Vesicular Stomatitis (VS) UPDATE

By Dr. Gregg A. Hanzlicek

Over the last few years there have been multiple Vesicular stomatitis (VS) cases in Arizona, Colorado, New Mexico, Texas, and Utah. A 2014 Colorado VS outbreak resulted in 556 livestock investigations and 370 facility quarantines. More recently, on July 2, 2015, two horses tested positive for VS in Colorado.

The VS virus can infect multiple species. The primary species include cattle, horses, pigs, but rarely include sheep, goats, and camelids. The virus is believed to be spread primarily through insect vectors such as black flies, sandflies, and mosquitoes, but the virus can also be transmitted through contact with VS lesion secretions. The transmission of virus is thought to occur only for a very brief period of time after clinical signs are observed.

The incubation period is estimated to be between two to eight days, and the classical clinical signs include vesicles, ulcers and sloughing of the skin on the muzzle, tongue, teats and the coronary band (Figures 1 and 2). Typically, the initial observation reported by an animal owner includes anorexic and/or lame animals, and not the observation of vesicles or ulcers.

One of the most important things to remember about VS is that it presents clinically very similar to Foot-and-Mouth Disease (in cattle, horses and pigs), Swine Vesicular Disease and Vesicular Exanthema of swine. KSVDL strongly recommends veterinarians call their local APHIS/veterinary services veterinarian to examine any animal presenting oral or extremity vesicles or ulcers. In all states, VS is a reportable disease regardless of the species of animal involved.

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Although often clinically over-diagnosed, the typical dermatophyte infection is still a fairly common skin disease seen in dogs. A less common nodular form of dermatophyte infection is a fungal kerion. Because the fungal kerion has a non-typical dermatophyte infection appearance, the precise diagnosis is often elusive and easily missed.

Infection is usually caused by M. gyseum or T. mentagrophytes. The dermatophytes are located deep within the dermis and may be few in number, so routine diagnostic tests such as a Wood’s lamp examination, microscopic examination of hair shafts for fungal elements, and fungal culture often yield negative results. The presence of secondary bacterial infection (Staph. sp) may complicate the diagnostic findings.

Grossly a fungal kerion is a firm to boggy, well–circumscribed, raised, focal or multifocal cutaneous nodule (Figure 1). Occasionally the lesion is exudative and may have draining tracts. Fungal kerions can occur anywhere on the body, but most commonly are localized on the face, pinnae, paws and/or tail. Depending on the lesion appearance, location, and number of kerion(s) involved; a fungal kerion can mimic bacterial furunculosis, demodex, histocytoma or other cutaneous neoplasia, or even auto-immune disease.

**Biopsy DX**

Because these lesions typically present as a single cutaneous mass, neoplasia is suspected and they are frequently surgically excised and submitted for histopathologic examination. Histologically the lesion is characterized as a nest of ruptured hair follicles replaced by suppurative to pyogranulomatous inflammation sometimes with eosinophils oriented around hair fragments that contain fungal hyphae and are surrounded by fungal spores (Figures 2 and 3).

With a single and uncomplicated kerion, the use of a topical “antifungal” agent may be sufficient therapy. However complicated and multiple lesions are best managed with both topical and systemic “imidazole” medication. The secondary bacterial infections should also be managed. Even with appropriate treatment strategies, it may take four – eight weeks for the lesion to resolve. Rarely the infected hair follicles are sufficiently damaged and never re-grow.
Canine and Feline Core Vaccine Titer Screening

**Rabies Titer Test**

The Micro Rabies Screen (MRS) test is a serum neutralization assay based on the RFFIT. Since The MRS test measures rabies virus neutralizing antibody (RVNA) titers, it can be used as a rapid screening for evaluating the need for rabies boosters.

A review of rabies challenge studies indicates there is a positive correlation between rabies virus neutralizing antibody (RVNA) titers and the level of protection after virus challenge. Pre-exposure vaccination coupled with a RVNA titer at or above 0.5 IU/mL indicates greater assurance of protection than does current vaccination status.

Using the MRS test results:

- If the RVNA value is >0.5 IU/mL, KSVDL does not recommend a rabies booster, but to recheck in one year.

**Other Core Vaccine Serologic Tests**

The current trend is to carefully assess each patient’s disease risk to determine if vaccine(s) are necessary and if so, which vaccine(s) would be appropriate. The use of serological titers can be a valuable tool in making those vaccine decisions especially in animals with histories of a previous vaccine reaction; those individuals prone to allergic reactions; in those specific cases where concerns of “over vaccinations” persist.

**CANINE:** There is an excellent correlation between a “positive” titer and protection against viral challenge with canine distemper virus (CDV); canine adenovirus (CAV); and canine parvovirus2 (CPV), and rabies (RV).

- CDV: SN > 1:32
- CAV: SN > 1:32
- CPV2: HI > 1:80

**FELINE:** In cats there is an excellent correlation between a “positive” titer and protection against challenge with the feline panleukopenia virus (FPL) and rabies virus (RV) but only a good correlation with feline herpesvirus (FHV1) and feline calicivirus (FCV) protection.

- FPL: HI > 1:16
- FCV: SN > 1:16
- FHV1: SN > 1:16

For more information on these test options, please contact KSVDL Client Care at clientcare@vet.k-state.edu or 866-884-3867.

