Metronomic chemotherapy - sometimes less is more
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Traditional chemotherapy
Chemotherapy drugs kill rapidly growing cells, such as tumour cells. However, some normal cells (e.g. those in the bone marrow and the lining of the intestines) also grow rapidly and may be affected by these drugs. The traditional use of anti-cancer drugs involves giving a high dose of a toxic drug to kill the cancer cells, followed by a rest period of a few days or weeks, to allow the normal cells to recover. However, because cancer cells are similar to the normal cells in the body, it is very difficult to provide a drug treatment that kills only the cancer cells and not the normal cells. Hence, a cure is generally not achieved and the cancer cells become resistant to the drug, which results in a return of the cancer.
Metronomic chemotherapy

Recent advances in human and veterinary oncology have changed the way we look at the outcome of treating a patient with cancer. In essence, less emphasis is placed on cure at all costs and more emphasis is placed on tumour control, such that the patient can live with cancer as a chronic disease (e.g., like osteoarthritis or diabetes). The aim here is to allow the patient to live with the tumour, as long as it is causing few or no problems, rather than suffering from it as it grows. This may mean keeping the tumour the same size, rather than trying to get it to shrink or disappear. In this respect, a new approach to the administration of anti-cancer drugs, metronomic chemotherapy, has proven very successful.

Metronomic chemotherapy refers to the continuous administration (e.g., daily or every other day) of low doses of chemotherapeutic drugs with few or no rest periods. This treatment works not only by killing the cancer cells directly (like ‘standard’ chemotherapy), but also by depriving the tumour of its blood supply by stopping new blood vessels from forming, and helping the immune system to mount a response against the tumour.

What are the advantages of metronomic chemotherapy?

There are many advantages to this approach for the management of the cancer patient:

- The drug doses are lower and the risk of adverse effects is therefore lower
- The adverse effects are much milder and often stop by themselves
- Monitoring of the patient is less intensive and less frequent, which reduces the number of visits to the vet
- The cost is lower, as many of the drugs are relatively cheap and given at lower doses
- Development of resistance is less common as the treatment is designed to target normal cells (of the blood vessels and immune system) which are less likely to become resistant

What are the practicalities?

A number of different anti-cancer drugs may be used. These drugs are given at lower doses (e.g., between 5% and 25% of the ‘standard’ dose) than used for traditional anti-cancer protocols. Given the small size of most cats and dogs compared to humans, these drugs need to be re-formulated into smaller (5mg or 10mg) capsules or a suspension to avoid splitting or crushing the standard tablets. These drugs may need to be ordered specially for an individual patient.

Other drugs are usually combined with these anti-cancer drugs, such as drugs related to aspirin or ibuprofen (non-steroidal anti-inflammatory drugs: NSAIDs) and molecular targeted therapy (tyrosine kinase inhibitors).

A blood sample and urine sample is taken for analysis prior to starting therapy and this is repeated at regular intervals, every 1 to 2 months initially, reducing to every 2 to 3 months with time. A blood sample may also be repeated if the patient is unwell.

What are the side effects of this therapy?

This treatment is normally well tolerated. Overall, side effects may be seen at some time during treatment in 10 to 40% of patients, depending mainly on whether the cytotoxic drug is given every other day rather than daily. The side effects are usually mild, such as a day or two of vomiting, diarrhoea or not wanting to eat, and either stop by themselves or resolve after reducing the dose of the drug.

Metronomic chemotherapy has been shown to be useful for soft tissue sarcomas and splenic haemangiosarcoma, but may be useful in a wider variety of tumour types, e.g., tumours of the nose.

Willows Referral Service offers a comprehensive approach to chemotherapy for dogs and cats with cancer with drug treatment protocols that are tailored to the patient’s needs and the client’s wishes.

If you have any questions about your pet’s condition, or his or her treatment, please do not hesitate to contact us.
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