

Tail Vaccination in Cats: Balancing Disease Protection and Cancer Treatment

Cleon G. Hendricks, BS;¹ Julie K. Levy, DVM, PhD, DACVIM; ¹ Sylvia J. Tucker, BS; ¹ Shaye M. Olmstead, BA;² P. Cynda Crawford, DVM, PhD, ¹ Edward J. Dubovi,³ PhD; Cathleen A. Hanlon, VMD, PhD, DACVPM⁴

¹Maddie's Shelter Medicine Program, Department of Small Animal Clinical Sciences, College of Veterinary Medicine, University of Florida, Gainesville, FL 32610, USA; ²Operation Catnip, Gainesville, FL 32610, USA
³Animal Health Diagnostic Center, College of Veterinary Medicine Cornell University, Ithaca, NY, 14851-5786, USA; ⁴Kansas State University Rabies Laboratory (Hanlon), Manhattan, KS 66502, USA

INTRODUCTION

Feline injection site sarcomas (FISS) affect 1-10 cats per every 10,000 vaccinated and are associated with high mortality. Radical resection may be curative, but is often associated with prolonged recovery, disfigurement, and loss of function when tumors occur at currently recommended injection sites (Fig 1).

The objective of this study was to assess alternatives to currently recommended vaccination sites in terms of preference by oncology practitioners, ease of injection, and serological responses.

METHODS

- 94 surgical, radiation, and medical oncology practitioners were surveyed regarding their preference for vaccination sites based on the ease of tumor resection.
- A 6-point Likert scale was used to measure the behavioral reaction to vaccination of 60 cats when injected subcutaneously in the distal hind limb or in the distal tail.
- Serum collected before and 1-2 months after vaccination was tested for antibody titers against feline panleukopenia virus (FPV) and rabies virus (RV).

RESULTS

- The top 3 preferred sites for vaccination by 94 oncology practitioners were below the stifle (41%), the tail (30%), and below the elbow (21%). Most agreed that the tail was an excellent site. (Figure 2)
- The vast majority of cats tolerated vaccination below the stifle (n=31) or in the distal tail (n=29). (Figure 3)
- Of the cats seronegative for FPV at the time of vaccination, 100% developed protective antibody titers (≥ 40) against FPV 1-2 months following vaccination. (Figure 4)
- For cats seronegative for RV, all but one cat (tail vaccine) developed adequate antibody titers (≥ 0.5 IU/mL) against RV. (Figure 4)