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**Diagnostic Disease Trends Maps for Kansas**

KSVDL has added a new web page that contains maps of Kansas indicating those counties where positive diagnostic submissions have originated.

**Disease trend maps include:**

- Anaplasmosis
- Canine Brucellosis
- Canine Leptospirosis
- Johne’s
- Rabies
- Rocky Mountain spotted fever
- Trichomoniasis
- Tularemia

To view these maps, visit ksvdl.org and click on the icon below:
KSVDL Outreach Activities

• Dr. Ben Hause gave a talk at the Symposium of Computational Resources for Swine Viral Diseases at the USDA-National Centers for Animal Health titled, “PRRSV genome diversity (there’s a lot more going on besides the GP5).”

• Dr. Kelli Almes attended the 2015 Emergency Conference on One Medicine One Science, Avian Influenza, Minneapolis, Minnesota.


• Dr. Dick Hesse gave the keynote presentation (“Identification of Emerging Swine Viruses & What to do with Them”) at the 8th Symposium of the Swine and Poultry Infectious Diseases Research Center (CRIPA) at the University of Montreal, College of Veterinary Medicine, Saint Hyacinthe, Quebec.

• Drs. Dick Hesse and Gary Anderson attended the World Association of Veterinary Laboratory Diagnosticians in Saskatoon, Saskatchewan. Dr. Hesse was a plenary speaker (“Emerging Swine Enteric Coronaviruses in North America”) and Dr. Anderson was a moderator and attended the executive meeting.

• Drs. Kelli Almes, Jamie Henningson, and Jerome Nietfeld presented case reports during the 76th Annual Conference for Veterinarians, Manhattan, Kansas.

• Dr. Gregg Hanzlicek, with assistance from veterinary student Heidi Yonkey completed Johne’s risk assessments on four western Kansas and Nebraska dairies.

• KSVDL sponsored Pioneering Partnerships with NBAF, Manhattan, Kansas.

• Drs. Bill Fortney and Gregg Hanzlicek made presentations at the SE KVMA, Cherryvale, Kansas.

• Drs. Gary Anderson and Gregg Hanzlicek attended the Western States Livestock Health Association meeting, Denver, Colorado.
New videos from the KSVDL

We have posted new videos on the KSVDL YouTube® channel covering the following topics:

- Collection and Submission of Swabs
  https://www.youtube.com/watch?v=ZGdwHnub-4l
- Bovine Nitrate Sample Collection
  https://www.youtube.com/watch?v=ysn-n-oZ0Yo
- Bovine Rabies Sample Collection
  https://www.youtube.com/watch?v=01gXa8KkuPA

Continuing Education Videos

Listed are the presentations from the Continuing Education Conference KSVDL held in November, which may be viewed at no charge. Presentations address the new antibiotic regulations facing practicing veterinarians.

- Antibiotic Stewardship: What does that really mean?
- Increasing Antimicrobial Resistance – Implications for the Veterinary Practitioners in Germany and other European countries, Part 1
- Increasing Antimicrobial Resistance – Implications for the Veterinary Practitioners in Germany and other European countries, Part 2

These videos, and more, can be found at: http://www.ksvdl.org/resources/

Canine Influenza

**Canine Respiratory Panel:** A PCR panel that tests for many of the common causes of canine respiratory disease, including Influenza A, Mycoplasma spp., Bordetella bronchiseptica, Canine Adenovirus-2, Canine Herpesvirus-1, Canine Distemper virus, Canine Parainfluenza virus-3, Canine Respiratory Coronavirus and Canine Coronavirus.

**Universal Canine Influenza A Panel:** This PCR panel tests for all Influenza A subtypes including the older canine H3N8 strain and the new H3N2 strain. However, to identify the subtype of the influenza virus identified in the sample, influenza gene sequencing could be completed: see below.

**Canine Influenza Gene Sequencing:** Sequencing can be requested on samples that are PCR positive for the Universal Influenza Panel. Sequencing will differentiate between the previously common H3N8 and the new H3N2 subtypes. It will also subtype any new or emerging subtypes.

Dairy Metabolic Profile

KSVDL now offers a panel of tests to assess transition cow health and management programs.

The panel includes: calcium, phosphorus, magnesium, NEFA and BHBA. The appropriate sample is serum submitted in a red-top tube (serum separator tubes are not recommended).

**Available Testing Options**

For more information on these test options, please contact KSVDL Client Care at clientcare@vet.k-state.edu or 866-884-3867.
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.k-state.edu/education/continuing/

August 28-31, 2015
Central Veterinary Conference (CVC)
Kansas City
Kansas City, Missouri
http://www.thecvc.com/register-now-to-attend-cvc-kc/

September 17-19, 2015
American Association of Bovine Practitioners Annual Conference
New Orleans, Louisiana
http://www.aabp.org/meeting/

For more information call the Continuing Education Office at 785-532-4528.

Test Results and Schedules
Laboratory results available online, all the time!

Holiday Schedule:
Labor Day: Closed Monday, September 7
Thanksgiving: Closed, Thursday, November 26 and Friday, November 27; Open Saturday, November 28
Christmas: Closed: Friday, December 25; Open Saturday, December 26

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