Incidence and Cause
Mast cell tumors (MCT’s) are the most common types of skin cancers found on dogs, making up 20% of all skin cancers. Most patients with MCT’s are middle-to-older age and, in most studies, certain breeds appear more often such as Boston terriers, Boxers, Bulldogs, Labrador Retrievers, Pit Bull terriers, Pugs, and Schnauzers. Currently, the initial cause of MCT’s is unknown, however recent studies suggest a possible genetic or viral role.

Presentation and Clinical Signs
MCT’s derive from a type of white blood cell (mast cells) that are normally found within the skin, lungs, and GI system. Normally, mast cells play an important role in allergies, new blood vessel formation, wound healing, and protection against pathogens. Most commonly, when a MCT forms, lumps or masses on or just underneath the skin can be seen. Those masses can take on many appearances, such as those seen in the pictures. MCT’s are also capable of rapidly changing in size and color due to reactive substances that they can release, such as histamine. Dogs may have swelling, redness, itchiness, and pain at the area of the tumor, along with loss in appetite, vomiting, diarrhea, lethargy, and fever; these signs are most often associated with a histamine release from the MCT’s. Rarely, a widespread form of MCT’s, called mastocytosis, develop in organ systems, such as the intestines, spleen, and lymph nodes. In either case, dogs that experience a large histamine release may go into shock, characterized by pale-colored gums, rapid heart rate, and sudden collapse.

Diagnosis, Prognosis, and Treatment
Initial diagnosis of MCT’s is obtained by a fine-needle aspiration (FNA) cytology, where small samples of the mass are taken with a needle, prepared onto a glass slide, and observed under a microscope. With FNA, MCT’s can be confirmed, however their grade and stage are still unknown. Both grading and primary treatment of MCT’s is performed by surgically removing the tumor and area around it. Once removed, the removed tumor can be then be examined by a process known as histopathology. This method allows veterinarians to determine the grade of MCT, in order to understand how different and/or organized those tumor cells are from normal cells. Grading is necessary for knowing the prognosis and additional treatment plan. Grading is performed with two systems: the Kiupel system, a newer system which identifies MCT’s as low or high grade, and the Patnaik system, which has historically placed MCT’s into grades I, II, and III. Low grade MCT’s or grade I MCT’s offer a good-to-excellent prognosis and do not usually require any further treatment. Higher-graded MCT’s often require further treatment. These types of MCT’s often require chemotherapy and carry a more guarded prognosis. Depending on the location of the tumor, not all MCT’s are capable of being surgically removed, such as those on the lower limbs or where MCT’s completely surround an area of the body or limbs. In these cases, treatments such as radiation therapy and chemotherapy, are recommended. Along with traditional treatment methods, newer options, such as electrochemotherapy and intraregional deionized water injections, are becoming available as they are being further researched.

Conclusion
Mast cell tumors are very common skin tumors and can be very serious. Because of their unpredictable nature, all MCT’s are regarded as cancerous and can take on many appearances. Any
lumps or masses, old or new, seen on your dog should be looked at by a veterinarian and undergo further diagnostics. Unfortunately, their cause is unknown, so there is no preventative, however certain breeds seem to be more at risk. Once diagnosed, full surgical removal of the tumor is both the primary treatment and way of identifying severity and further diagnostics and treatment.

References


