

Multiple Myeloma and Plasma Cell Tumors

ABOUT THE DIAGNOSIS

Plasma cells are a specific subtype of white blood cells. In healthy individuals, these white blood cells produce antibodies. Antibodies are proteins involved in the immune system's defenses against infection by bacteria, viruses, and the like. In normal dogs and cats, plasma cells are involved in production of antibodies as part of a normal immune response.

Multiple myeloma is a malignant tumor of plasma cells. It involves overproduction of antibodies, which can make the blood excessively thick, leading to strokes. There is no benefit to having this excess of antibodies. In fact, paradoxically, animals with multiple myeloma may be at increased risk for developing infections, perhaps because the antibodies being produced by the tumor are dysfunctional or because they interfere with other vital parts of the immune defense system.

In multiple myeloma, the cancerous plasma cells are diffusely distributed throughout the body, especially in tissues such as the spleen, liver, and bone marrow. Plasma cells can also form tumors that are focal (a mass or swelling), usually on the surface of the skin. In comparison to multiple myeloma, these other plasma cell tumors are less likely to become malignant.

Dogs or cats that have plasma cell tumors are usually noticed to have one of two categories of symptoms. Either there is a visible lump or growth in the skin, which is the plasma cell tumor, or there may be general, vague symptoms of not feeling well—decreased appetite, weight loss, sluggishness, and so on. These generalized symptoms are usually due to the massive excess of antibodies in the circulation, which interfere with normal circulation, in animals with multiple myeloma.

Since either of these class of symptoms (the skin lump or the vague generalized symptoms) can be caused by many, many diseases other than plasma cell tumors or multiple myeloma, your veterinarian will want to perform tests, such as a complete blood profile and if a skin mass is present possibly a fine-needle aspiration to examine the cells of the mass preliminarily under a microscope. Such tests help to confirm or refute plasma cell tumors as the cause of symptoms and help to guide treatment and give an idea of disease outlook (prognosis).

The two most important factors concerning any tumor made of plasma cells are the tumor distribution and the microscopic characteristics of the tumor tissue. Tumor distribution refers to whether the cancerous plasma cells are found in a single, focal tumor or rather spread to more than one area or even throughout the body. Focal plasma cell tumors are generally found in the skin, bone, or gastrointestinal tract. Focal plasma cell tumors often can be removed through surgery without any tumor residue (meaning the patient is cured) or may, in some cases, require radiation therapy directed onto the tumor.

The second important factor in evaluating these tumors is the microscopic appearance of the tumor cells: their maturity and size. Tumors of plasma cells where the plasma cells are made up of small and more mature cells are generally slower growing, while plasma cell tumors where the cells are large and more immature tend to grow faster and may be more detrimental. They both respond to chemotherapy quite well, but when treated, the success rate for the more immature cell type (polymorphous-blastic) generally seems lesser than when tumors are made up of less abnormal, more mature cells. This type of information concerning cell maturity and size is only possible with microscopic examination of

biopsy tissue, which emphasizes the central role of a biopsy when any type of plasma cell tumor—benign or malignant—is suspected.

LIVING WITH THE DIAGNOSIS

Multiple myeloma and plasma cell tumors can be treated, and depending on the degree of involvement and severity, treatment is either curative (no further medications needed afterward) or supportive (ongoing medication). Either way, the goal of therapy is to improve and restore good quality of life. As described above, single masses can be removed with surgery with curative intent. With the more generalized forms, such as multiple myeloma, treatment with anticancer drugs (chemotherapy) offers the best outlook. The extent of this treatment aims to extend your pet's life by reducing/removing the cancer burden. There are different chemotherapy plans. These protocols may use different strengths of medications, as well as different dosages of the same medications. Plans should be chosen by your veterinarian with guidance from you as to your expectations. The more intensive the treatment is, the more likely extended remission will be; however, significant drug reactions and side effects also become more likely. Reducing treatment to the level of few or no side effects gives good quality of life but will not have as good a chance of extending your pet's life as long.

