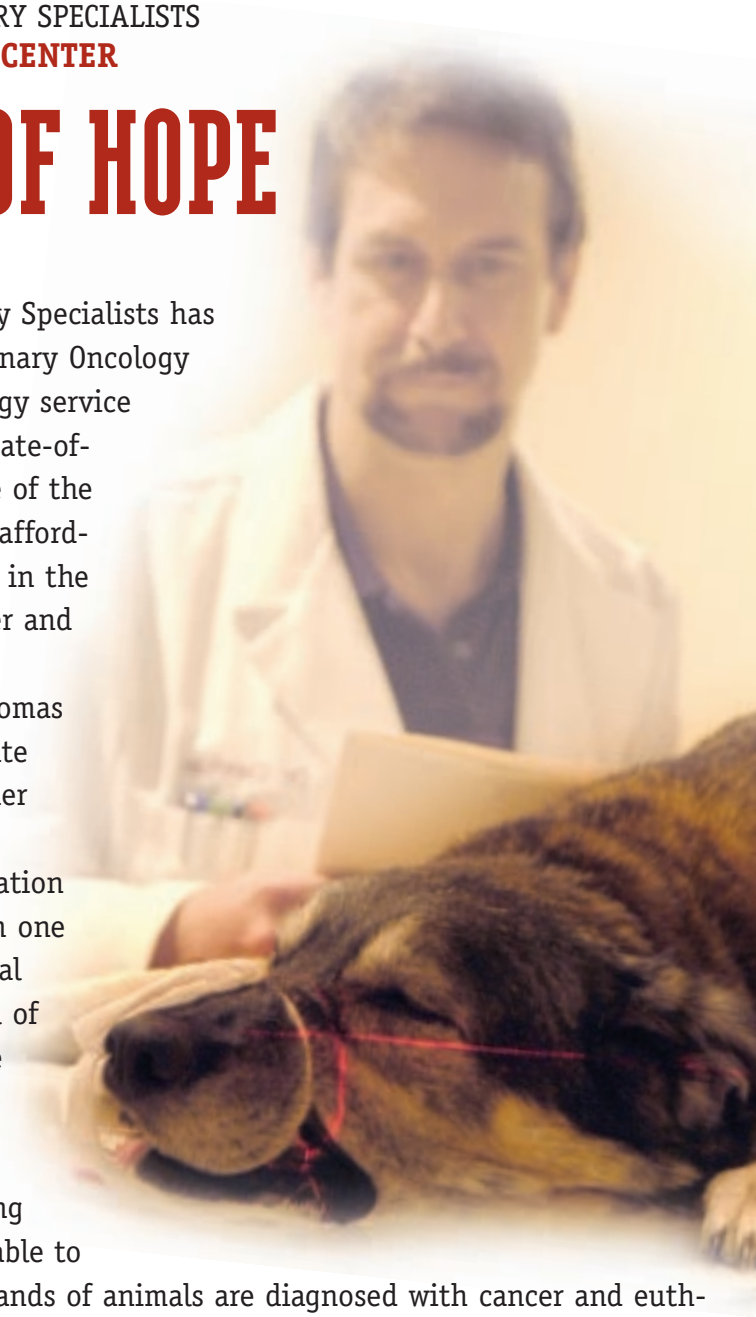
GSVS Newsletter Fall/Winter 2002/2003

GARDEN STATE VETERINARY SPECIALISTS
ONCOLOGY REFERRAL CENTER

A BEAM OF HOPE

by Dave Simmons, R.T. (R)



Garden State Veterinary Specialists has expanded their Veterinary Oncology program. The new Oncology service combines a progressive state-of-the-art facility with some of the most comprehensive and affordable Oncology treatments in the tri-state area. The founder and director of Garden State Veterinary Specialists, Thomas D. Scavelli, DVM, Diplomate ACVS, has brought together Chemotherapy, Surgical Oncology and a new Radiation Therapy department all in one 24-hour emergency/critical care, referral hospital. All of our specialists are on-site and board certified.