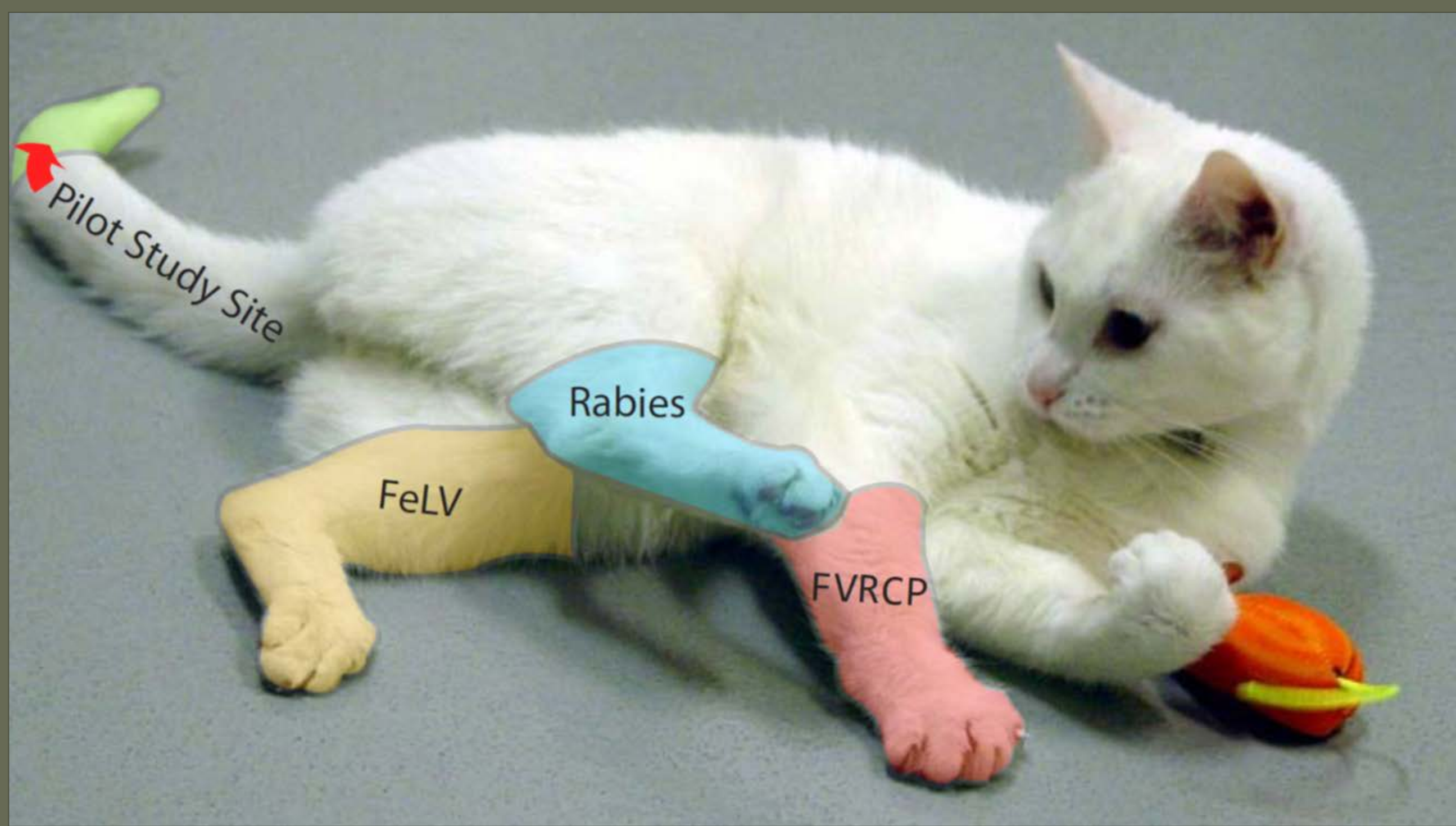
