DiagnosticInsights

Kansas State Veterinary Diagnostic Laboratory
www.ksvdl.org

Accredited by the American Association of Veterinary Laboratory Diagnosticians — December 2012

KSVDL's 2nd Annual Conference on Animal Diagnostics and Field Applications: Food Animal Medicine

Meeting Schedule

8:00 a.m.	Registration
8:50 a.m.	Welcome
9:00 a.m.	Bovine Clostridial Diseases - Dr. Robert Callan
10:00 a.m.	REFRESHMENT BREAK
10:15a.m.	Bovine Clostridial Disease Diagnosis - Dr. Robert Callan
11:15 a.m.	Bovine Clostridial Disease Prevention and Treatment - Dr. Robert Callan
12:15 p.m.	LUNCH
1:00 p.m.	Multiple bovine field case-studies from 2012

- Bovine rota virus differences between vaccine and field strains: validation of vaccine ineffectiveness?
  Dr. Dick Hesse, Dr. Gregg Hanzlicek
- KSVDL bovine respiratory disease PCR panel results: 2010-2012
  Dr. Gary Anderson, Dr. Jamie Henningson
- Bovine abortion pathogen findings from the KSVDL: 2012
  Dr. Kellie Almes, Dr. Brian Lubbers

2:00 p.m.	Bovine tritrichomonas veterinarian-certification - Dr. Bill Brown, Dr. Gregg Hanzlicek
3:00 p.m.	ADJOURN

For more information, contact Dr. Gregg Hanzlicek at gahanz@vet.k-state.edu or 785-532-4853.

For registration: Contact Rebecca Frakes at 785-532-2530 or rebecca@k-state.edu to register.

Date: February 9th, 2013

Where: Frick Auditorium

College of Veterinary Medicine
Kansas State University

6 CE credits • Cost: $125

Inside this issue:

To set up an account go to: www.ksvdl.org

What's the Beef With Bovine Genetic Disease?

Dr. Jamie Henningson

A test that we do commonly at the KSVDL is immunohistochemistry (IHC). If you are not familiar with it, it can be a confusing topic.

Developmental defects can be caused by teratogenic toxins, teratogenic infectious agents, such as BVDV, or DNA mutations. DNA mutations can result in widespread genetic disease with current breeding technologies. Although artificial insemination and embryo transfer technologies have made tremendous advancements in breeding practices in the last few decades, there is a downside to these breeding practices--the potential propagation of genetic defects within the bovine population. With either breeding technology, emphasis is placed on an individual with a desirable phenotype. (Phenotype is the outwardly appearance of an individual due to the interaction of genotype and the environment.) The use of a select individual based on a desirable phenotype for breeding can result in the dissemination of a genetic defect if that animal is a carrier of a genetic mutation, which is most commonly recessive. In addition, widespread use of artificial insemination can result in the global distribution of a genetic defect.

A bull carrying DNA with a genetic mutation (a carrier bull) can affect a large percentage of the calf crop. A large number of abnormal, nonviable or weak/stillborn, fetuses or calves can result in significant production and economic losses. An example of the effect one bull can have on the bovine industry occurred in 2008. The genetic mutation resulted in Arthrogryposis Multiplex (AM), also known as "curly calf syndrome", which resulted from a deletion on two separate genes leading to a lethal genetic defect with a simple recessive mode of inheritance. AM fetuses are Angus or Angus-influenced and have kyphoscoliosis, arthrogryposis and decreased muscle mass (Figure 1). Neurodegenerative hydrocephalus (NH) is also an example of a recessive mutation. This mutation was first observed in 2009 in the Angus Breed and resulted in late term abortions or stillborn calves with low birth weights that had marked hydrocephalus and lacked brain and spinal cord tissue (Figure 2). Both of these syndromes happened to occur in the Angus breed but with today's breeding practices any breed can be readily affected with genetic disease. In these two syndromes, it is easy to see the defects. However, if mutations cause internal defects, where there are no outwardly signs in the