Radiation therapy is the newest and fastest growing treatment modality available to Oncology patients. Thousands of animals are diagnosed with cancer and euthanized each year. Radiation therapy can relieve suffering and prolong their life span, without disfigurement. Radiation therapy offers the patient a therapeutic dose of radiation to treat a variety of malignant and nonmalignant conditions. This process is performed with the use of a linear accelerator and a three-dimensional computerized treatment planning system. The thoughtful application of ionizing radiation requires understanding of the type and extent of the disease to be treated, and consideration of the effects of the treatment on normal tissue and organs. Garden State Veterinary Specialists utilizes both an on-site MRI and CT scanner along with a full complement of diagnostic services for patient evaluation and planning.

Dr. Scavelli, understanding the need for a team approach when treating a seriously ill patient, has created a Radiation Oncology team. The treatment

- SURGERY
- EMERGENCY & CRITICAL CARE
- INTERNAL MEDICINE
- NEUROLOGY/NEUROSURGERY
- NUCLEAR MEDICINE
- OPHTHALMOLOGY
- CARDIOLOGY
- ONCOLOGY
- DERMATOLOGY

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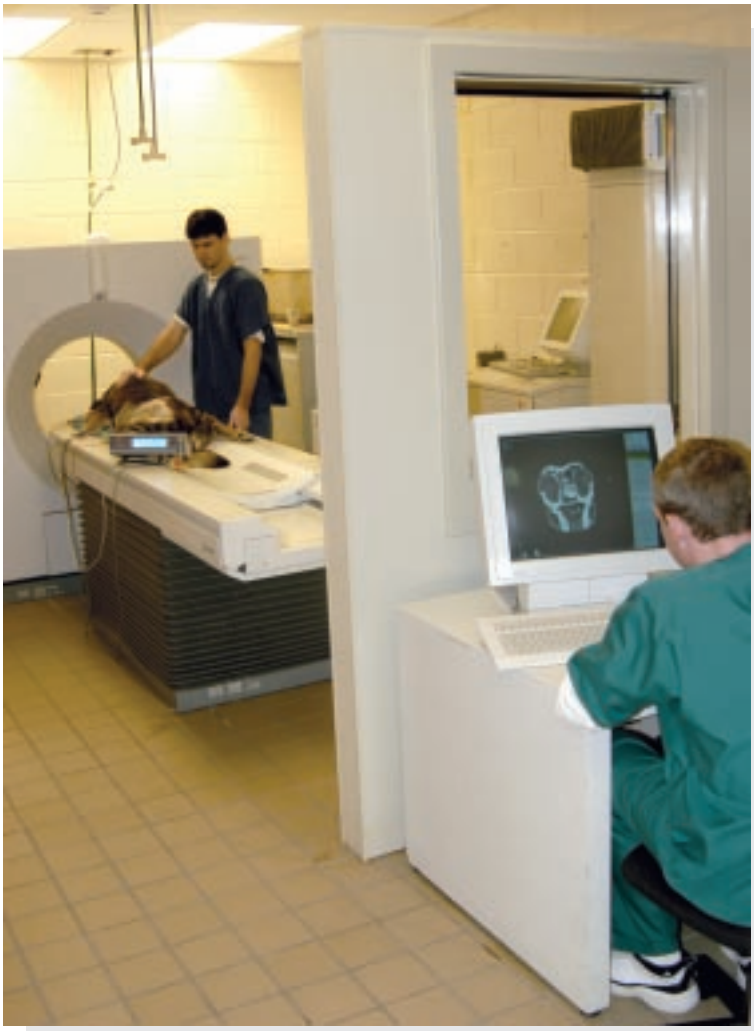
team consists of the Medical Oncologist, Gerald Post, DVM, Diplomate ACVIM (Oncology); Radiation Dosimetrist/Therapist, David Simmons, R.T. (R); and Medical Physicist, David Denman, Ph.D.

