Introduction

This lecture will include a detailed evidence based discussion of the three main questions raised today regarding adverse reactions to feline vaccines. These include acute vaccine reactions, vaccine induced fibrosarcomas and the recently raised questions regarding the possible influence vaccines that include modified live viruses grown on kidney cell cultures on acute or chronic kidney disease in cats.

Acute vaccine reactions

Because of a lack of a uniform federal system for the reporting of vaccine reactions in companion animals, data regarding acute vaccine reactions has been limited. Recently, though, the mining of the Banfield Pet Hospital data base has allowed researchers to access reactions to vaccines in a large number of patients. A recently published study (Moore GE et. al. JAVMA 2007 231(1): 94-100) analyzed data from over 2,500 vaccine reactions in approximately 500,000 vaccinated cats over a 3 year period. These reactions included: Lethargy (approximately 50%), local swelling inflammation or soreness (approximately 25%), Vomiting (approximately 10%) and facial edema, pruritis and others (<6%).

These data will be analyzed along with others to try and determine risk factors for these reactions and how severe they really are.

Vaccine induced sarcomas

This is likely the most important questions facing feline vaccinology today and one of its biggest challenges. The facts around this question will be scrutinized. These include:

1. Do vaccines induce sarcomas in cats?
2. What is the data regarding prevalence of vaccine induced sarcomas if indeed there is an association there.
3. What are the risk factors for vaccine inducing sarcomas?

One of the big questions here is the use of adjuvanted vaccines and the possible association between post vaccinal inflammation and the induction of a vaccine induced sarcoma at the injection site. Data will be presented to try an address this issue. The vaccine component most commonly associated with vaccine-site inflammation is the adjuvant. Adjuvants are used in many feline vaccines. The specific role of vaccine adjuvant or antigen in inducing feline vaccine-site sarcomas remains unknown. However, if it is true that the resulting inflammation is the basis for proliferation of fibroblasts and myofibroblasts at sites of chronic inflammation, then this issue must be taken very seriously. Because inflammation and proliferation of fibroblasts appear to be necessary antecedents to tumor development in this scenario, the risk of cats developing postvaccinal sarcomas may be linked in part to the amount of chronic inflammation and cell proliferation induced by a certain vaccine.

The possible effect of vaccines grown on feline kidney cells in feline chronic kidney disease.

This fascinating topic has been introduced in past few years by work performed by Dr. Mike Lappin from Colorado State University (Lappin MR, et al. Am J Vet Res 2005;66:506-511). He has suggested the hypothesis that since vaccines containing viruses grown on the Crandall-Rees feline kidney (CRFK) cell likely contain some feline kidney cell antigens, then perhaps these vaccines are inducing an autoimmune response against self kidney antigens resulting in kidney pathology. This lecture will review Dr. Lappin’s studies and update on his most recent findings. These include:

1. In 1 study Five of the six cats administered a parenteral vaccine were positive for antibodies against CRFK cells by ELISA.
2. Significant CBC, serum biochemical, urinalysis, microalbuminuria, or histopathologic abnormalities were not detected during that study even in the cats that developed anti-CRFK antibodies.
3. In a subsequent study we documented interstitial nephritis in 3 of 6 cats hypersensitized with CRFK lysates when the biopsies were taken very soon (2 weeks) after the booster vaccine. This is in contrast to 6 weeks in the first study. Thus this inflammation is likely transient and of questionable clinical importance.
Are these changes significant? Do vaccines play a role in the course of chronic kidney disease in cats? We do not have evidence to say they do but hopefully we will learn more as larger studies are performed.