

METROPOLITAN VETERINARY ASSOCIATES NEWSLETTER

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CRYOTHERAPY/CRYOSURGERY IN SMALL ANIMAL DERMATOLOGY

Katherine Backel, DVM, DACVD | *Dr. Katherine Backel has joined Dr. Karen Farver on our Dermatology Team*

Although a relatively common tool in human dermatology, Cryotherapy, also known as Cryosurgery, is not frequently employed in veterinary medicine. In humans, cryotherapy has been used for over 150 years with uses ranging from simple wart removal, to use within a multimodal approach to cutaneous leishmaniasis. (Zimmerman, 2012) (Asilian, 2004) In small animal practice, its use has received only relatively recent attention, mainly for removal of benign skin lesions and for various ophthalmologic diseases such as trichiasis and small eye lid masses. (Zibura, 2019) However, due to the minimally invasive nature and speed of the procedure its potential utility is great, and its use is growing rapidly. (deSuza, 2016) (Richman, 2017) (Shibata, 2002) At this time, Metropolitan Veterinary Associates is offering cryotherapy as an excellent option for a number of dermatological issues. Our state of the art Cryoprobe allows for fast and accurate treatment without the need for sedation or anesthesia.

Cryotherapy works through controlled tissue destruction. Cryogens (agents used to induce freezing of cells) are applied directly to or sprayed on

the intended lesion. Rapid cooling of cells causes intracellular water to form ice crystals. Ice crystals then cause cell damage, resulting in rupture and death of target cells. Sublethal damage to nearby cells may result in subsequent apoptosis in this region. Additional effects include vasoconstriction, and destruction of small blood vessels resulting in ischemic necrosis to treated areas, which is the more effective strategy for inducing tissue destruction via rapid cooling followed by slow thawing. (Zimmerman, 2012)

A final tissue temperature of -60°C (-76°F) is required for cell destruction. Many different cryogens have been employed to achieve this outcome. Liquid nitrogen (boiling point -195°C) and nitrous oxide (boiling point -85°C) are the most commonly employed for clinical use. For most dermatologic uses, liquid nitrogen administered as a spray, provides the most efficient method for targeting larger or irregular cutaneous lesions. In contrast, nitrous oxide gas-cooled probes are utilized in ophthalmology practice to target smaller, discrete areas along the delicate palpebral margins while avoiding damage to surrounding normal structures. (Zimmerman, 2012)



Depending on the tissue type and goal, 1 – 4 freeze thaw cycles are utilized to achieve adequate tissue destruction. Liquid nitrogen spray is applied to the entire lesion, as well as a 1 – 2mm margin of normal tissue. Freezing and thawing time depends on the size and thickness of the lesion but is typically around 10-30 seconds for freezing and 30-90 seconds for complete thawing. Intermittent spraying allows for deeper penetration, and formation of an “ice-ball” up to a depth of 10mm. (Zimmerman, 2012, Angeli, 2019)



“FOR MOST DERMATOLOGIC USES, LIQUID NITROGEN ADMINISTERED AS A SPRAY, PROVIDES THE MOST EFFICIENT METHOD FOR TARGETING LARGER OR IRREGULAR CUTANEOUS LESIONS.”

While the procedure in adult humans is typically performed without local anesthetic, mild to moderate pain is associated with the procedure and lidocaine application is recommended in children. (Zimmerman, 2012) A recent canine study described behaviors interpreted as pain in 32% of dogs during the procedure. (Angileri, 2019) Thus, local anesthetic is used in most instances.

Following treatment, erythema of the tissue occurs almost immediately. Within the first day, a blister may be noted, but the treated area quickly crusts over to form an eschar. Over the following 7-14 days, the eschar will fall off revealing treated underlying tissue. If the lesion is fully resolved, no further therapy may be needed. However, in many instances (especially in lesions >0.5 cm) 1-2 repeat sessions may be needed for complete resolution. (Angeli, 2019)