Garden State Veterinary Specialists offers both daily inpatient and outpatient services for our clients. These services usually depend on the course of treatment for the animal and the needs of the owners. Radiation treatments are given Monday to Friday between the hours of 8:00am – 4:00pm. Any inquiries regarding treatment procedures or costs of therapy can be handled in person or on the telephone by contacting Dr. Tom Scavelli or Dr. Gerald Post at Garden State Veterinary Specialists (732) 922-0011.



ELEMENTS OF CLINICAL RADIATION ONCOLOGY

The oncologist first evaluates each patient, usually after the diagnosis of malignancy has been confirmed by biopsy. The extent of disease is determined; this is also known as "staging" the disease. If radiation therapy is to be a part of that patient's care, simulation and treatment planning occur next, followed by the actual radiation treatment. Finally, periodic evaluation of the patient after treatment (follow-up) is essential.

The treatment of any illness is based on an understanding of its natural history. The extent (stage) of a malignancy determines the choice of treatments as well as the prognosis. The diagnosis of the malignancy may be at an early, intermediate, or late stage of its natural history.

After staging, the therapeutic decision for the appropriate treatments is made. The first treatment decision is whether treatment offers any chance of cure, if so, the treatment is of curative intent. If there can be no hope of total eradication of the tumor, treatment becomes palliative, to relieve suffering and prolong life.

The simulation process uses a machine that is capable of duplicating the geometric and mechanical elements of a linear accelerator but uses diagnostic x-rays. Three dimensional computer models of the patient's organs are created for beam mapping. This process lets the oncologist know the dose of radiation to individual organs.

After the details of dose calculations have been completed, the patient proceeds to treatment. Actual treatments require minimal daily variation from the treatment plan.

DIAGNOSTIC IMAGING CENTER

Computerized Tomography (CT) and Magnetic Resonance Imaging (MRI) dramatically revolutionized the investigative approach of veterinary neurology within the last 10-15 years. These techniques finally allowed non-invasive access to the well-protected brain (within the cranial vault) permitting **more precise surgical planning** and **better directed therapies**. It also allowed identification of disorders previously not recognized in veterinary medicine.

Garden State Veterinary Specialists is proud to offer both advanced imaging services to its clientele. **An in-house CT scanner** is available 6 days a week including Saturdays. As of September 2002, GSVS is using a brand-new CT scanner permitting the acquisition of high definition images and three-dimensional radiation therapy planning. MRI is available 5 days a week including Saturdays. Saturday thru Monday, **an in-house mobile unit** allows integration of additional diagnostic procedures (such as CSF tap, EMG,...) and emergency neurosurgery within the same anesthesia. This also allows acquisition of images as an **outpatient** basis. Wednesday thru Friday, emergency MRIs may be performed at an outside imaging center.

The image acquisition process is performed under the supervision of a board certified member of our Neurology department. **A short-acting and safe anesthesia protocol** (propofol induction and maintenance with isoflurane) is utilized and implemented by our highly trained anesthesia technician. The images are acquired by a certified MRI technician and certified radiology technician.

An MRI report is faxed directly to you the same day as the procedure was performed. A CD of the study is also mailed for your review.

In our tradition of offering the best service and latest available diagnostic and therapeutic information to our clientele, this issue of GSVS's newsletter briefly reviews the physics, the indications and advantages of its advanced imaging modalities.

ADVANCED IMAGING OF THE NERVOUS SYSTEM

by Noemie Bernier, DVM, Diplomate ACVIM (Neurology)

Computerized Tomography (CT) Scanning

CT scanning relies on the interaction of tissue with x-ray photons.

(Object -> x-ray photons -> energy detected and recorded by computer -> digital processing -> image)

Contrast agents may be administered to better visualize pathologies. Intravenous iodinated water-soluble contrast medium reveals areas with increased vascularity or with impairment of the blood-brain barrier.

