Diagnostic Insights

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KANSAS STATE VETERINARY DIAGNOSTIC LABORATORY

Accredited by the American Association of Veterinary Laboratory Diagnosticians **January 2012**

Personnel Profile—Dr. Ara Gupta

Dr. Aradhana ("Ara") Gupta has joined the KSVDL as an instructor in Clinical Pathology.

She is originally from Punjab state of India, which is famous for agriculture and Punjabi music. She graduated from Punjab Agricultural University (PAU), India in 2000 and then completed a masters in Epidemiology and Preventive Veterinary Medicine from PAU in 2002.

Her research focused on infectious bovine rhinotracheitis and bovine brucellosis. Upon completion of her masters program, she worked as a veterinary microbiologist in PAU for one year, where she was an essential part of the veterinary disease investigation team.

Dr. Gupta accompanied her husband for 3 years in Sydney, Australia. While her husband was pursuing a PhD at the University of Sydney (USyd), she worked as a research associate at the USyd Veterinary Clinics. She was as an integral part of a research project on the investigation of bacteriological isolates and their sensitivity patterns in different animal species. Another project at the USyd involved mucosal immunity following the oral delivery of vaccine in poultry.

Dr. Gupta was employed by New South Wales Department of Primary Industries in Sydney, Australia before moving to Oklahoma State University (OSU) in 2006. Dr. Gupta successfully completed one year of the AVMA Educational Commission for Foreign Veterinary Graduates program at OSU in 2007. After working for a year in a small animal practice in Florida, she began a three-year clinical pathology residency at Louisiana State University. She completed her residency and became a Diplomate of the American College of Veterinary Pathologists in 2011.

Dr. Gupta has been awarded and admired for her presentation skills. Additionally, she has been awarded the C.L. Davis Foundation Student Scholarship Award at the ACVP/ASVCP meeting as the outstanding resident in 2011.

Virology Lab Offers New Bovine Neonatal Diarrhea Panel
Joe Anderson

In an effort to further strengthen the commitment to full service diagnostics, the virology lab at KSVDL has enhanced its offerings for diagnosing infectious agents associated with bovine neonatal diarrhea.

An antigen enzyme linked immunoassay (ELISA) test panel for detecting bovine rotavirus, coronavirus, *Cryptosporidium parvum*, and *Escherichia coli* K99 is now available to clients.

This test is a rapid and sensitive screening method for identifying these important calf diarrhea-associated pathogens. Testing for individual pathogens will be available, and there will be a price break for requesting a screen for all four agents.

We're on the web @ www.ksvdl.org

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January 2012

Tritrichomonas foetus Infection in Cats

Drs. Bill Forney and Patricia Payne


***Tritrichomonas foetus* has recently been identified as a significant enteric protozoan of cats.**

T. foetus causes an intermittent or persistent large bowel diarrhea (increased frequency; tenesmus; loose semi-formed to liquid stools; +/- blood or mucus). Most cases spontaneously resolve, although it may take months.

Although cats of all ages can be affected, it is most commonly seen in kittens and young cats (12 months or less) living in or coming from shelters, breeding colonies, or multi-cat households.

Diagnosis:

The definitive diagnosis of *T. foetus* can be made using microscopic examination of the motile trophozoites from a fresh fecal sample, fecal culture direct examination, and/or PCR using the "Green Feline" ***InPouch TF™ - Feline*** (from BioMed Diagnostics).

1. Direct Smear: Although this is a quick and simple test, the fresh direct fecal sample examination is subject to false negatives and false positives. The live organisms are often difficult to find plus they are commonly misdiagnosed as Giardia sp. trophozoites. Examination of multiple fecal saline smears, using multiple fecal samples over several days will improve the chances of finding the organisms.

These video clips (http://www.ncsu.edu/project/cvm_gookin/Tfoetusvideo.mov) from the North Carolina State University website shows the distinctive characteristics and dissimilar movements between Giardia and Tritrichomonas.

2. InPouch TF culture: The organism can be successfully cultured from **0.05 - 0.1 g** ("pea-size") fecal sample incubated in the "Green Feline" ***InPouch TF™ - Feline.*** The fecal pouch is incubated at room temperature and microscopically examined for the organisms every two days for two weeks. This test is more sensitive than direct fecal examination.

3. PCR (polymerase chain reaction) test: PCR testing, currently available at the KSVDL, is the most sensitive methodology for confirming a presence of *T. foetus* in cats. A "pea-size" fecal sample should be placed in a "Green Feline" ***InPouch TF™ - Feline*** and submitted at room temperature to the laboratory.

Treatment:

The treatment of *T. foetus* infection in cats have been generally unrewarding as the organism is resistant to most traditional anti-protozoal drugs such as fenbendazole and metronidazole.