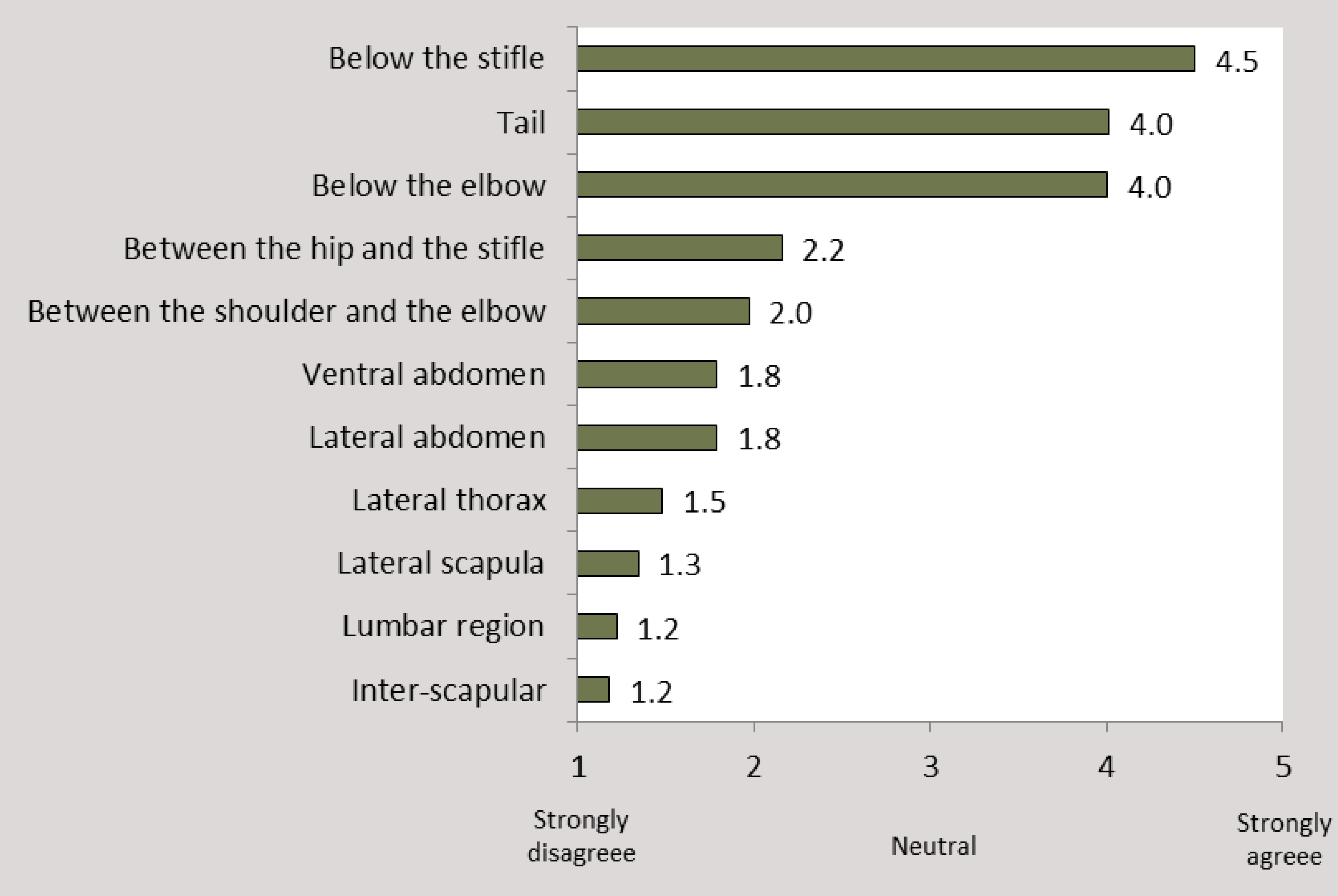


