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INTRODUCTION to Veterinary clinical oncology

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INTRODUCTION

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Veterinary clinical oncology involves a multidisciplinary approach to the recognition and management of spontaneously occurring neoplasms of domestic animals.

This requires some knowledge of the causes, incidence, and natural course of malignant disease as it occurs in domestic species. The purpose of this course is to acquaint you with the more common neoplastic problems you will encounter in practice, so that you can offer your clients an informed opinion regarding prognosis and possible therapeutic modalities. A major thrust will be directed toward discussing and encouraging treatment/management of malignant disease. Multimodality therapy will be stressed.

The primary role of the veterinary oncologist (practitioner) is to identify and "orchestrate" the treatment of cancer in small and large animals. A good veterinary pathologist is the steady "right arm" of the successful oncologist. Remember, the final pathological diagnosis is only as good as the history, biopsy, and description of the tumor that you give the pathologist.

Armed with a good histologic diagnosis, the oncologist can then plan his therapy based on the sensitivity of that tumor to various therapeutic modalities.

Definitions:

Cancer - "a malignant new growth anywhere in the body characterized by the disorderly proliferation of transformed cells." - Websters

- "a chronic progressive disease." - Weller

Oncogenic - giving rise to tumors or causing tumor formation.

Malignant - tending to become progressively worse and to result in death.

TABLE 1
BENIGN AND MALIGNANT TUMORS FOUND IN DOMESTIC ANIMALS

Benign Tumor	Malignant Tumor
CONNECTIVE TISSUE AND ITS DERIVATIVES	
Fibroma (and fibropapilloma) Myxoma Chondroma Osteoma Lipoma Osteoclastoma (giant cell tumor) Synovioma Mastocytoma (mast cell tumor) Meningioma Histiocytoma	Fibrosarcoma Myxosarcoma Chondrosarcoma Osteosarcoma (osteogenic sarcoma) Liposarcoma Malignant osteoclastoma Synovial sarcoma (synoviosarcoma) Mast cell sarcoma
ENDOTHELIAL TISSUE AND ITS DERIVATIVES	
Hemangioma Lymphangioma	Hemangiosarcoma Lymphangiosarcoma
HEMOPOIETIC TISSUE AND ITS DERIVATIVE	
	Lymphosarcoma (with or without leukemia) Myelogenous leukemia (granulocytic leukemia) Erythroleukemia Lymphosarcoma, histiocytic type (reticulum cell sarcoma) Hodgkin's-like disease Plasma cell myeloma (plasmacytoma) Myeloproliferative disease
MUSCLE	
Leiomyoma Rhabdomyoma	Leiomyosarcoma Rhabdomyosarcoma
ELEMENTS OF NERVOUS SYSTEM	
Schwannoma (neurofibroma, neurolemoma) Astrocytoma Ependymoma (includes papilloma of the choroid plexus) Oligodendroglioma Pheochromocytoma (chromaffinoma) Ganglioneuroma and Neuroma	Malignant schwannoma (neurofibrosarcoma) Undifferentiated astrocytoma (includes astroblastoma) Undifferentiated ependymoma Medulloblastoma Malignant pheochromocytoma Neuroblastoma (and retinoblastoma)

TABLE 1 (CONT)

BENIGN AND MALIGNANT TUMORS FOUND IN DOMESTIC ANIMALS

Benign Tumor	Malignant Tumor
EPITHELIUM	
Papilloma Adenoma Basal cell tumor (basal cell adenoma, basaloid tumor) Transitional cell adenoma or papilloma	Squamous cell carcinoma Adenocarcinoma Transitional cell carcinoma
MIXED (DERIVED FROM MORE THAN ONE GERM LAYER OR MORE THAN ONE DERIVATIVE OF SINGLE GERM LAYER)	
Teratoma Mixed tumor (mammary), benign	Mixed tumor (mammary), malignant

TABLE 2
EPIDEMIOLOGIC FEATURES OF CANCER BY MAJOR SITES IN DOGS

Primary Site	Incidence Rate (per 100,000)	Major Histologic Types	Age	Sex	Breed	Etiologic Factors
Skin, other than melanoma	90.4	Mastocytomas Adenocarcinomas Squamous cell carcinomas	Rates markedly increase after 5 years	Males - high risk of perianal gland adenocarcinomas	Boxers - high risk Chihuahuas - low risk	Cell-free transmission of mastocytoma
Malignant	25.0	Melanotic and amelanotic melanomas	Rates increase after 7 years	NOD*	Purebred dogs - high risk Boxers - high risk	--
Connective	35.8	Fibrosarcoma Hemangiosarcoma Malignant hemangiopericytoma	Rates markedly increase after 7 years	NOD	Boxers - high risk	Methylchoan then induced fibrosarcoma of subcutaneous tissue
Mouth and pharynx	20.4	Melanoma Squamous cell carcinoma Fibrosarcoma	Rates markedly increase after 9 years	Males - high risk of melanoma and Fibrosarcoma	Several breeds - high risk** Dachshunds & beagles - low risk	Cell-free transmission of oral papillomas
Mammary gland	198.8 (females)	Adenocarcinoma Mixed mammary tumor	Rates increase after 5 years	Large sparing effect if spayed before 2-1/2 years	Purebred dogs Chihuahuas - high risk	Cellular transmission of mixed tumors
Lymphoid tumors	25.0	Lymphosarcoma	Rates increase with age	NOD	Boxers - high risk	Cellular transmission Radiostrontium Virus-like particles observed
Bone	7.9	Osteogenic sarcoma	Rates increase little with ages	NOD	Large breeds - high risk	Associated with body size Radiostrontium
Testis	33.9 (males)	Seminoma Sertoli cell tumor	Rates increase after 7 years	Cryptorchidsetoli cell tumor	NOD	--

*NOD - No observed difference

** German shorthaired pointer, weimaraner, golden retriever and boxer

TABLE 3
EPIDEMIOLOGIC FEATURES OF CANCER BY MAJOR SITES IN CATS

Primary Site	Incidence Rate (per 100,000)	Major Histologic Types	Age	Sex	Breed	Etiologic Factors
Skin, other than melanoma	34.7	Squamous cell carcinoma	Rates markedly increase after 5 years	NOD	Siamese - low risk	White cats - high risk of squamous cell carcinoma of ears and head
Connective tissue	17.0	Fibrosarcoma Hemangiosarcoma	Rates increase after 7 years	NOD	NOD	Feline sarcoma virus induces some sarcomas in cats and other species
Mouth and Pharynx	11.6	Squamous cell carcinoma	Rates markedly increase after 9 years	NOD	NOD	--
Mammary gland	25.4 (females)	Carcinoma	NOD*	Spaying - sparing effect	NOD	Virus-like particles observed
Lymphoid tumors	48.1	Lymphosarcoma	High rates in young ages with increase after 5 years	Males - high risk	NOD	Feline leukemia virus
Bone	4.9	Osteogenic sarcoma	NOD	NOD	NOD	--

*NOD - No observed difference

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