Figure 1. Arthrogryposis multiplex in an Angus calf

Figure 2. Neurodegenerative hydrocephalus in an aborted Angus calf. Photos courtesy of Dr. David Steffen

See Henningson, page 5

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Localized Rabies Vaccination-Induced Ischemic Dermatopathy

Dr. Bill Fortney and Dr. Brad DeBey

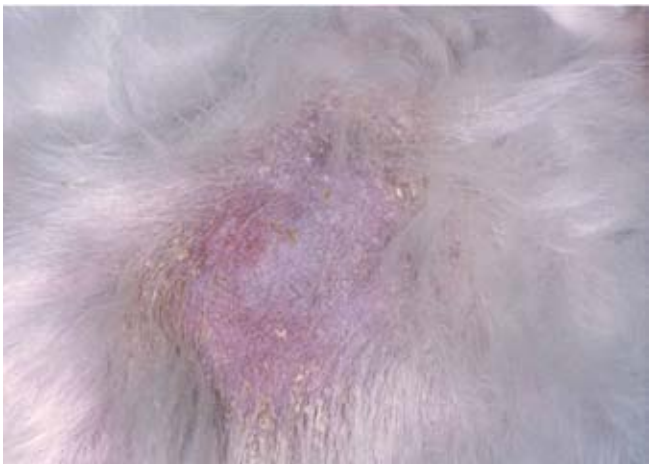
Ischemic dermatopathy is a term for a group multiple vasculopathic syndromes based on similar clinical and histopathologic characteristics. In dogs, post rabies vaccine reactions have been associated with two forms of a vaccine-induced ischemic dermatopathy. The more serious syndrome is a severe generalized ischemic dermatopathy. The milder and more common is the focal cutaneous vascultis lesion of ischemic dermatopathy occurring at the site of the vaccine injection.

With both clinical syndromes, the ischemic dermatopathy is presumed to be due to an idiosyncratic immunologic reaction to rabies antigen that partially targets vessels. Using immune-fluorescent testing, the rabies antigen can be documented in the walls of dermal blood vessels and in the epithelium of hair follicles via.

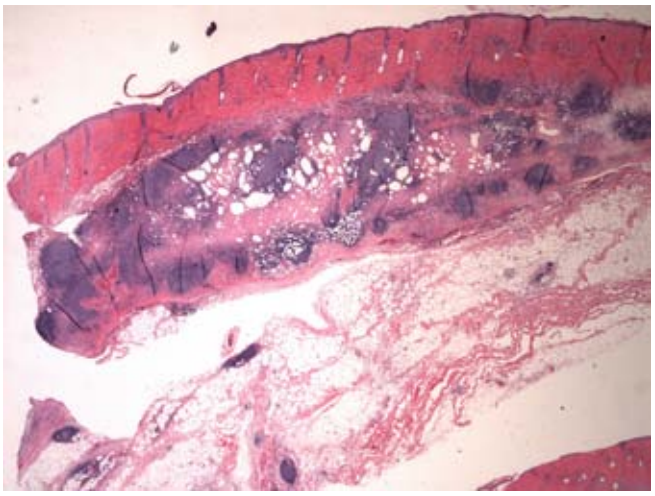
The localized vaccination-induced ischemic dermatopathy is a focal panniculitis. Long-haired toy or miniature breeds and white haired seem to be at greater risk to develop the disease. At the site of the fairly recent rabies vaccine is a round, oval or annular shaped areas (2cm – 6cm) of variable alopecia, hyperpigmentation, with occasionally scaling and/or mild erythema. The lesion generally appears between three to six months following the subcutaneous vaccine injection and will persist for months to years. (Picture 1)

Suspected lesions are confirmed by histopathologic examination. (Picture 2) Typical microscopic findings are hair follicle atrophy with other changes of ischemia found in the dermis. The localized vaccination-associated lesions also have chronic inflammation in the underlying subcutis. Biopsies need to extend into the subcutis to identify the inflammatory component; therefore punch biopsies of the lesion may not reach deeply enough to be diagnostic. In some cases, material suggestive of vaccine adjuvant may be recognized in the biopsy of vaccination-associated lesions.

