table 1) showed the stress leukogram, that was neutrophilia, lymphopenia, monocytosis and regenerative shift to the left. Mild anemia and thrombocytosis were also observed. Serum biochemical abnormalities consisted of hypernatremia and elevated ALT (Table 2). On thoracic radiograph, multiple discrete nodular densities were noted in the lung (Fig 2). Aspiration from the oral mass

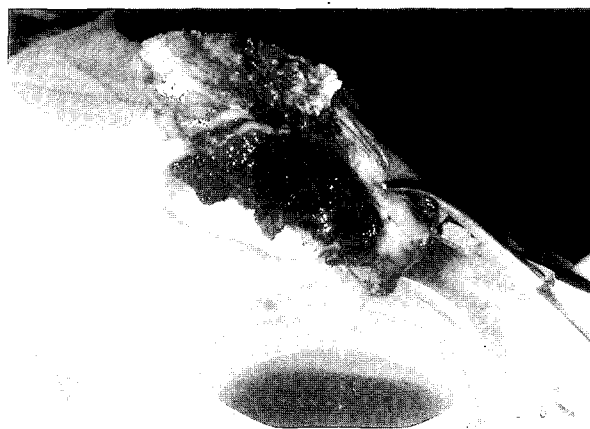


Fig 1. Excised mass shows that black-pigmented mandibular mass is protruding between two left incisors and hemimandibulectomy was performed.



Fig 2. A thoracic radiographic shows that oral melanoma was metastasized to the lungs and there is multiple nodular densities within the pulmonary parenchyma.

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Table 1. Complete Cell Count profiles in a dog with oral malignant melanoma.

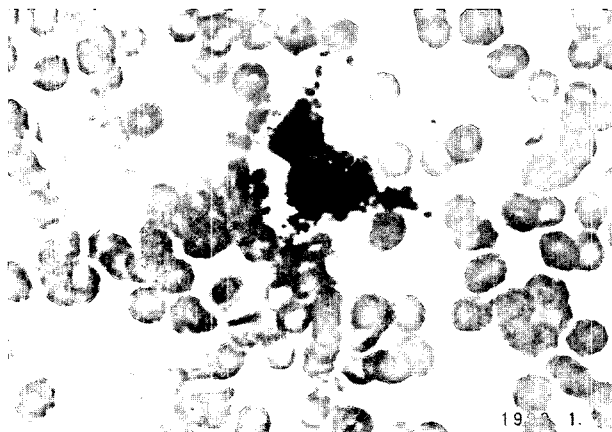
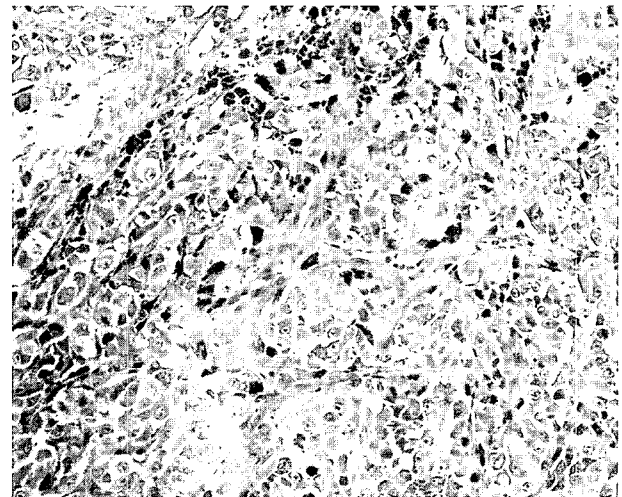
Items tested	8/23	8/29	9/3	10/30	Reference
WBC	28.14	35.82	23.56	28.50	6 ~ 17 × 10 ³ /μl
RBC	4.75	4.12	3.58	6.30	5.5 ~ 8.5 × 10 ⁶ /μl
Hb	11.1	9.2	9.2	13.3	12 ~ 18 gm/dl
PLT	628	853	728	796	200 ~ 500 × 10 ³
MCV	66.9	70.6	65.4	70.8	60 ~ 77 fL
MCH	23.4	22.3	25.7	21.1	19.5 ~ 24.5 pg
MCHC	34.9	31.6	39.3	29.8	32 ~ 36%
PCV	31.8	24.0	19.0	38.0	37 ~ 55%

WBC: white blood cells, RBC: red blood cells, Hb: hemoglobin concentration, PLT: platelet number, MCV: mean corpuscular volume, MCH: mean corpuscular hemoglobin, MCHC: mean corpuscular hemoglobin concentration, PCV: packed cell volume.

Table 2. Serum biochemistry profiles in a dog with oral malignant melanoma.