Intrathecal water soluble contrast medium (myelogram) may be used to outline the spinal cord.

Indications of CT scanning:

Evaluation of the skull and cranial vault for:

Hyperostosis
Depressed fracture
Osteolytic lesion
Remodelling

Evaluation of ventricular system:

Size, position, shape, compression, mass

Evaluation of the brain:

Mass effect:

Midline shift, ventricular compression, obliteration of sulci.

Abnormal tissue density:

High Density: acute hemorrhage, mineralization, calcification

Low Density: infarction, edema, resolving hematoma, neoplasia, granuloma, abcess, encephalitis.

Mixed: neoplasia, abscess, granuloma, contusion, hemorrhagic infarct.

Number of lesions:

Multiple: metastasis, lymphoma, feline meningiomas, abscesses, granulomas, infarcts.

Evaluation of the axial skeleton for:

Osteolytic/osteoproliferative lesions (neoplasia, diskospondylitis)

Lumbosacral disease

Acute disc extrusion in the chondrodystrophic breed (Hansen Type I)

Following intrathecal injection: Cervical malformation/malarticulation syndrome (Wobbler's syndrome), Hansen Type II disc herniation, other compressive diseases, other disorders affecting the shape/size of the spinal cord.

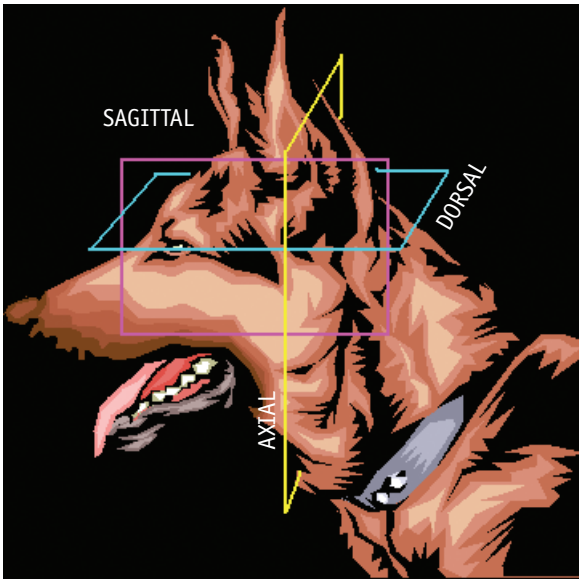
Following intravenous contrast injection: spinal neoplasia (lymphoma, meningioma, other), granuloma, abscess.

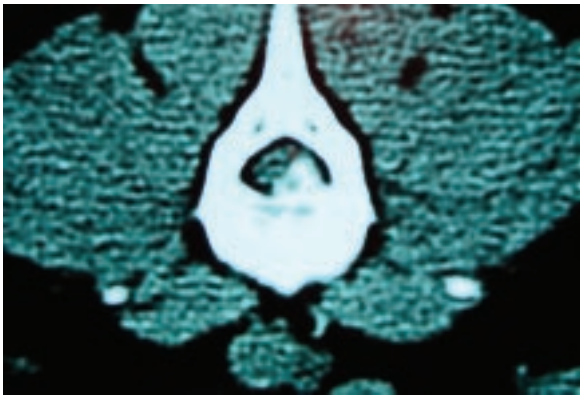
Advantages of CT scan:

Thinner slices
Faster
Usually more available
Better evaluation of bone
Not affected by pacemaker or ferromagnetic implants
Less expensive

Especially useful for:

Head trauma, acute disc extrusion in chondrodystrophic breeds, evaluation of bone and detection of tumors.

