

WHAT IS AN INJECTION SITE SARCOMA?

Vaccine site-associated sarcomas were renamed as injection site associated sarcomas as an acknowledgement that they can occur after injection of a variety of medications and foreign materials. Although vaccines are most commonly associated with the development of this tumor, other causes have been reported as well. On average, 1/10,000 cats will develop this reaction to a vaccine or injection given. These tumors likely form due to induction of an inflammatory cascade after injection leading to uncontrolled fibroblast and myofibroblast proliferation and eventual tumor formation either alone or with immunologic factors. The time to tumor development after vaccination has been reported to be between 4 weeks to 10 years. No single vaccine manufacturer or vaccine type had a higher or lower association with development of sarcomas, and it does not need to be a vaccine that induces the effect, it could be any injectable medication. It is likely there is a genetic predisposition to the development of these tumors in certain cats; however, the exact genetic problem has not yet been identified.

HOW IS INJECTION SITE SARCOMA DIAGNOSED?

Needle aspirates are useful in increasing your veterinarian's suspicion of cancer. However, sometimes it is difficult to differentiate an injection-site sarcoma from a vaccine reaction or inflammatory granuloma on aspirates. Sometimes these tumors do not exfoliate or "give up" their cells easily, making a diagnosis by needle aspirate difficult. A surgical biopsy is often necessary to make a definitive diagnosis of injection-site sarcoma.

HOW IS INJECTION SITE SARCOMA TREATED?

Surgery is the mainstay of treatment for injection-site sarcoma and it is recommended that surgery be performed by a board-certified surgeon. Surgical removal needs to be wide and deep, as these tumors grow by sending "finger-like" projections of tumor cells among the tissues. The first surgery is also the best chance at a surgical cure of this tumor and therefore it is best to be aggressive up front. In most instances, surgery alone is not curative and other treatments, such as radiation and chemotherapy are recommended in addition to surgery.

Radiation therapy may be performed either before or after surgical removal of the tumor in order to treat any residual tumor cells that may remain after surgery. The treatment protocol is often based on the type of tumor, location of the tumor, the extent of the disease and specifics unique to a particular patient. Radiation therapy combined with surgery has been shown to significantly improve survival over surgery alone.

Chemotherapy may be recommended for recurrent tumors or tumors that may behave aggressively based on biopsy characteristics (ie, high-grade tumors). Chemotherapy is extremely well-tolerated in cats.

WHAT IS THE PROGNOSIS?

With appropriate and aggressive treatment, many cats may experience a good quality of life for an extended time. Survival times vary based on location, success of surgical removal, and treatment options chosen. Overall, the prognosis for cats treated aggressively (with surgery and radiation therapy) for injection-site sarcomas is approximately 1.5-3 years of survival.

CAN INJECTION-SITE SARCOMAS BE PREVENTED?

Vaccination is a medical procedure that has risks and benefits, and it should be tailored to the individual patient. It is important to know the law in your state regarding rabies vaccination. The best advice is to vaccinate discriminately and make educated decisions about which diseases each cat should be vaccinated for. Please discuss your concerns about vaccination with your cat's regular veterinarian. Vaccination on the lower limbs and tail has been advocated, such that amputation of the affected leg or tail can be performed if a tumor should occur. Cats that have been treated for an injection-site sarcoma and their siblings are at high risk for tumor development and should not receive future vaccinations if possible.