In 2005, Dr. Jody Gookin and colleagues at North Carolina State University reported that the nitroimidazole drug ronidazole had good efficacy against *T. foetus* in cats (JVIM, 2005 19: 436; JVIM, 2006 20: 536-543).

From limited studies to date, ronidazole appears to be relatively safe in cats, although a small number of patients have developed neurological signs (twitching and seizures) which resolved on stopping the drug.

For more information on *Tritrichomonas foetus* infection in cats, go to: http://www.cvm.ncsu.edu/docs/personnel/gookin_jody.htmlon

Dr. Fortney can be reached at: **wfortney@vet.k-state.edu or 785 532-4605.**
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Help us help you:

- E-mail and Fax: Please make sure we have your correct email and fax information.

Rabies Update: 2011—Dr. Mike Moore and Rolan Davis

2011 was nearly a historically low year for positive rabies submissions from Kansas.

We reported only 31 positive rabies cases in the state for the year while Nebraska tallied 33 positive cases.

We believe, because of our expert knowledge and diligent efforts, that we have most likely conquered rabies. Not!

Although a decrease in rabies is a good thing for the general public, it can lull people into a false sense of security when it comes to vaccinating or checking for rabies.

Historically positive rabies are year-to-year cyclical in endemic areas. Traditionally the cycle in Kansas skunks is approximately 10 years between peaks. We are approaching the time frame where we could potentially see a peak occur. Will it happen? We do not know. But, do not let your guard down.

Epidemiologists would call an upswing in cases a cyclical epidemic, caused by an increase in susceptible individuals (in our case skunks). This raises the issue that epidemics may be due to a drop in herd immunity. While many have hypothesized that immunity occurs in the wild, it is tough to prove without conducting a population serological survey. We are taking applications for skunk phlebotomists…….

Have a healthy and prosperous 2012. Keep your powder dry. We will keep you informed if we see a spike in rabies positives.

The rabies lab can be reached at:
mcmoore@vet.ksu.edu

New Instructional Videos Available On the KSVDL Website:

Bovine Tritrichomonas collection and sample handling:
http://www.vet.k-state.edu/depts/dmp/service/index.htm

Bovine breeding soundness examination, Part I:
http://www.vet.k-state.edu/depts/dmp/service/index.htm

Bovine abortion necropsy procedure and sample collection:
http://www.vet.k-state.edu/depts/dmp/service/index.htm

Bovine Pregnancy Serology is Now Being Offered

A new test offered by KSVDL detects bovine pregnancy associated glycoproteins in serum or EDTA plasma as early as 28 days of gestation. The test can be completed in cows or heifers as early as 60 days postpartum with no interference from the previous pregnancy.

Using transrectal ultrasound as the gold-standard, the sensitivity of this test was determined to be 99.3%, and the specificity 95.1%.

Does this test take the place of the bovine practitioner for pregnancy examination? Certainly not as veterinary-performed pregnancy testing offers multiple advantages, including: immediate results, a higher specificity, ability to assess fetal health, and veterinarians are able to discuss the results and offer needed management changes.

The advantage of this test is the opportunity to perform additional tests for pathogens such as Johne's, BVDV, and BLV on the same sample, which can be important for export testing.

Cost is $2.50/per sample.

If you have questions, please contact Dr. Gregg Hanzlicek at: 785-532-4853 or gahanz@vet.k-state.edu.

Superficial Necrolytic Dermatitis
Drs. Gordon Andrews and Bill Fortney

Superficial Necrolytic Dermatitis (SND), also referred to as hepatocutaneous syndrome (HS), necrolytic migratory erythema (NME), metabolic epidermal necrosis (MEN), or diabetic dermatopathy is an uncommon necrotizing skin disease of dogs associated with an underlying metabolic disease.

The disease is seen most often with chronic hepatopathy where the term hepatocutaneous syndrome is used, and is also associated with diabetes mellitus and glucagon secreting pancreatic endocrine tumors (glucagonoma). The skin lesions are believed to be a result of decreased levels of plasma amino acids which are required for normal epidermal growth. Superficial necrolytic dermatitis is generally seen in middle-aged to older dogs with females overrepresented. There is no breed predilection. Clinical signs of affected dogs may include lethargy, anorexia, weight loss, and painful or difficult walking.

The typical history is of chronic skin lesions with a waxing and waning but slowly worsening course. Bilaterally symmetric skin lesions most commonly affect the feet and or foot pads **(Fig 1)** and mucocutaneous junctions of lips **(Fig 2)**, eyes, anus, vulva, and may progress to involve pressure points (elbows and hocks), ventral thorax and scrotum. Lesions are characterized by erythema, erosions, ulcerations, alopecia, exudation, and thick adherent crusts. Lesions are frequently pruritic and painful. Secondary infection by bacteria, yeast and dermatophytes is common.