For plasma cell tumors and multiple myeloma, a good response to even fairly low grade anticancer medications (chemotherapy) provides extended periods of good quality of life. Fifty percent of dogs survive for relatively long periods of time (a little less than 2 years). Ongoing therapy will involve oral medications and regular checkups to monitor for recurrence of disease and side effects from chemotherapy. Because of these regular rechecks, it is recommended that you have a good working relationship with your veterinarian, and/or seek a second opinion if in doubt.

TREATMENT

Treatment for focal plasma cell tumors is surgical excision for soft-tissue masses and radiation therapy for bony masses.

Melphalan and prednisone—both tablets (pills)—are the most common chemotherapies used together for multiple myeloma. Relief of symptoms, healing of bone lesions caused by the tumors, and resolution of excess immune proteins are all typical signs of success with this therapy. Pets generally feel very well when taking these medications, unlike human chemotherapy patients. The most common side effect of melphalan and prednisone is suppression of the bone marrow leading to low platelet counts or reduction in other blood cell numbers. Your veterinarian will monitor for the earliest signs of such problems by rechecking a complete blood count on a regular basis to catch side effects early and adjust therapy appropriately.

DOs

- Determine whether the tumor is benign or malignant. This almost always requires tissue sampling (biopsy) and microscopic analysis of biopsy tissue.
- Realize that focal plasma cell tumors can be removed with surgery and may be gone forever (cure) this way.
- If multiple myeloma is present, the likelihood of cure is low, but a good quality of life is possible (dog or cat that feels well). If the diagnosis is multiple myeloma, it is important to decide what your companion's quality of life means to you and your family.

Discuss your goals and expectations with your veterinarian before deciding whether to institute therapy.

- It is important to have a good working relationship with your veterinarian. If you wish to seek a second opinion, you can find the latest knowledge regarding diagnosis (Is this really what it is?), treatment, and outcome by consulting a veterinary oncologist. These animal cancer specialists are known as Diplomates of the American (or European) College of Veterinary Internal Medicine, Specialty of Oncology (directories: www.acvim.org and www.ecvim-ca.org).

DON'Ts

- With multiple myeloma, it is important to not give up just because of a bad day. Pets that have cancer like multiple myeloma may eventually have recurrence of disease or side effects from medication, but this does not mean they are at the end of the road. There are often treatments for side effects or further treatment to be done.
- Don't stop giving medications unless at the recommendation of your veterinarian. Plasma cell tumors and multiple myeloma usually respond well to chemotherapy—pets feel good and the cancer is reduced, sometimes to undetectable levels. It is important to remember that even in the best cases of multiple myeloma, the pet is not cured. Symptoms are likely to recur much sooner if you stop the medications or give them inconsistently.

WHEN TO CALL YOUR VETERINARIAN

- Recurrence of symptoms (as indicated below) warrant a discussion with your veterinarian.
- Your veterinarian can provide you with a description of specific symptoms and side effects based on drugs prescribed and/or given in hospital. These should be clear to you, and if they are not, you should ask the necessary questions until you understand.

SIGNS TO WATCH FOR

- Compatible with onset/recurrence of multiple myeloma (although nonspecific—realize other illnesses can cause these too): Decreased appetite, weakness, pallor, excessive drinking/urination, seizures, blindness, fever, vomiting, diarrhea, weight loss, or behavioral changes.
- Drug-related side effects; in general, nausea, vomiting, diarrhea, weakness, pallor, or fever. Particular side effects unique to any given drug can be described by your veterinarian.
- Quality of life. This is a highly individual concept that is different from one pet—and one pet owner or family—to the next. It is important to decide, in cases of multiple myeloma, what a declining quality of life would mean because treatment may not be worth continuing if that threshold is crossed.

ROUTINE FOLLOW-UP

- Periodic examinations including follow-up blood tests to check for the efficacy of the medication and to monitor for any adverse effects. Typically this will be done within the first 7 to 10 days of starting treatment and then regularly at longer intervals (often every 2 to 4 weeks) during treatment.

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