

August 2022

## Electrochemotherapy

Rowe Referrals are delighted to be able to offer this method of treatment for pets with cancer.

### What is electrochemotherapy? (ECT)

Electrochemotherapy is a local treatment for tumours. It uses a combination of intravascular or intralesional chemotherapy combined with application of short electric pulses/current to the diseased tissue which facilitates the tissue uptake of the chemotherapy drug. The current causes the cell membranes to temporarily become more permeable allowing the chemotherapy drug to enter the cancer cell (electroporation) and accumulate. This process results in greater drug uptake by the diseased cells compared to standard administration by injection or tablets. After the electrical pulses stop, the membranes close allowing the cells to survive (reversible



The most commonly used drug for electrochemotherapy is Bleomycin which has minimal systemic side effects at the dose given for electrochemotherapy. The process of electroporation increases the concentration of Bleomycin by a factor of 700-fold. This causes fragmentation of the DNA of the tumour cells and apoptosis (controlled cell death). Apoptosis is a desirable way to kill cancer cells as it is controlled and organised and doesn't result in necrotic lesions. Cisplatin can also be used.

Intralesional calcium chloride has also been used as when combined with electroporation will increase calcium uptake by cells. Calcium is not well tolerated by neoplastic cells but is not toxic to normal tissue.

### How is it performed?

Electrochemotherapy needs to be performed under general anaesthetic or heavy sedation. We are using the Onkodisruptor® Electroporation unit which has been specifically designed and built for veterinary electrochemotherapy. Electrodes are applied either around or into the tumour.

ECT can be used in number of situations:

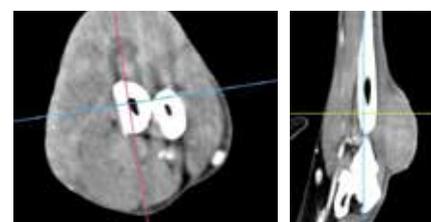
1. Superficial tumours such as SCC on the nasal planum of a cat
2. Solid tumours that are not amenable to resection or resection is declined. This is a stand-alone palliative treatment which is usually performed every 2-weeks until remission unless the tumour proves refractory in which case it is discontinued.
3. As a neoadjuvant to shrink inoperable tumours to a size more amenable to surgery.
4. As adjuvant treatment, following surgery, where only marginal tumour resection (adjuvant) was possible e.g., soft tissue sarcoma on a limb. This is applicable where extensive surgery and complicated reconstruction may be contraindicated due to age, comorbidities or client preference. Post-surgical application is usually immediately post-op and then repeated after 2 weeks.

### What types of tumour can it be used on?

Electrochemotherapy can be in a wide variety of tumour types, most commonly those of the skin and head and neck tumours including oral tumours. It can be used as adjuvant therapy for soft tissue sarcomas following planned marginal excision. Ultrasound guided treatment of tumours of the prostate and thymomas have been documented.

### What we do

- Ophthalmology
- Orthopaedics
- Soft Tissue & Spinal Surgery
- Dentistry
- Laparoscopy
- CT Scanning
- MRI
- Ultrasound
- Internal Medicine
- Radioactive Iodine
- Neuro Diagnostics
- Acupuncture



CT images of Patch's tumour

## Side effects:

Side effects are minimal as the chemotherapy drug (bleomycin) is given at very low doses. Some post ECT inflammation and pain at the treatment site may be seen, they are usually self-limiting. Wound healing is not delayed.

## CASE EXAMPLE:

'Patch' 10 year old MN Border Collie cross presented with a large 5x6cm mass adhered to and encircling muscles of antebrachium with no clear delineation between these structures. The mass was diagnosed as a soft tissue sarcoma intermediate to high grade with no evidence of metastasis at time of surgery.

The tumour was marginally excised and intraoperative chemotherapy performed with Bleomycin and calcium chloride. Post treatment there was inflammation and swelling of the surrounding skin and scar but this was treated conservatively and no wound dehiscence occurred.

Four weeks later the electrochemotherapy (Bleomycin IV and Calcium chloride intralesional) was repeated.

7 weeks post op and Patch is doing well with no sign of recurrence.



Appearance of tumour pre surgery



Demonstration of electrochemotherapy



Some skin and wound swelling post electrochemotherapy



Appearance of skin 4 weeks post surgery/first electrochemotherapy



## Meet the team spotlight on...

**Toby Evans-Bowen**  
Referrals Manager

Toby joined Rowe in April 2022 as Referrals Manager. He has been in the veterinary industry for around five years, but he has worked and volunteered in animal welfare for much longer. Toby is originally from the South West, but his work has taken him across the country and the world, before returning to Bristol to join Rowe. His role is often behind the scenes, but he enjoys working hard to support the clinical and administrative teams - hopefully helping their days run smoothly.

Toby is passionate about animal welfare and preservation, particularly marine life. He is also a keen advocate of the animal adoption system. Over the years, Toby has taken on multiple rescued animals, many of them with additional health needs.

Outside of work Toby enjoys travel and sport, he is also a keen chef. He currently has two rescue dogs – a cavalier, and an ex-racing greyhound from Ireland.

## Same or next day referrals are available for your urgent cases.

Rowe referrals and eye clinic provide a flexible approach to booking, enabling all referred clients to be seen as soon as possible. Rowe strive to find availability wherever they can to fit service around clients. Most referrals are seen within days and wherever possible Rowe maintain a same or next day service for the most urgent cases.

From our Bradley Stoke location we provide referral services in ophthalmology, orthopaedics, internal medicine, surgery and dentistry. At our sister site in Wotton-Under-Edge, we also offer a neuro diagnostic service; – together, our clinicians, cover an extensive range of referral and outpatient options.

All our Rowe vets are available for peer-to-peer advice – if you need to make a referral or discuss the management of your own case, we are always happy to talk.

In these testing financial times, referred clients can be reassured that we are doing all we can to be as transparent as possible, assisting all our referrals with financial clarity – whether that is through insurance claim management or our interest free credit options. Any client wanting to discuss these matters beforehand is always very welcome to do so. Rowe will work with the referring vet, client and the patient to signpost the best possible service solution.



Did you know that our ophthalmology service also offers external clinics at a range of locations across the South West and Wales? If you have a client that would prefer a consultation or follow up at a location closer to home, we may be able to help. External clinics are currently available in Bath, Frome and Carmarthen.