

Electrochemotherapy: *the new wave of cancer treatment?*

INTRODUCTION

Most cancers in pets are treated with surgery, radiation therapy, chemotherapy, or a combination of these options. When deciding on a treatment plan, veterinary oncologists consider a number of factors including location of the tumor, characteristics of the tumor, characteristics of the patient, whether or not the tumor can be removed entirely with surgery, and the likelihood it will spread to distant sites in the body.

In some cases, complete removal of a tumor is not possible because of the location or because of an aggressive and invasive growth pattern. Incompletely removed tumors can regrow and radiation therapy is frequently recommended following surgery to delay or prevent this from occurring. While effective, radiation therapy can be cost prohibitive for some owners and requires multiple anesthetic events, with some protocols lasting 4-5 weeks in duration. Radiation therapy may not be available in all geographic regions, requiring owners to travel significant distances, which also may be prohibitive.

An alternative treatment for such cases is electrochemotherapy. While the name sounds “shocking”, the potential benefits of this form of treatment are exciting, especially for cases where radiation therapy or surgery are not an option.

WHAT IS ELECTROCHEMOTHERAPY?

Electrochemotherapy is a type of treatment that enhances the delivery of traditional chemotherapy drugs to the interior of a cancer cell through the local application of short and intense electric pulses. These pulses make the cancer cell membrane transiently permeable to chemotherapy and increase absorption of drug by up to a thousand-fold more than would be expected from routine intravenous (IV) administration.

WHAT KINDS OF TUMORS CAN BE TREATED WITH ELECTROCHEMOTHERAPY?

In veterinary medicine, electrochemotherapy is most commonly used for tumors located in the skin or just under the skin (subcutaneous). This includes (but is not limited to) the following:

- Melanoma
- Squamous cell carcinoma
- Soft tissue sarcomas
- Feline injection-site sarcoma
- Localized cutaneous lymphoma in dogs or cats
- Plasmacytic tumors
- Low to intermediate grade mast cell tumors
- Perianal and rectal tumors
- Sarcoids and squamous cell carcinoma in horses
- Superficial tumors on exotics (small mammals, birds, and zoo animals)
- Some internal tumors – tracheal and esophageal (on a case by case and location basis)

WHAT CHEMOTHERAPY DRUGS ARE USED DURING ELECTROCHEMOTHERAPY?

The most common drugs used are bleomycin and cisplatin.

HOW EXACTLY IS ELECTROCHEMOTHERAPY GIVEN?

Individual protocols vary, but in general, patients are anesthetized or heavily sedated, so they will not feel any discomfort during treatment. The dose of chemotherapy to be administered is calculated based on tumor or surgical scar size (if chemotherapy to be injected directly into the tumor site) or patient body weight (if chemotherapy to be given IV). In some cases, the drug may be given partially IV and partially into the tumor, or one drug be given IV and one be given into the tumor. Each treatment lasts about 20 minutes and hospitalization is not necessary. Treatments can be repeated weekly – on average three sessions are necessary for a 5cm lesion, depending on initial tumor size and response.

WHAT ARE THE SIDE EFFECTS OF ELECTROCHEMOTHERAPY?

Animals may develop a local skin reaction including redness, edema (swelling), and necrosis (death) of tissue. Follow up visits are done to ensure the area is healing. Healthy scar tissue will gradually replace the damaged tissue. This can take several weeks.

HOW EFFECTIVE IS ELECTROCHEMOTHERAPY?

While efficacy depends on many factors including the tumor type and size, in general, electrochemotherapy can offer excellent long-term localized control for many cancers in pets. One advantage of electrochemotherapy compared to other options is the possibility of repeated treatments in case of local recurrence. Your pet's specific prognosis and expected outcome will be discussed during your initial consultation.

SUMMARY

Electrochemotherapy is a safe and efficacious approach to treating tumors in pets. Its low cost and ease of administration makes it a valuable addition to the currently available oncological therapies. If you or your veterinarian feel your pet could benefit from treatment with electrochemotherapy, please contact our service for further information.

Medical Oncology

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