Various advocated managements options include; surgical excision of the affected area, oral prednisone therapy alone; combined therapy of oral prednisone and pentoxifylline; or a conservative "what and see" approach.



Picture 1: A typical lesion.



Picture 2. Suspected lesions are confirmed through a histopathologic examination.

References:

Muller and Kirk, "Small Animal Dermatology," 5th ed., W.B Saunders Co, pp. 604 – 606.

Gross, Ihrke, Walderand Afolter, "Skin Diseases of the Dog and Cat," 2nd ed., Blackwell Publishing, pp. 538-541.

Animals exposed to rabies virus

Dr. Mike Moore and Rolan Davis

According to current rabies guidelines, in the face of exposure to a rabid skunk or bat, animals with a current rabies vaccination status are allowed revaccination and return to their owner with an at-home observation period of 45 days. **Animals that are either naïve or considered to have an out-of-date vaccination status have more severe consequences in the event of a rabies virus challenge.** The two options for these animals recommended to their owners include either 1) euthanasia or 2) six months of quarantine at an approved facility. Be aware that according to protocol, out-of-date vaccination status provides no protection given these two options. These two options are many times very expensive, both monetarily and emotionally, leading to unnecessary euthanasia, in our opinion.

Given these facts:

1) The Compendium states that an animal boostered for rabies is immediately considered current.

2) Humans exposed to rabies who have been vaccinated previously are treated by a 2 boosters regardless of the time elapsed since the primary vaccination series.

We hypothesize that an animal that has been primed by previous rabies vaccination but has fallen "out-of-date" should respond anamnestically just as a current "in-date" animal. If we can gather supporting data, we will publish our findings hoping to influence changes that would allow these pets to be re-vaccinated and observed for 45 days, as is the recommendation for current vaccination status animals.

To investigate our hypothesis, we are soliciting veterinarians' help:

We need veterinarians to collect two serum samples, from both current and overdue dogs and cats, one sample taken just prior to vaccination and another 5-7 days later.

The Kansas State Veterinary Diagnostic Rabies Laboratory will complete titers at no cost if submitted samples meet the study criteria.

If you are interested in being part of our study please call us at 785-532-4503 or 785-532-4826.

Please find current Compendium recommendation at http://www.nasphv.org/Documents/RabiesCompendium.pdf

KSVDL Outreach Activities

- "*Mannheimia haemolytica* Susceptibility Patterns"; "Using Canine Serum Titers to Design Vaccination Regimens" and "A Three Year Study of Pathogens Isolated Using the Bovine Respiratory Panel" were the titles of presentations given to the SOUTHEAST KVMA membership in October by Drs. Fortney, Lubbers and Hanzlicek.
- Dr. Hanzlicek and senior veterinary students investigated a herd health problem occurring on a Kansas dairy.
- Drs. Schneider (Kansas Animal Health Department), Hanzlicek (KSVDL), and Archer (USDA/APHIS/VS) conducted a seminar in Western Kansas for cow-calf producers who have experienced Trichomoniasis in their herds this year.
- "*Mannheimia haemolytica* Susceptibility Patterns"; "Using Canine Serum Titers to Design Vaccination Regimens"; "Differences in Rota Virus Vaccine and Field Strains Discovered at the KSVDL: An Explanation for the Possible Lack of Effectiveness in the Field", were the titles of presentations given to the NORTHEAST KVMA membership in October by Drs. Lubbers, Fortney, and Hesse.
- Dr. Hanzlicek conducted a seminar on Beef Quality Assurance and Vaccinology at the Killough Farms Field Day in Baldwin City.

Henningson | Where's the Beef

continued from page 2

phenotype or where a mutation causes early abortions, the genetic defect can be difficult to identify.

