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Mast Cell Tumours in Dogs

Mast cell tumours (MCT) are very common in dogs, in fact they are the most common type of cancerous growth in the skin. Mast cells are normal cells within the body that are responsible for allergic reactions. They contain substances that once released can potentially cause other types of effects such as stomach ulcers or swelling around the tumour. Like many tissues in the body, these cells can become cancerous and grow in an uncontrolled way on, or just under, the skin, or in internal organs. This can happen in any breed of dog, but some breeds appear predisposed: e.g. Boxers, Golden Retrievers, Pugs, Boston terriers or Staffordshire Bull Terriers.

Mast cell tumours can look and feel like anything so your veterinarian cannot know if a skin mass is a MCT without looking at cells under the microscope. In general, MCT are thought of as malignant tumours that can regrow if they are incompletely removed, and some may spread to other organs.

What testing do we do for patients with mast cell tumours?

The initial evaluation of a dog with a MCT often includes: fine needle aspiration or biopsy (if not already performed by your veterinarian), blood and urine test, as a general health screening. Ideally, we perform further diagnostic tests to confirm whether the tumour has spread. When looking for tumour spread, we are often interested in the regional lymph nodes ('glands'). During your visit with us, we are likely to obtain a small sample of that lymph node to determine whether the MCT has spread. Sometimes, it is not clear which lymph node is the one that receives cells from the tumour and which one to test. Therefore, in certain cases we might consider performing an additional test, known as 'sentinel lymph node mapping'. This is a specific form of CT scan, where we inject a contrast agent around the tumour and then scan the local lymph nodes, to determine which the 'sentinel' lymph nodes are for that patient. This is important both for understanding the patient's outlook (prognosis) and for determining the best treatment. In some cases, we might consider performing abdominal ultrasound to look at the liver and spleen (along with obtaining samples with a small needle), which is a second site of spread of MCT.

What is the outlook?

Mast cell tumour behaviour (e.g. tendency to recur or spread) is very variable but can be predicted to some extent based on the *grade* of the tumour. The pathologist assigns a grade to the tumour based on its appearance under the microscope, after surgical removal. Low grade tumours are unlikely to spread, so complete surgical removal may be the only treatment required. High grade tumours have higher chance of spreading so our screening tests for spread might be more rigorous and we usually recommend using chemotherapy in addition to surgery. In addition to pathological grade, location on the body may be important. MCT in the groin, muzzle, vulva, prepuce, toenail or any internal organs are usually more aggressive.

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What treatment is possible?

Treatment options for cutaneous MCT include surgery, radiation therapy, chemotherapy and symptomatic treatment. Surgery to remove the tumour and allow grading tends to be the first (and best) treatment choice. Because MCT can have an invasive growth, we usually recommend removal with a margin of normal appearing tissue both around and underneath it to ensure complete removal



Intraoperative view of a mast cell tumour removal. First, a margin of healthy tissues surrounding the tumour is adequately measured. Subsequently, the tumour is removed.

If a clean margin is not achieved, additional treatment might be necessary to prevent tumour regrowth. Options include revision surgery (repeating surgery to achieve a wider and deeper margin, if possible), radiation therapy, chemotherapy or only active surveillance in case of a low grade MCT.

If a MCT is too large to be removed with appropriate safety margins or is in a difficult location, we might recommend multimodal therapy involving a conservative surgery, followed by radiation therapy. It involves the local application of a powerful X-rays directly onto the tumour area, usually 10-14 days after the surgery. It consists of multiple treatment sessions and different protocols will be discussed with an individual patient. This treatment modality is not currently offered at AMVS and further referral would be carefully considered in every individual case.

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Both surgery and radiation therapy are local treatments and have no effect on the potential for spread of the MCT. For tumours with a higher risk of spreading, such as high grade MCT, tumours growing rapidly, tumours in 'high risk' locations or tumours that have already spread to a lymph node we often recommend that treatment would benefit from chemotherapy. The most commonly used treatment protocol consists of eight injections of a cytotoxic drug, often combined with a pill given at home. Alternative options with oral medications exist as well. The goal of treatment is always to prioritise the quality of life.

Will my pet experience side effects with chemotherapy?

Some animals (<20%) experience side effects with chemotherapy but these are generally mild and either resolve spontaneously or with minimal treatment. Please refer to our chemotherapy brochure for further details.

What happens next?

After completion of treatment, we recommend that a dog is checked regularly for evidence of tumour regrowth, spread to lymph nodes or other organs, or new skin tumours. This would involve careful evaluation of the site where the tumour was located, palpation of local lymph nodes or sometimes extra scans. Additional treatments are usually possible in case the tumour grows back or spreads. Some dogs can develop new MCT in future and it does not usually mean it is connected to the previously diagnosed MCT. Presence of multiple MCT does not necessarily impact negatively on survival. Any new lumps or bumps should be brought to our or your veterinarian's attention immediately, rather than waiting for the next scheduled recheck. We recommend monitoring for up to 18 months after completing the treatment.

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