# The Variable Cytological Appearance of Melanoma in Dogs

Hazelyn Patterson, DVM and Kenneth S. Latimer, DVM, PhD

Class of 2001 (Patterson), and Department of Pathology (Latimer), College of Veterinary Medicine, The University of Georgia Athens, GA 30602-7388

## Introduction

Melanocytic tumors represent 4 to 7% of all canine neoplasms and are the most common malignant tumor of the canine oral cavity and digits.[1] Cutaneous melanomas, the fourth most common canine skin tumor, are usually benign; however, oropharyngeal, uveal, and mucocutaneous neoplasms are often aggressive and have metastatic potential. Melanoma is prevalent among Standard and Miniature Schnauzers, Doberman Pinschers, Scottish Terriers, Irish and Gordon Setters, and Golden Retrievers. Males tend to develop neoplasms more frequently than females.

The most important prognostic factors in determining the course of the disease are tumor stage, size, mitotic activity, and evidence of tumor recurrence after a prior treatment. Metastasis to lung and regional lymph nodes occurs in at least 50% of oropharyngeal malignant melanomas.[2]

## Gross Appearance and Clinical Signs

The gross appearance of melanocytic tumors is highly variable and ranges from raised, dark macules on the skin to pedunculated masses at the commissures of the mouth. These neoplasms may be dark, gray, or amelanotic, and often are ulcerated to necrotic. Metastastic melanomas often appear as darkly pigmented globoid masses.

When tumors of the oral cavity are present, the patient may present with dysphagia, weight loss, anorexia, loss of teeth, facial swelling, thickening of the mandible or maxilla, sneezing, hemorrhage, or pain. These clinical signs often are accompanied by halitosis and ptyalism.

## Cytological Appearance

Melanomas are highly variable in their cytological appearance and may resemble round cell, epithelial, or spindle cell neoplasms (Figs. 1, 2, & 3). Anisocytosis and anisokaryosis may be marked. Multinucleated tumor cells may be observed infrequently. Individual neoplastic cells have a round to oval nucleus; prominent, large (~5 µm diameter), pale-staining nucleoli; and variable amounts of gray cytoplasm. Individual cells from most melanomas contain discernable melanin pigment. The melanin pigment granules may be fine and dust-like, needle-shaped, or coarse and granular (Figs. 4, 5, & 6). If the neoplastic cells are disrupted during fine-needle aspiration or smear preparation, melanin pigment may be scattered throughout the background of the smear (Fig. 7). Infrequently,

melanomas may be amelanotic or devoid of melanin pigment formation (Fig. 8). Variable numbers of mitoses may be observed. Inflammatory cell infiltrates usually accompany necrosis.

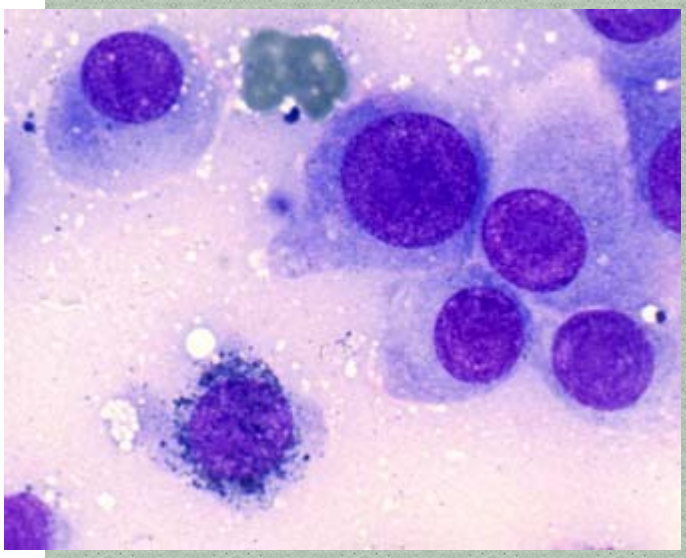

**Fig. 1.** Malignant melanoma, dog, Wright-Leishman stain. Neoplastic cells are often individual and discrete, resembling a round cell neoplasm.

