

Southern California Veterinary Specialty Hospital

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Feline Injection Site Sarcomas

BACKGROUND

In 1991, the first report was published associating vaccines and sarcoma development in cats. This association was made, in part, from the increasing number of sarcomas in the dorsal portion of the neck and the interscapular regions. In addition, macrophages that surrounded these tumors contained foreign material determined to be aluminum, which is a common vaccine adjuvant.

Both the FeLV and rabies vaccines have been shown to be associated with sarcoma development. Compared with unvaccinated cats, there is a 2.8 to 5.5 times risk with the FeLV vaccine and a 1.8 to 2.0 times risk with the rabies vaccine. There is also an increased risk in cats given multiple vaccines at the same site. The true prevalence rate of these tumors is unknown and ranges from 1:10,000 to 1:1,000 cases per vaccinated cat. Most sarcomas develop 3 months to 3 years from the time of vaccination with an average latency period of 1-2 years. However, some may occur within the first 3 months of vaccination. Any lump that occurs after an injection should be monitored closely.

ETIOLOGY

The etiology of sarcoma development remains unknown. Suspected factors include an inappropriate inflammatory response or immunologic reaction, a genetic predisposition tumor suppressor gene inactivation, overexpression of oncogenes and/or growth factors, vaccine related factors and others. No specific brand of vaccine has been implicated.

DIAGNOSIS AND TREATMENT

Injection site sarcomas are fast growing tumors and are locally invasive. Up to 10-25% may metastasize (spread to other parts of the body), but this generally occurs late in the disease. The lungs are the most common location for metastasis, but any organ may be infiltrated. A tumor should be suspected if a post-injection lump persists greater than 3 months or is growing rapidly. Most post-injection granulomas develop within 3 weeks and resolve by 3 months. If a tumor is suspected, a biopsy should be done. The biopsy will allow confirmation of the tumor and treatment can then be planned. Once a tumor has been diagnosed, the patient should be staged to evaluate for metastatic or concurrent disease. Suggested diagnostic tests include a complete blood panel and urinalysis, thoracic radiographs (3 views), and radiographs or preferably contrast-enhanced CT scan or MRI of the tumor site.

Surgery is the mainstay of treatment. The initial surgery must be aggressive as it is the best chance to cure these tumors. Without radical surgery, local recurrence is common and most tumors will recur within months. With each additional surgery, it becomes more difficult to completely excise the tumor and additional recurrences become more frequent.

Radiation therapy can be useful when surgery alone won't control the tumor. It may be given before or after surgery. Pre-operative radiation may reduce the tumor size and potentially make a non-operable tumor operable. It may also sterilize the tumor margins and decreased seeding of neoplastic cells during surgery. Post-operative radiation is more commonly done to kill microscopic disease. Multiple treatments are needed and cats tolerate radiation very well.

Chemotherapy also has a role in treating injection site sarcomas and is generally used when surgery and radiation therapy fail, if the tumor is high grade or if metastatic disease is present. In general, the benefits of chemotherapy are short-lived and it should not be the sole treatment.

Things you or your veterinarian can do:

- 1) Keep accurate records of all injections, vaccine or otherwise. Record the site, type of injection and manufacturer. Individualize the vaccination sites so that specific vaccines are only given in certain areas of the body.
- 2) Use monovalent vaccines from single-dose vials. Non-adjuvanted vaccines are also recommended.
- 3) Do not over vaccinate your cat. There is scientific evidence that panleukopenia and feline leukemia vaccines can last for at least 3 years or longer. Discuss your cat's environment with your veterinarian and make an informed decision together.
- 4) Request that your veterinarian use 25 gauge needles when administering injections to your cat. Small needles are less likely to carry irritating hair and debris under the skin.

It is still highly recommended that your cat be vaccinated against disease, as the prevalence of such diseases is much higher than the likelihood of your cat acquiring an injection site sarcoma. Education is the key to understanding injection site sarcomas. Do not hesitate in asking your veterinarian to discuss these pros and cons of vaccinations with you!