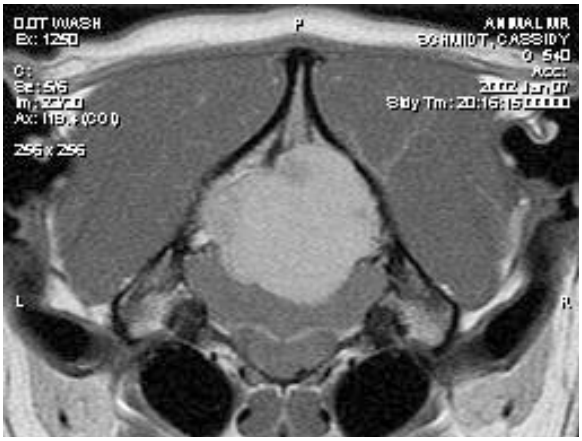




CT Scan. Hyperdense area ventral and lateral (right side) to the spinal cord at the level of L2-L3 intervertebral disc and L3 vertebra. This represents large amounts of extruded mineralized disc material at L2-L3. This was confirmed at surgery (a right hemilaminectomy at L2-L3).

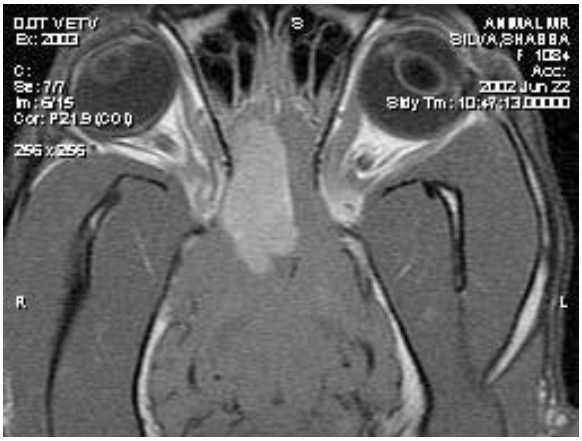
Noemie Bernier, DVM
Diplomate ACVIM (Neurology)

Noemie is a graduate of the University of Montreal's School of Veterinary Medicine. She completed an internship at Purdue University, a Neurology and Neurosurgery residency at the University of Pennsylvania and a fellowship on MRI techniques during her training at Penn. She was Board Certified in Neurology in 2001.



Axial Fat Sat T1WI after intravenous injection of gadolinium. Large extraaxial (outside brain parenchyma) homogeneously and strongly enhancing mass, originating from the skull, causing severe compression of the underlying cerebellum. Surgery was performed. Histopathologic diagnosis: multilobular bone tumor.

Sagittal T2WI. Same patient. Large extraaxial isointense to hypointense mass originating from the occipital bone and causing severe compression of the cerebellum. Diagnosis: multilobular bone tumor.



Dorsal T1WI after intravenous injection of gadolinium. Large right sided, olfactory and frontal, extraaxial, homogeneously and strongly contrast enhancing mass. Surgery was performed. Histopathologic diagnosis: transitional meningioma.

Magnetic Resonance Imaging (MRI)

MRI relies on the interaction of tissue with radiofrequency waves in a magnetic field.

(Object -> radiofrequency waves -> energy detected and recorded by computer -> digital processing -> image)

Contrast agents are usually administered to better assess pathologies.

Intravenous paramagnetic contrast medium (gadolinium) reveals areas with increased vascularity or with impairment of the blood-brain barrier.

Indications of MRI:

Evaluation of ventricles:

Size, shape, compression, tumors, width of sulci.

Evaluation of brain parenchyma:

Ideal for detection of congenital malformations, vascular disorders, inflammatory conditions (encephalitis, meningitis, abscess, granulomas) and neoplasia.

MRI gray scale:

T1-WEIGHTED IMAGES	T2-WEIGHTED IMAGES
Hypointense: Calcification, flow, water-therefore most lesions and CSF, acute hemorrhage, hemosiderin, iron, cysts, bone	*Hypointense:* Calcification, flow, hemosiderin, iron, acute hematoma/deoxyhemoglobin, melanin, bone
Hyperintense: Subacute–chronic hemorrhage, fat, melanin, hyperproteinaceous fluids, gadolinium (paramagnetic)	*Hyperintense:* Water–therefore most lesions and CSF, subacute hematoma, demyelination.