Figure 1 – Traditionally recommended vaccination sites (lower limbs) and novel site (distal tail).

Figure 2 – Agreement by 94 surgical, radiation, and medical oncology practitioners with the statement: "This is an excellent site to vaccinate a cat."



Behavioral responses of cats to vaccination in the hind limb vs. the tail

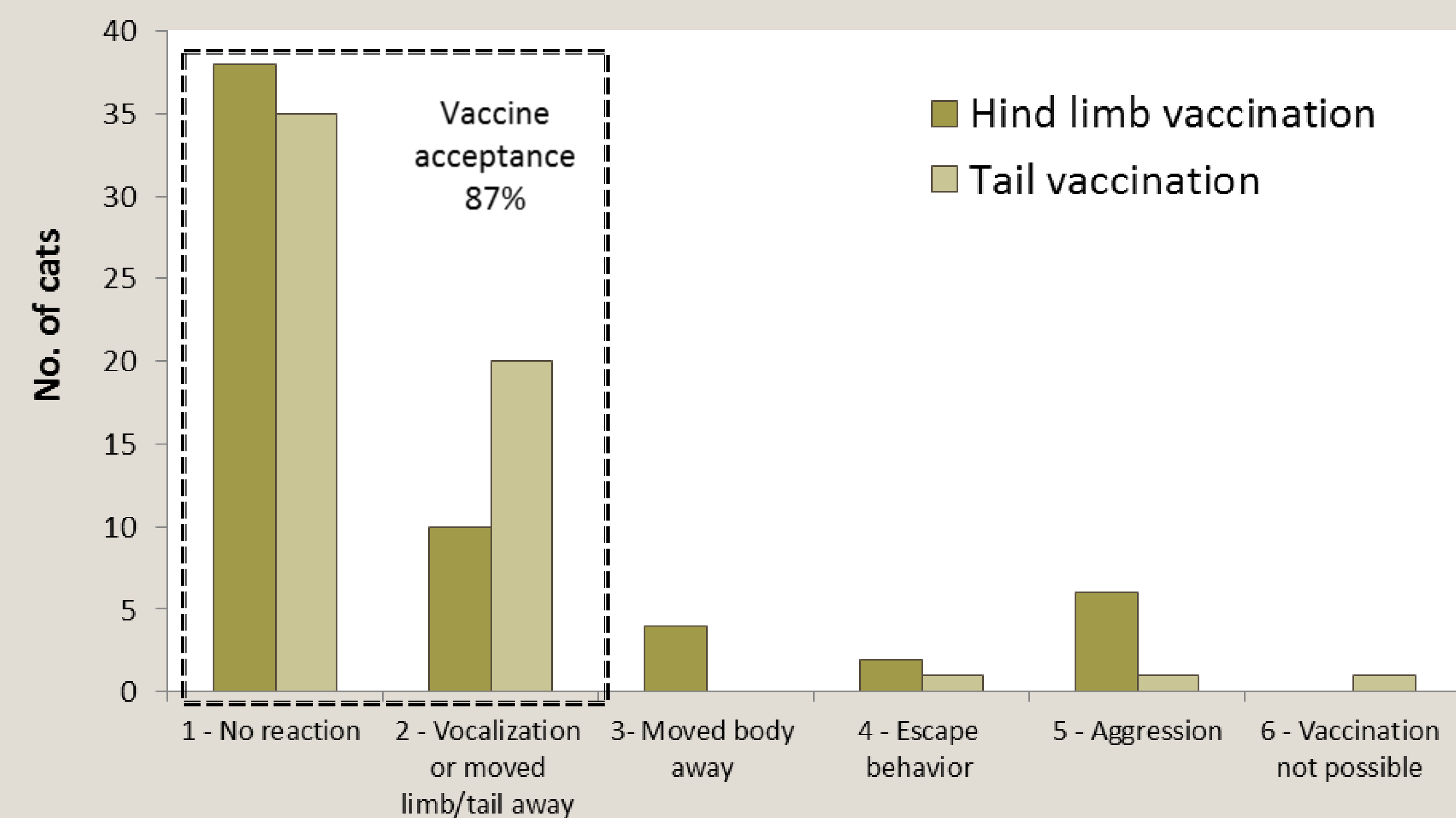


Figure 3 – 87% of 120 vaccine injections (2 per cat) were accepted by cats with little reaction. Cats were significantly more likely to accept vaccination with a response score of 1-2 in the tail (95%) than in the hind limb (78%), $P=0.03$.