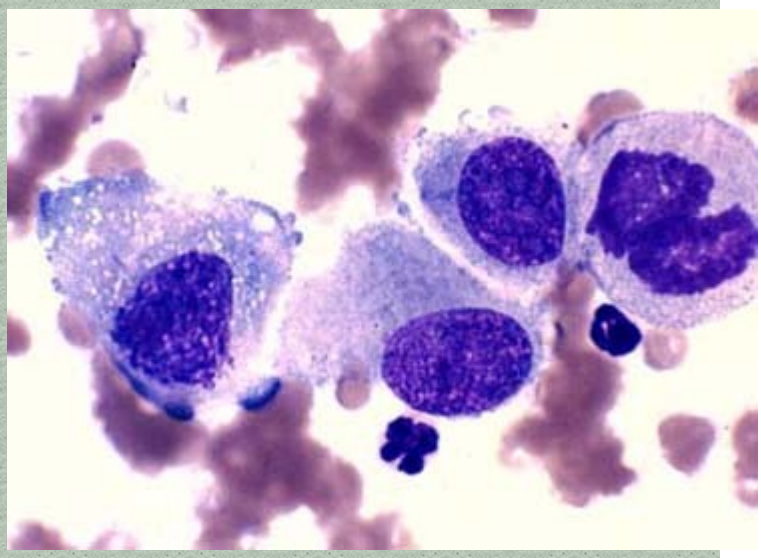

**Fig. 2.** Amelanotic malignant melanoma, dog, Wright-Leishman stain. Melanoma cells are large (epithelioid type) and present in aggregates, resembling an epithelial neoplasm. A mitotic figure is present (right).

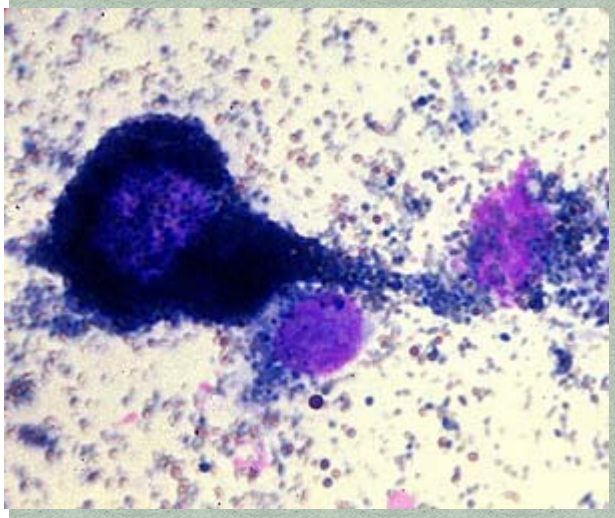

**Fig. 3.** Malignant melanoma, dog, Wright-Leishman stain. Melanoma cells are spindleoid, resembling a mesenchymal neoplasm.

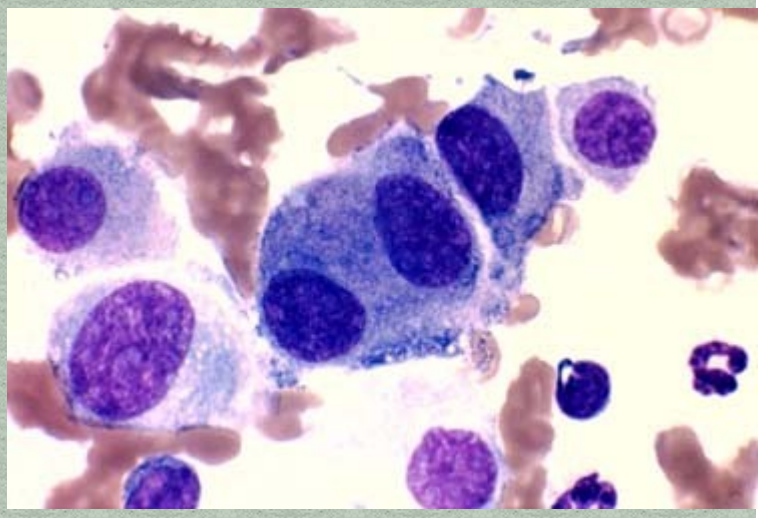

**Fig. 4.** Malignant melanoma, dog, Wright-Leishman stain. Dust-like melanin pigment granules are present in neoplastic cells.