Evaluation of the spine:

Ideal to evaluate intervertebral discs, spinal cord, spinal nerves and nerve roots.

Allows detection of edema and inflammation associated with infarction due to fibrocartilaginous embolic myelopathy (FCEM).

Evaluation of brachial and lumbosacral plexi:

Trauma, neuritis, neoplasia.

Advantages of MRI:

Can select any plane (sagittal, dorsal, oblique)
No ionizing radiation
No bone artifacts (especially when evaluating the caudal fossa)
No need for intrathecal contrast injection
More sensitive to tissue changes
MRI is the modality of choice to evaluate pathologies affecting the structure of the brain, spinal cord and nerves.

GSVS WELCOMES NEW DERMATOLOGIST

We are pleased to announce that Kathleen Kalaher, DVM, Diplomate ACVD, has joined our practice as a full-time dermatologist. Dr. Kalaher is a 1982 graduate of the New York State College of Veterinary Medicine. She completed her residency in dermatology in 1989 at Cornell University and became a Diplomate of the American College of Veterinary Dermatology in 1991. Most recently, she was the director of the dermatology service at Angell Memorial Animal Hospital in Boston.

When dermatology cases are referred to GSVS, a questionnaire is sent to the client before the appointment. The client should bring a complete history form on the day of the visit. In addition, it is essential to have detailed referral information from you. A summary of the case or copy of the medical record should be provided. Please include the results of all diagnostic tests and drugs previously prescribed, including dosages, duration of treatment, and the response to therapy. We prefer to have this information mailed or faxed ahead of time, so it can be reviewed before the appointment.

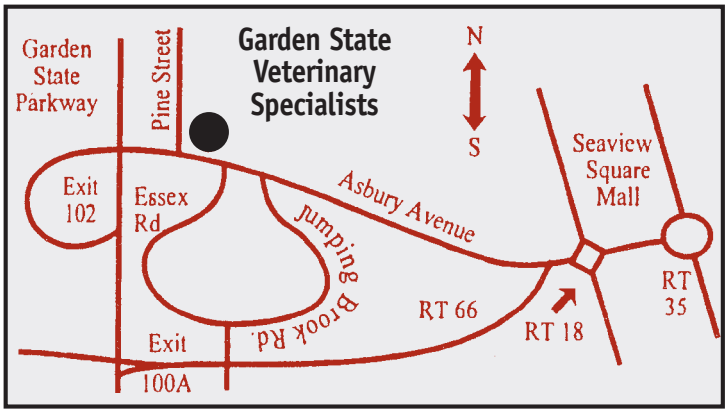
To facilitate diagnostics, we ask you to instruct your client not to bathe the pet for at least a week before the initial visit. Some drugs, most notably corticosteroids, may affect the results of diagnostics such as skin biopsies and allergy testing. If you have any questions about appropriate drug withdrawal times for your patient, please contact us before the appointment.

Initial consultations are 45 minutes. Appointments are available Tuesday through Friday and one Saturday per month. Procedures such as skin biopsies, intradermal skin testing, and ear flushes are usually performed as inpatient procedures. It may or may not be possible to schedule such procedures on the same day as the initial appointment. For the convenience of your clients, we will be formulating allergy vaccines in house. This will eliminate any waiting period before starting hypo sensitization injections.

To arrange a referral or obtain more information, please call 732-922-0011. Telephone consultations are welcome.

Referral Policy

Patients treated at Garden State Veterinary Specialists must be referred by their veterinarian. The patient will only be treated for the condition for which they were referred, no routine procedures (i.e., vaccinations, prophylactic heartworm testing) are performed on any patients of the hospital.



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By Veterinarian Referral Only

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