So what can we do about bovine genetic disease? The best method to prevent any of the current syndromes is to use "clean" bulls (bulls identified as not carrying a genetic mutation) for breeding, which can be identified through genetic testing. However, genetic disease cannot be entirely prevented since mutations randomly occur. Genetic mutations occur in every generation and while most are quiescent, an expressed mutation can result in genetic syndromes such as AM and NH. To reduce the number of new genetic syndromes that arise from mutations requires teamwork among producers, veterinarians, diagnosticians, molecular geneticists, and purebred associations. The development of a genetic test cannot be completed from information from a single animal; DNA samples from multiple affected animals along with their pedigree information are needed. An isolated case resultant from a genetic mutation will not be identified if there is not a current test available. In addition, teratogenic toxins and infectious causes have to be ruled out as the cause of the defects. If you have clients experiencing fetuses/stillborn calves with defects please contact us and submit samples to the Kansas State Veterinary Diagnostic Laboratory.

Please do not hesitate to contact Dr. Henningson at: heningsn@vet.k-state.edu or Dr. Hanzlicek at gahanz@vet.k-state.edu. Both can be reached at 785-532-5650.

New Tests Available at KSVDL

Mast Cell Tumor Prognosis Panel

This panel involves c-kit immunohistochemistry, cell proliferation analysis, and PCR for mutations in the c-kit gene, which can aid in the reliability of mast cell tumor prognosis.

The panel can also aid clinicians in determining if tyrosine kinase inhibitors could be beneficial in the treatment of a mast cell tumor in a patient by identifying the presence of mutations in the c-kit gene.

Bovine Enteric Disease Panel

This test is specific for Rota, Corona, K-99 E. coli, and Crypto
Sample: 2 grams of feces

KSVDL Specializations

DIRECTOR: DR. GARY ANDERSON
785-532-4454

BACTERIOLOGY: DR. BRIAN LUBBERS
785-532-4012

COMPANION ANIMAL OUTREACH: DR. BILL FORTNEY
785-532-4605

CLINICAL PATHOLOGY: DR. LISA POHLMAN
785-532-4882

COMPARATIVE HEMATOLOGY: DR. GORDON ANDREWS
785-532-4459

FIELD INVESTIGATIONS: DR. GREGG HANZLICEK
785-532-4853

HISTOPATHOLOGY: DR. BRAD DEBEY
785-532-4461

IMMUNOLOGY: DR. MELINDA WILKERSON
785-532-4818

MOLECULAR DIAGNOSTICS: DR. RICHARD OBERST
785-532-4411

PARASITOLOGY: DR. PATRICIA PAYNE
785-532-4604

RABIES: DR. CATHLEEN HANLON
785-532-4200

RECEIVING & NECROPSY: DR. KELLI ALMES
785-532-3995

SEROLOGY: DR. RICHARD HESSE
785-532-4457

TOXICOLOGY: DR. DEON van der MERWE
785-532-4333

VIROLOGY: DR. RICHARD HESSE
785-532-4457

Developing, Delivering Accurate, Innovative Diagnostic Services

The mission of the Kansas State Veterinary Diagnostic Laboratory (KSVDL) is to develop and deliver accurate, innovative, and timely diagnostic and consultative services to the veterinary and animal health community while providing support for teaching, training and research programs.

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Continuing Education

www.vet.ksu.edu/CE/Conference.htm

January 11, 2013
Conference on Reproduction, Calving, and Calf Care in Cow-Calf Herds

February 9, 2013
KSVDL's 2nd Annual Conference on Animal Diagnostics and Field Applications: Food Animal Medicine

March 2, 2013
Veterinary Technician Conference

June 1-5, 2013
75th Annual Conference for Veterinarians
Hilton Garden Inn and Convention Center, Manhattan

Test Results and Schedules

Lab results may be accessed online 24 hours a day, 7 days a week!

To set up an account go to:
www.ksvdl.org

KSVDL will be closed on the following days:
December 25, 2012
January 1, 2013

To receive this newsletter by e-mail, contact: DlabOffice@vet.k-state.edu

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