Serological responses to vaccination

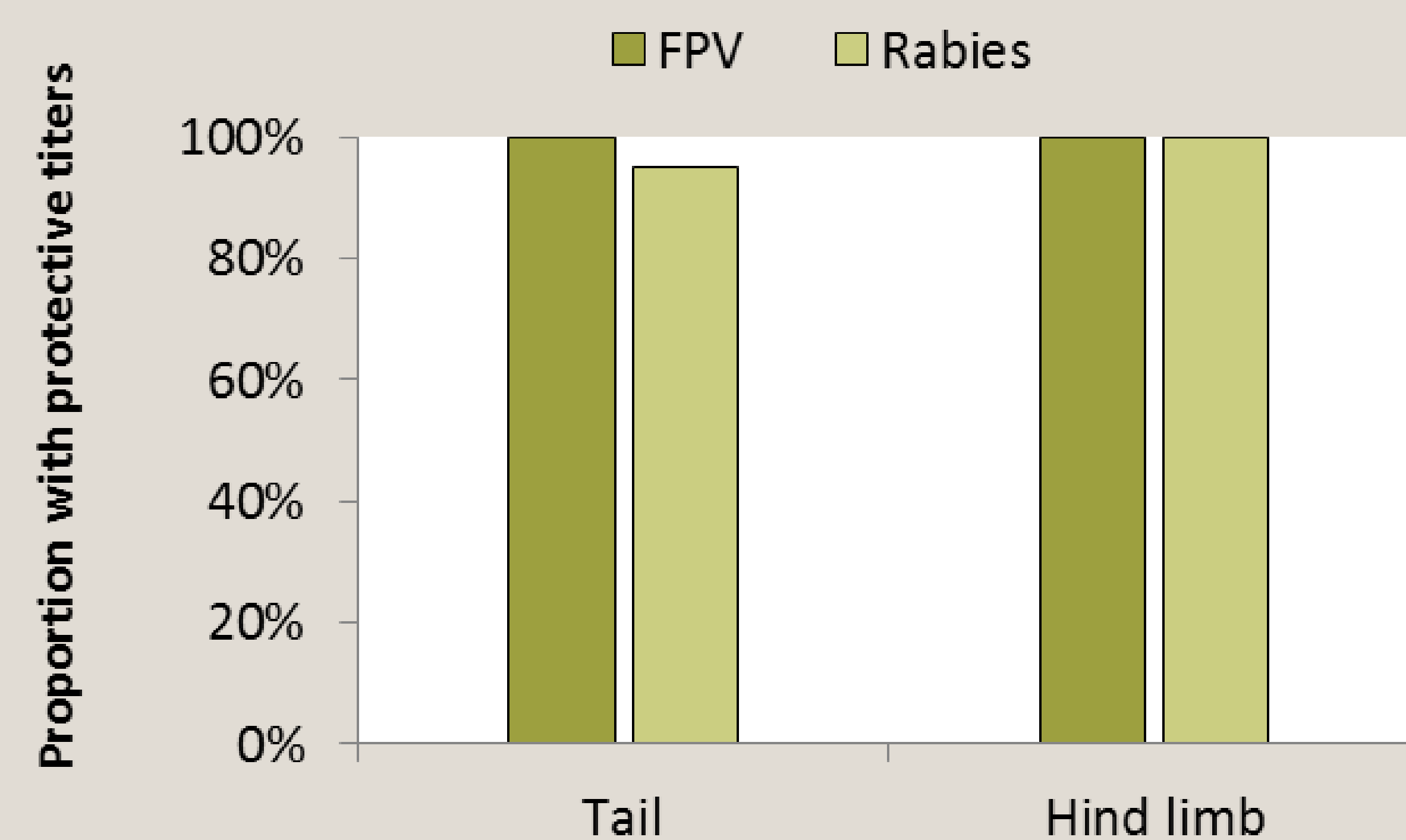


Figure 4 – All cats that were seronegative for FPV or rabies at the time of vaccination were tested for antibodies 1-2 months after vaccination. All developed protective antibody titers against FPV and all but one developed protective titers against rabies.

DISCUSSION

Veterinarians whose area of practice includes the treatment of FISS selected a traditional vaccination site (the distal hind limb) and a novel site (the distal tail) as their preferred vaccination sites due to the option for obtaining wide surgical margins with amputation.

Although the vast majority of cats tolerated vaccination in either site, acceptance was slightly higher in the tail than in the traditional site.

Vaccines appeared to be equivalently immunogenic in the tail and in the hind limb.

This pilot study provided proof-of-concept for vaccination in an anatomic site that can be amputated without severely disfiguring the patient. Tail amputation is a minor surgery that can be performed by a general practitioner on an outpatient basis. This may increase access to curative surgery for many cats afflicted with FISS.

If tail vaccination is adopted, care should be taken to assure the vaccine is administered in the distal third of the tail and only in cats with long tails to avoid the occurrence of tumors near the perineal area.

Based on the promising findings of this small study, further research is indicated to better characterize the acute and long-term effects of tail vaccination in a larger population of cats of different ages and body sizes and in cats receiving multiple booster vaccines.

ACKNOWLEDGEMENTS



The authors would like to thank Maddie's Fund, the Harold H. Morris Trust Fund, and the Merial Veterinary Scholars Program for supporting this study. Maddie's Shelter Medicine Program is underwritten by a grant from Maddie's Fund, The Pet Rescue Foundation (www.maddiesfund.org), helping to fund the creation of a no-kill nation.