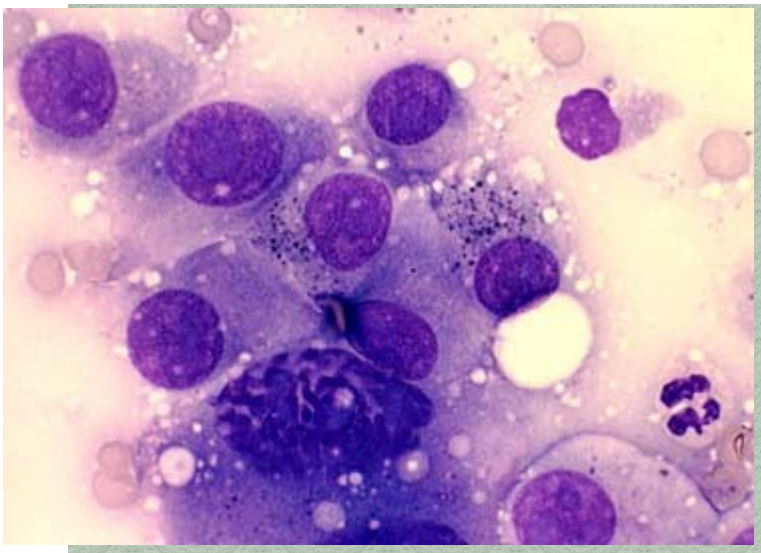

**Fig. 5.** Malignant melanoma, dog, Wright-Leishman stain. Melanin pigment granules are moderately coarse.

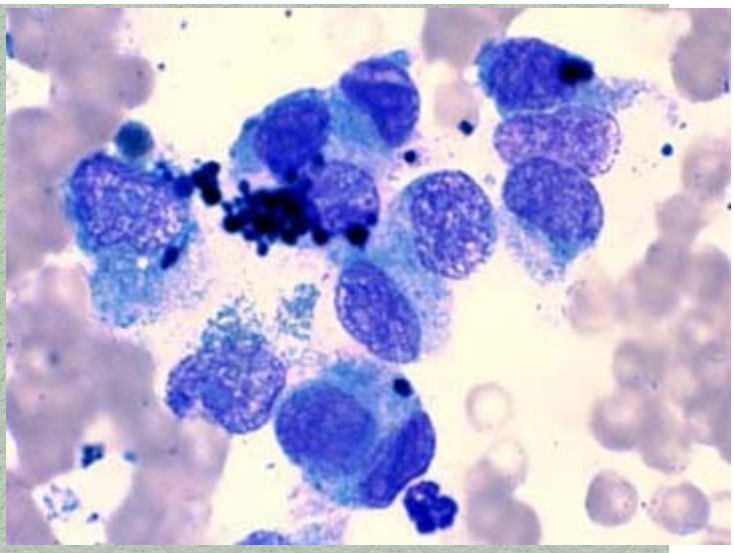

**Fig. 6.** Malignant melanoma, dog, Wright-Leishman stain. Coarse, chunky melanin pigment is present within neoplastic cells.

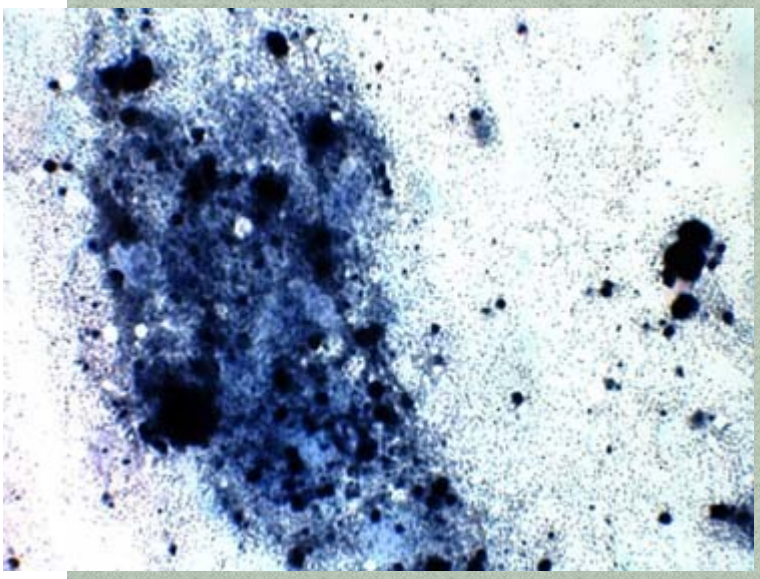

**Fig. 7.** Malignant melanoma, dog, Wright-Leishman stain. Free melanin pigment is scattered in the background of the smear because the neoplastic cells were lysed during fine-needle aspiration or specimen preparation.

