Prevention of Feline Injection-Site Sarcomas

Is There a Scientific Foundation for Vaccine Recommendations at This Time?

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KEYWORDS

• Injection-site sarcoma • Vaccines • Adverse reactions • Cat

KEY POINTS

- Authority figures have made vaccine recommendations to reduce the incidence of feline injection-site sarcomas.
- The evidence supporting these vaccine recommendations is surprisingly weak.
- Until additional research is performed, there is little evidence supporting the recommendation that use of certain vaccines will prevent sarcoma formation.

Over 25 years have passed since the initial report of vaccine-site sarcomas (FISS) appeared in the veterinary medical literature.[1] Almost from the point of recognition of these iatrogenic tumors, the veterinary medical profession and its allied professional communities have valiantly struggled to promulgate recommendations to mitigate, if not eliminate, the risks associated with vaccinations. Examples of such recommendations have included avoidance of multidose vaccine vials, distributing vaccines over different parts of the body, using vaccines less likely to induce local inflammation, restricting vaccines to cats with potential exposure to other animals with communicable diseases, and even not vaccinating at all.

One article, "Feline Injection-site sarcoma: ABCD guidelines on prevention and management"[2] encapsulates considerable thought to date, and perhaps even mainstream credence on strategies for treating and preventing these iatrogenic tumors, products of the veterinary medical profession's well-intentioned and largely successful attempt to eliminate the incidence of rabies and, to a lesser extent, other mostly species-specific infectious diseases in domestic cat populations. Given the widespread market penetration of vaccines in the United States, Canada, and many

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countries of Europe, together with the large number of owned cats, there are now more than 20 years of experience managing afflicted patients, providing a plethora of information about current standards of practice as well as emerging state-of-the-art therapies. The veterinary medical professional manifestly benefits from such reflection, as do owners and their feline companions.

I am less sanguine, however, that these authors' recommendations for prevention share the same evidence-based scientific standing that their management recommendations have. For there to be standing to justify recommendations there must be foundation. For there to be foundation there must be evidence; for there to be evidence there must be research. The latter presents in many forms, and I have become increasingly concerned that the findings from preliminary or tenuous research have, over time, taken on a quasi-mythical standing through a disciplinary support network that places more weight on belief than on the weight of the evidence itself. Opinion is, of course, the natural evolution of the assimilation of information, and is the provenance of assertions by decision makers occupying positions of leadership, influence, and change. In the proper setting, and in the appropriate context, such expressions contribute to a healthy exchange and dialogue (eg, the Vaccine-Associated Feline Sarcoma Task Force).[3] For an article focusing on prevention of this disease in a peer-reviewed scientific journal, far more circumspection is not only warranted, but arguably essential. In this article, I hope to underscore this contention by illustrating that not only do I judge that such recommendations are premature (although not necessarily incorrect), but that others absorbing the same body of evidence could be impelled to reach entirely different conclusions.

The key statement in that article, and hence the most provocative, is the following from the abstract: "Non-adjuvanted, modified-live or recombinant vaccines should be selected in preference to adjuvanted vaccines." This is manifestly similar to a principle expressed in the World Small Animal Veterinary Association's (WSAVA) Guidelines for the Vaccination of Dog and Cats[4]: "Non-adjuvanted vaccines should be administered to cats wherever possible." Indeed, the WSAVA[4] and Hartmann and colleagues[2] articles share authors in common. However, these prescriptions go well beyond the recommendations of the 2013 American Association of Feline Practitioners Advisory Panel Report, which judiciously exercised considerably more restraint in writing: "Overall, however, the Advisory Panel concluded that, at the current time, there is insufficient information to make definitive recommendations to use particular vaccine types to reduce the risk of FISS [feline injection-site sarcomas]."[5]

What is the evidence to support the Hartmann and colleagues[2] recommendation, as indicated in the abstract and on page 611: "Vaccines without adjuvants should be used rather than adjuvant-containing vaccines, which means that MLV or recombinant vaccines (eg, canarypox-vectored vaccine) without adjuvant are preferred over inactivated vaccines with adjuvants?" The section "Recommendations for reducing inflammatory reactions" (pages 610–611) provides some guidance. Three articles cited found that recombinant canarypox-vectored vaccines caused less inflammation when injected into rats and cats.[6–8]

The use of such experimental studies to measure postvaccinal tissue inflammation is enigmatic and can be faulted on several grounds. Using rodents as models of adjuvant-induced inflammation or carcinogenesis in the cat remains notional, and its validity has previously been called into question.[9] Given the near-certain differences between species in immunologic and tissue-based responses to vaccine adjuvants, it should be difficult to ascribe more than a passing interest in these results. As for the use of cats in experimental studies, the goal should not be to measure relative