There are many potential indications for use. Treatment of small, benign

and/or multifocal lesions is the most common indication for use. Examples include, but are not limited to, multiple sebaceous hyperplasia/adenoma, acrochordons, persistent papillomas and epidermal nevi (Angileri, 2019) (Richman, 2017) (Shibata, 2002) Additionally, a variety of malignant tumors have been targeted with cryotherapy – however complete resolution relies on careful patient selection. (Fernandes de Queiroz, 2008) Success has been reported for feline nasal planum and pinnal squamous cell carcinoma with low rates of recurrence. (Clark, 1991) (Lucas, 2004) Overall, reported success is somewhat variable for all tumor types ranging from 57-98% remission rates. (Fernandes de Queiroz, 2008), (Angileri, 2019) Because success is variable, especially with larger and malignant tumors, it is important to discuss and explore other treatment options prior to electing cryotherapy. Additionally, since cryotherapy damages tissue needed for histopathology, it should not be used until a definitive diagnosis is obtained via fine needle aspirate or incisional biopsy.

Side effects of the procedure are uncommon but may occasionally include sensitivity at the treated site, persistent alopecia, leukoderma, leukotrichia or hyperpigmentation. Some cases may require multiple treatment sessions for complete resolution. 🐾

References on following page.

BENEFITS OF CRYOTHERAPY INCLUDE:

1. Fast treatment times
2. Reduced hemorrhage
3. Improved comfort
4. Well tolerated by most patients without sedation or general anesthesia
5. No need for suture removal or specific post-procedure care
6. May be used on extremities and areas where incisions and primary skin closure is difficult

DISADVANTAGES OF CRYOTHERAPY INCLUDE:

1. Prevents cytologic or histopathologic interpretation once performed
2. Treatment cause initial tissue necrosis, which may be unsightly for owners
3. Scarring, leukotrichia/ leukoderma, alopecia at the treatment site
4. Possible need for repeat procedures

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ABOUT OUR DERMATOLOGY SPECIALIST, KATHERINE BACKEL, DVM, DACVD

Dr. Katherine Backel, a Connecticut native, attended Cornell University where she received her Bachelor of Science degree in Animal Science in 2010. She continued on at Cornell University for her doctorate of veterinary medicine, where she received awards in dermatology, clinical pathology and immunology, ultimately graduating top in her class in 2015. After leaving the upstate NY area, Dr. Backel completed her small animal rotating internship at Red Bank Veterinary Hospital in NJ in 2016. She was then accepted as a Dermatology resident at the University of Pennsylvania, Matthew J. Ryan Veterinary Hospital which she completed in July of 2019 before joining MVA. She was awarded board certification status as a diplomate of the American College of Veterinary Dermatology in 2019. She has published original research in the *Veterinary Dermatology Journal* and contributed to the *Journal of Feline Medicine and Surgery*.

Dr. Backel's clinical interests include allergy, ischemic dermatopathy, auto-immune disease and immune mediated disease. As a former college track athlete, Dr. Backel enjoys staying active by running, lifting, and participating in Crossfit. Dr. Backel lives in Narberth with her two fox hounds, Polly and Roo.

SPECIALIZED SERVICES

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PET LOSS SUPPORT GROUP

At MVA we understand the depth of loss one experiences when a beloved four-legged family member has passed. For that reason, we provide a Pet Loss Support Group to help grieving owners in need. Our group is designed to provide grieving pet parents with a safe, confidential environment to share their feelings with others who have experienced pet loss.

The group is operated by professionals who have experience with pet loss. A board certified psychiatrist consults with us regarding the implementation of the group, however, our group leaders are not mental health care professionals. Clients experiencing difficulty coping are urged to seek help from a mental healthcare professional. We can provide you with the names of health care professionals if needed.

Our Pet Loss Support Group meets on a varying schedule.

For dates please call the hospital at 610.666.1050 or visit metro-vet.com/petloss



The Veterinary Cancer Center

Have you heard? MVA opened our cancer center! This new space provides a separate entrance and waiting area for our oncology patients which is more relaxing to the patients and their pet parents. Also, we were able to incorporate USP 800 regulations into the build to ensure we provide the highest level of team and patient safety.

LIKE A TOUR?

To schedule a tour please call Sarah Spurgeon at **610.666.1050** or email her at ssurgeon@metro-vet.com.

SAVE THE DATE!

The 2020 MVA 5K will be taking place on May 9.

Stay tuned for more details! If you have any questions please contact Sarah Spurgeon at ssurgeon@metro-vet.com or **610.666.1050**.



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