

Metronomic Chemotherapy for Pets With Cancer

What is Metronomic Chemotherapy?

Metronomic chemotherapy uses low doses of oral medication. It is administered daily or every other day, at lower doses than 'traditional' chemotherapy, minimising side effects

Treatment Success?

This method of chemotherapy administration has been successful for a variety of human tumours, although currently there is limited veterinary specific information published. Treatment in animals to date has been largely empirically based on human studies and anecdotal evidence.

Results

The results of initial and current canine and feline studies are promising and, as more canine and feline specific dosing and scheduling data becomes available, the applications of this treatment are expected to increase

How Does It Work?

The goal of metronomic chemotherapy is not to kill cancer cells directly. Instead, metronomic chemotherapy targets and inhibits tumour blood vessel growth

Tumour blood vessels are more fragile than normal blood vessels and are therefore sensitive to metronomic chemotherapy.

The aim is to disrupt the nutrient supply to the tumour. Blood vessel growth is technically called angiogenesis, so you might hear metronomic chemotherapy being called "anti-angiogenic".

Looking At Evidence

There is also evidence that some low-dose chemotherapy drugs, like cyclophosphamide, have an effect on tumour immunology which seems to contribute to tumour control.

When Is Metronomic Chemotherapy Used?

Indications for Metronomic Chemotherapy

Metronomic chemotherapy has been shown to be particularly useful in the management of soft tissue sarcomas and splenic haemangiosarcoma in dogs, but may be useful in a wider variety of tumour types than we currently recognize.



Improved outcomes have also been shown with metronomic chemotherapy in the treatment of some mammary and lung tumours

Metronomic chemotherapy can also be used for some patients with metastatic disease — such as spread of the tumour to the lungs. The treatment may slow progression of the disease as traditional chemotherapy is often not very effective for dogs in this scenario

What does metronomic chemotherapy involve and how frequent are the visits?

Metronomic chemotherapy is given orally at home as tablets or capsules. The most commonly used drugs in veterinary oncology are called cyclophosphamide and chlorambucil.

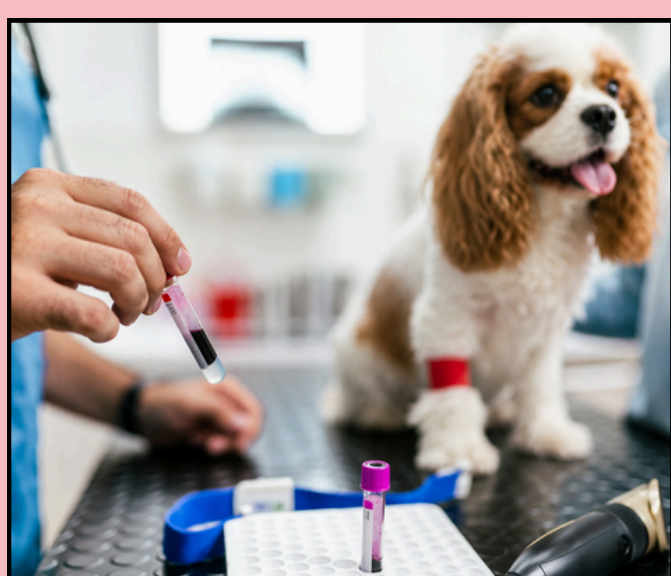
Given the small size of cats and dogs compared to humans, these drugs often need to be re-formulated into smaller capsules to avoid splitting or crushing the tablets. These drugs might need to be ordered specifically for an individual patient.



A number of different anti-cancer drugs may be used and these are given at lower doses (e.g. between 5% and 25% of the standard dose) than used for traditional chemotherapy.

Other drugs will often be used in combination with anti-cancer drugs, such as anti-inflammatory drugs which contribute to the overall effect of the treatment or other antiangiogenic drugs like thalidomid

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Prior to starting treatment your pet will need a blood and urine test to check if any abnormalities are present and exclude any other underlying health problems. Scheduled re-assessments will be required every month or so to assess tumour response and for (rare) chemotherapy side effects

At these visits your vet should carry out a physical examination, run some basic blood work, and check tumour response (which might periodically require chest x-rays or ultrasound, depending on the case).



Is treatment well tolerated?

Metronomic chemotherapy, if well tolerated, is usually given for at least six months unless tumour progression occurs before that.

If any side effects develop, we may also adjust the dose and/or take a treatment break.

How quickly can I expect to see results?

With metronomic chemotherapy it might take up to six to eight weeks to see an effect. In some cases, for example tumours that have failed to respond to other therapies, stabilizing the disease (meaning it doesn't progress) is still considered a success.

Possible Risks/Side Effects

The aim of chemotherapy in pets is quality of life over quantity. The majority of pets undergoing metronomic chemotherapy experience a normal quality of life and side effects with metronomic chemotherapy are rare (<20%) compared to more traditional protocols.

Most side effects are managed at home only with symptomatic treatment and usually resolve within a few days. The main side effects from chemotherapy are:

Cyclophosphamide in dogs can cause inflammation of the bladder (cystitis) in up to 20% of cases. We minimize the risk as much possible by checking the urine before each treatment. We will instruct you to monitor your dog's urine at home every one or two weeks by using urine dipsticks to check for any haematuria (microscopic blood in urine).

Gastro-intestinal: mild vomiting, diarrhoea and inappetence can be seen but this is usually caused by the anti-inflammatory medication.

Bone marrow suppression: chemotherapy can reduce the white cell count, and we perform regular blood tests to monitor for this. However, we very rarely see bone marrow suppression with this type of chemotherapy. A low white cell count can increase the body's susceptibility to infection which in very rare occasions might be life threatening (sepsis)

Hair loss: some dog breeds (e.g. Poodle, Old English Sheepdog, Schnauzer, Puli, Lhasa apso) and cats might lose hair after a few months of treatment – this usually causes a thin hair coat rather than complete baldness. Cats may lose their whiskers.

Thalidomide in dogs is usually very well tolerated and the most common side effect that we see is transient sleepiness. For this reason we administer the medication in the evening.



How do I give the medication?

Dosing

The medication is given as a capsule or tablet, generally once a day. It should be given in the morning with or without food. Please remember to wear gloves when handling the medication and do not split/crush the tablets or open the capsules.



Urine Monitoring

If your dog is receiving cyclophosphamide, you should purchase urine dipsticks to monitor for blood in the urine, which is an early sign of cystitis and check their urine once or twice weekly whilst wearing gloves. If the dipstick shows blood in the urine you should contact your vet

NOTE

Both dogs and cats will excrete very small amounts of the chemotherapy medication in their urine and faeces.



Safety Precautions

You should wear rubber/latex gloves to handle any of your pet's urine and double-bag faeces wearing gloves while they are receiving chemotherapy. Pregnant women or those who are trying to conceive should not be in touch with any waste.

In Summary

Metronomic Chemotherapy is a well tolerated low risk therapy for appropriate clinical situations.

About OncoTails

OncoTails is a specialist veterinary oncology support service led by Dr Sarah Mason FRCVS, working alongside your vet to help you understand your pet's diagnosis, results and treatment options so you can make informed decisions with confidence.

 www.oncotails.com