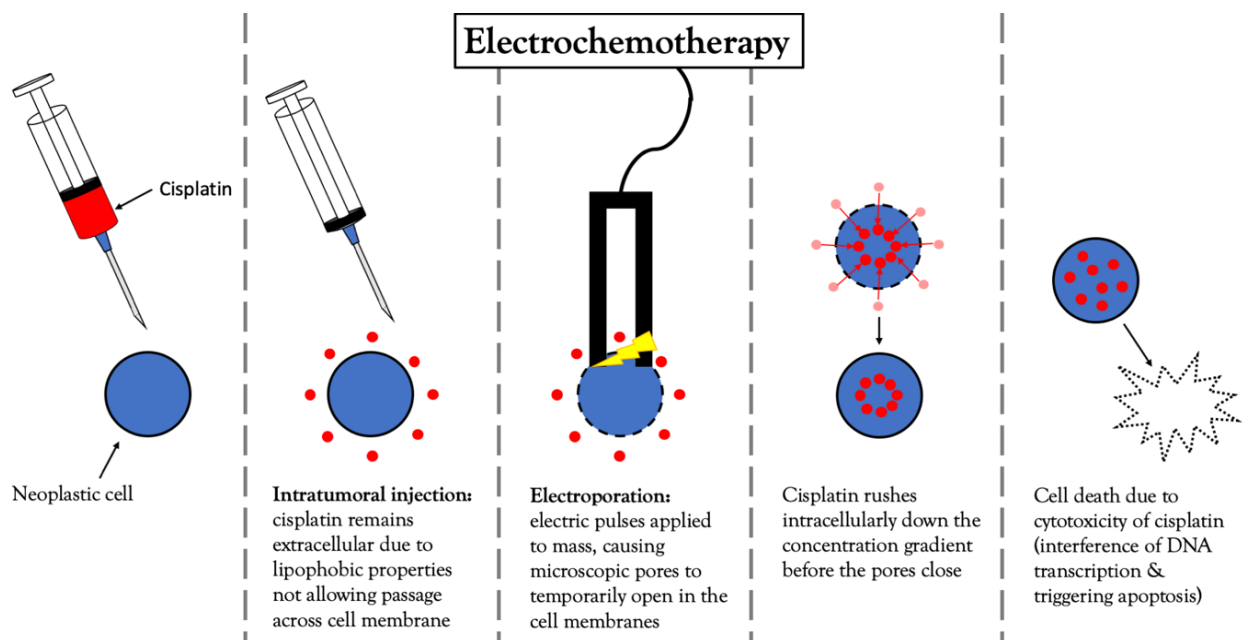


ELECTROCHEMOTHERAPY

Electrochemotherapy is an innovative technique developed over the last 10 years. It is a type of chemotherapy that uses electric pulses to increase the permeability of cell walls transiently, allowing a higher concentration (approximately 10-300 fold increase) of chemotherapeutic drugs to enter into the neoplastic cells, leading to a dramatically improved clinical response. For example, a retrospective study that evaluated treatment of equine sarcoids with electrochemotherapy and cisplatin found that 99.5% of tumours were cured with no recurrence in a 4 year follow up period (Tamzali 2012).



Most chemotherapy drugs are lipophobic, i.e. they do not readily cross cell membranes. They exert their effect on the DNA in the cells, particularly in fast growing cells. Facilitating their intracellular access via the electroporation process, greatly increases the efficacy of the chemotherapy drug

The procedure is performed under short duration intravenous anesthesia, as the electrical impulses fired can cause nervousness, excitement, and mild discomfort in conscious patients.

After site preparation, a dose of chemotherapeutic agent, usually cisplatin, is calculated based on tumour volume and is injected into and around the tumour. Electrical impulses are then fired through the tumour using different probes, which causes the cell membranes to become porous for a short time. Thus, the extracellular chemotherapeutic drugs enter the cells in high levels. The cell membranes seal the drugs into the cells once the electrical impulses cease, resulting in greater efficacy of the drugs.

Patient selection for electrochemotherapy treatment is determined based on tumour type, size and location. The number of treatments required is determined based on these criteria as well as individual tumour response, although the average patient requires approximately three treatments (with 2-4 week intervals between each treatment).

We have experience successfully treating a variety of equine neoplasms using electrochemotherapy, with a much higher success rate without recurrence compared with other treatment options and modalities. Examples of types of tumours treated include squamous cell carcinomas, sarcoids, melanomas, cutaneous lymphoma and hemangiosarcoma.