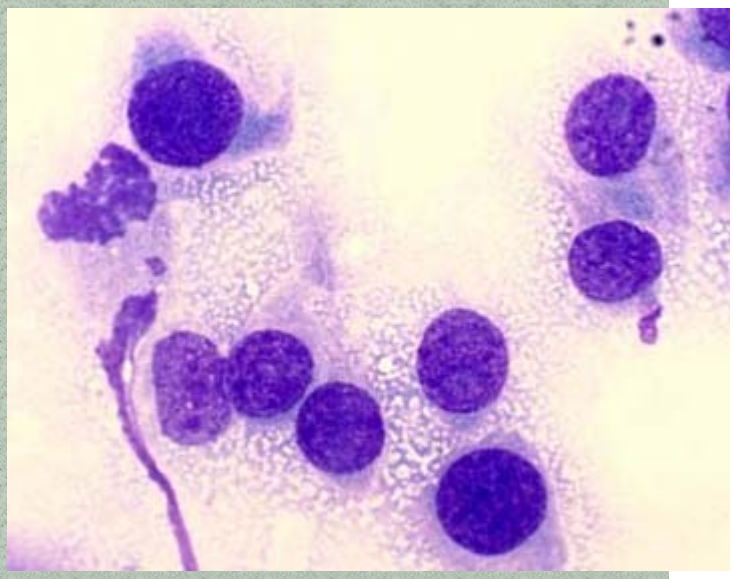

**Fig. 8.** Amelanotic malignant melanoma, dog, Wright-Leishman stain. Melanin pigment is not present in neoplastic cells from an amelanotic melanoma.

## Treatment

Various treatments for malignant melanoma have been attempted, but clinical response has been less than ideal. Melanomas generally exhibit poor response to chemotherapy. Surgical excision (with wide margins) often is performed if the neoplasm is isolated. Malignant melanomas on digits or distal limbs are sometimes amenable to amputation. However, surgery is often impractical because of the anatomical location of the neoplasm or inability to achieve sufficient surgical margins at excision.

Cryosurgery, photocoagulation using Nd-YAG lasers, radiation therapy,

and intralesional cisplatin implants have been performed with variable success. For localized neoplasms, combining two methods of treatment may improve survival rates.

## Selected References


1. Modiano JF, Ritt MG, Wojcieszyn J: The molecular basis of canine melanoma: Pathogenesis and trends in diagnosis and therapy. J Vet Intern Med 13: 163-174, 1999.

2. Nelson RW, Couto CG: Oncology, *In:* Manual of Small Animal Internal Medicine, St. Louis, Mosby, Inc., 1999, pp. 709-710.

3. Dhaliwal RS, Kitchell BE, Marretta SM: Oral tumors in dogs and cats. Part II. Prognosis and treatment. Comp Cont Edu 20:1109-1119, 1998.

4. Dhaliwal RS, Kitchell BE, Marretta SM: Oral tumors in dogs and cats. Part I. Prognosis and treatment. Comp Cont Edu 20:1011-1021, 1998.

5. Rogers KR, Barton CL, Habron JM: Cytology during surgery. Comp Cont Edu 18:153-162, 1996.

6. Sullivan TC, Nasisse MP, Davidson MG, Glover TL: Photocoagulation of limbal melanoma in dogs and cats: 15 cases (1989-1993). J Am Vet Med Assoc 208: 891-894, 1996.

7. Kitchell BE, Brown DM, Luck EE, Woods LL, Orenberg EK, Bloch DA: Intralesional implant for treatment of primary oral malignant melanoma in dogs. J Am Vet Med Assoc 204: 229-236, 1994.


---


**Clerkship Menu** | **Pathology Main Menu**