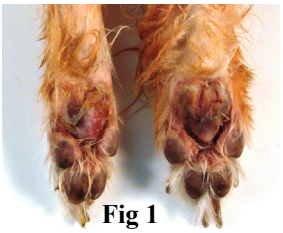
Fig 1

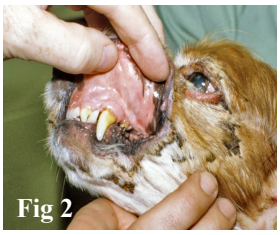
Fig 2

Clinical differential diagnoses include bacterial mucocutaneous pyoderma, pemphigus foliaceus, erythema multiforme, systemic lupus erythematosus, zinc-responsive dermatosis, vitamin A-responsive dermatosis, generic dog food dermatosis, toxic epidermal necrolysis, and drug eruptions.

Initial diagnostics tests should include skin surface cytology, complete blood count, biochemical profile, and skin biopsy. Abnormalities in serum chemistry profile and CBC usually include increase in alkaline phosphatase, moderate increases in ALT and AST, hyperglycemia, decreased plasma amino acids, hypoalbuminemia, increased bile acids and normocytic, normochromic anemia. Many dogs have concurrent diabetes mellitus and/or hyperadrenocorticism (Cushing's).

On histopathology, the characteristic microscopic lesion consists of parakeratotic hyperkeratosis and crusting of the skin surface, intercellular and intracellular edema with necrosis and clefting in the spinous layer of the epidermis, and hyperplasia of the epidermal basal cell layer which results in what pathologists refer to as the "red, white, and blue" lesion. **(Fig 3)** The ideal biopsy site is from areas of erythematous plaques with adherent crust, taking care not to disturb the crust. Because the diagnostic lesions are epidermal, ulcerated areas will be non-diagnostic and should be avoided. **Multiple skin biopsies from several affected areas are essential. It is common to find the characteristic lesions in only one of several biopsies submitted.** In older lesions, the typical pattern may not be present, which may result in misdiagnosis or failure to diagnose the condition. General anesthesia will most likely be required to biopsy these sensitive areas, and it is always more expedient to take several biopsies during the first procedure and get a definitive diagnosis than to have to repeat the biopsy procedure because the first biopsy was non-diagnostic. If superficial necrolytic dermatitis is diagnosed or suggested by the pathologist, hepatic and pancreatic ultrasonography is indicated to determine if there is evidence of liver disease, or liver or pancreatic masses.

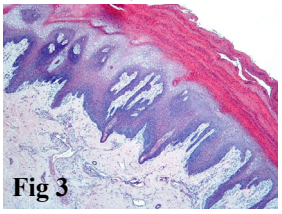
Fig 3

With the hepatocutaneous syndrome (HS) form of superficial necrolytic dermatitis the hepatic ultrasound generally shows a characteristic "Swiss cheese" or "honeycomb" pattern (Fig 4) that some feel is pathognomonic for the syndrome. When liver disease is suspected, biopsy is indicated to determine the type and severity of disease. Multifocal vacuolar hepatopathy is the histologic lesion responsible for the ultrasonographic appearance of the liver in Fig 4.In dogs with chronic idiopathic hepatocellular collapse as the cause for their liver dysfunction, the liver ultrasonigraphically has a nodular appearance with variable sized hypoechoic regions of regeneration surrounded by an echogenic borders. In these cases the gross appearance of the liver is of micro and macronodular cirrhosis and histologically is characterized by variably sized areas of nodular regeneration surrounded by tracts of fibrosis.

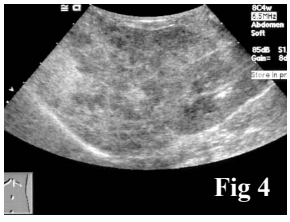
Fig 4

In cases involving the glucagon secreting tumors of the pancreas, the ultrasound findings are less consistent. The pancreas and liver maybe normal or a mass may be identified in one or both organs. If a glucagonoma is suspected and ultrasonography is normal, a glucagon assay should be performed. Plasma glucagon levels are characteristically 5-10 times above the normal range.

The prognosis with any form of Superficial Necrolytic Dermatitis is poor to grave. Treatment is symptomatic and oriented around vitamin and mineral supplementation, high protein diet and amino acid supplementation. If secondary infections exist they need to be treated appropriately and if the patient has concurrent diabetes mellitus that must also be controlled. The reader is referred to current texts of veterinary therapeutics for specific treatment recommendations.

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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We're on the web!
www.ksvdl.org

Continuing Education

February 25, 2012

Veterinary Technician Conference

April 29, 2012

Frank W. Jordan Seminar – "The Science Behind Alternative Medicine in Animal Health"

June 4-6, 2012

74th Annual Conference for Veterinarians & KVMA Trade Show

Test Results & Schedules

Laboratory 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:

January 16, 2012

May 28, 2012

July 4, 2012

September 3, 2012

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