Items tested	8/23	8/29	9/3	10/30	Reference range
BUN	18.9	10.9	10.4	9	4.5-30.5 mg/dl
CRSC	0.97	0.72	0.66	0.8	0.5-1.5 mg/dl
ALT	80	659	376	43	3-50 U/L
AST	27	102	52	38	1-37 U/L
ALP	65	1212	488	117	20-155 U/L
CK	59	136	202	81	25-467 U/L
TP	6.58	6.23	5.54	7.2	4.8-6.6 g/dl
ALB	2.60	2.61	2.28	2.8	2.3-3.9 g/dl
Ca	10.26	9.78	9.78	9.9	9.7-12.2 mg/dl

BUN: blood urea nitrogen, CRSC: creatinine, ALT: alanine transaminase, AST: aspartate transaminase, ALP: alkaline phosphatase, CK: creatinine phosphokinase, TP: total protein, ALB: albumin, Ca: calcium.

**Fig 3.** Aspiration from the oral mass showed the melanin granule in the cytoplasm.**Fig 4.** The dermis is densely packed with polygonal shape cells that occasionally contain dark granules in the cytoplasm. H&E, ×400.

showed the pigmentation in the cytoplasm and matrix. (Fig 3). Excision of oral mass with hemimandibulectomy was performed and the mass appeared to be locally infiltrative. Histopathological examination revealed that the tumor is malignant oral melanoma (Fig 4).

Carboplatin (250 mg/M², q 3wk, I.V.) treatment was initiated 10 days after surgery for chemotherapy. Packed cell volume

was decreased to 19% but increased gradually in normal range after 1 month later (Table 1).

Although there was no side effect that azotemia and myelosuppression with neutropenia and thrombocytopenia,

the patient became a cancerous debilitation and died after 3 months later.

Discussion

Melanomas of oral cavity and mucocutaneous junctions in dogs generally exhibit poor prognosis because rapid invasion of surrounding normal tissue and high likelihood of regional and distant metastasis occur early in the course of the disease⁷. Most oral melanomas are malignant and metastasize via lymph nodes or by blood to the lungs⁹. This is consistent with the case reported here.

In a large number of dogs, the clinical and history takings were related to metastases in the regional lymph nodes or to paraneoplastic hypercalcemia¹. Systemic therapy may be an appropriate adjunct to local treatment for dogs malignant melanomas. For longer survival duration, the dog received the combination of chemotherapy and surgery¹.

Platinum drugs are myelosuppressive with neutropenia and thrombocytopenia reported in small animals⁸. However, severe lymphopenia and neutropenia were not observed in this case. Due to the absence of efficacious chemotherapeutic agents for metastatic melanoma and severe side effects following chemotherapy, we selected carboplatin instead of cisplatin, which has severe renal damage resulting in acute renal failure and this chemotherapeutic agent has activity against macroscopic spontaneously occurring malignant melanomas in dogs. Thus the dog was entered into the carboplatin treatment after surgical resection. According to results of several studies^{4,9} Thirty-seven dogs with oral malignant melanoma treated by mandibulectomy had a median survival time of 9.9 months and 22% of these tumors recurred locally. Metastatic disease was diagnosed in 43% of these dogs. Fifty-four percent of dogs had progressive disease. Five of seven dogs with malignant melanoma had metastatic disease a median of 3 months following mandibulectomy and had local tumor recurrence.

The dog described here died 3 months later due to severe hemorrhagic enteritis induced by canine parvovirus although careful monitoring and intensive therapy were taken. In addition, the cause of this patient might be associated with coagulation disorder commonly seen in tumor-bearing dogs or chemotherapy patients. However, necropsy examination of metastasized pulmonary masses was not performed due to the clients refusal. Thus we could not confirm the response to chemotherapy in this study.

Conclusions

In this case reported here, carboplatin chemotherapy could have activity against measurable oral malignant tumors. In addition, carboplatin has no severe side effects including GI hemorrhage and severe renal damage during chemotherapy. Thus, this carboplatin chemotherapeutics could be an alternative chemotherapy of oral melanoma to cisplatin in the future.

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리트리버 개의 구강유래 악성 흑색종 발생 예

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요약 : 구강내에 출혈을 동반한 크기 5×6 센티미터의 종괴가 있는 종양을 가진 12년령의 거세되지 않은 수컷 래브라도 리트리버가 건국대학교 부속동물병원에 의뢰되었다. 임상증상은 2년전부터 시작되었고, 점진적인 진행양상을 보여왔다. 총백혈구검사에서 백혈구증가증과 경도의 빈혈증상이 관찰되었다. 구강 종양의 폐장으로의 전이는 흉부 방사선 검사에서 발견되었으며 왼쪽 하악 주위의 흑색 괴저성의 종괴는 흡인도말검사 및 조직병리학적 검사에 의해 악성 흑색종으로 진단되었다. 치료는 외과적으로는 반하악절제술과 항암제인 carboplatin을 이용한 화학요법이 시행되었다. Carboplatin투여후 심한 신장의 괴사는 관찰되지 않았지만 이차감염으로 투여 3개월 후 폐사하였다.

주요어 : 악성흑색종, 화학요법, 개