Diagnostic Insights

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KANSAS STATE VETERINARY DIAGNOSTIC LABORATORY

Accredited by the American Association of Veterinary Laboratory Diagnosticians ***September, 2012***

What is Immunohistochemistry?

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.

So, what is it and what is it used for? Immunohistochemistry refers to the process of detecting antigens or proteins in cells of a tissue section through the use of specific antibodies directed at the cell antigen. It is a widely used method by pathologists in diagnostics in both human and veterinary medicine and research.

Immunohistochemistry can identify infectious agents in a lesion, aid in the identification of cellular origin of a neoplasm, or aid in prognosis determination of a malignant neoplasm in a tissue section. A common diagnostic use is to determine the origin of lymphoma.

On routine histology, pathologists can diagnose lymphoma, but prognosis and treatment options require determination of B cell or T cell origin. We can use antibodies detected against B cells or T cells to identify if the lymphoma is of B cell or T cell origin. *(Figure 1)* In cases when neoplasms are anaplastic and the origin of the neoplasm cannot be determined on routine histology, immunohistochemistry using a panel of antibodies is often beneficial.

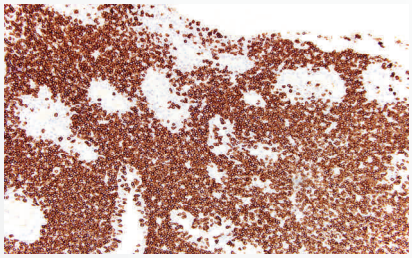

Figure 1. Feline, small intestine, CD3 IHC. Demonstrates neoplastic lymphocytes (brown areas) are of T cell origin.

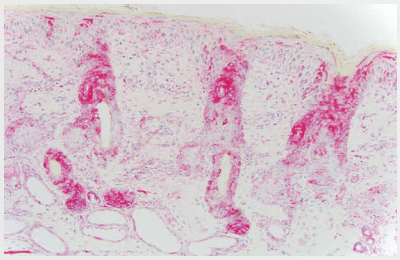

Figure 2. Bovine, ear notch, BVDV IHC. This animal has strong positive reactivity for BVDV (red coloring).

A common use in our production animal IHC testing is the identification of Bovine Viral Diarrhea Virus in ear notches for screening of persistently infected animals. *(Figure 2)*

We offer a range of antibodies for immunohistochemistry at the Kansas State Veterinary Diagnostic Laboratory for infectious agents, neoplasm identification, and prognosis.

We are expanding our offerings in this area of diagnostic testing. We also welcome researchers and would be happy to meet with you to discuss your specific project and how we may be able to help you.

If you have any questions or think there is an immunohistochemical test that you and your clients would benefit from, please let us know!

Please do not hesitate to contact Dr. Henningson at: heningsn@vet.k-state.edu or 785-532-5650.

We're on the web @

www.ksvdl.org

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Coggins Turnaround Times

Please help us assure short turnaround times on Coggins submissions!!

For the KSVDL to report Coggins test results, the USDA/AHPIS is requiring that **all fields/boxes** in the official form (VS Form 10-11) be completely filled out.

In some cases, the KSVDL is allowed to contact the submitting veterinarian by telephone to complete some of the incomplete fields, such as breed, accreditation number, etc.

Other incompletions, specifically veterinary signatures and blood draw dates, will require the KSVDL to send the form back to veterinarian for completion and resubmittal.

Whether we contact the veterinarian to complete the form or return the form for the veterinarian to complete, these processes will delay reporting the test results.

Additionally, in Field #5, the USDA would prefer you enter your 6-digit accreditation number and NOT your 4-digit veterinary license number.

Thanks for your cooperation!!

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

When: February 9th, 2013

Where: Frick Auditorium, KSU-CVM

This year's keynote speaker will be Dr. Rob Callan from the Colorado State University College of Veterinary Medicine discussing **bovine Clostridial disease,** including diagnostics, prevention, and treatment.

Dr. Shelie Laflin, KSU-CVM will be presenting the latest on reproductive ultrasound in both bovine and small ruminants, and KSVDL veterinarians will present recent bovine pathology case studies.

Keep checking the web site **(www.ksvdl.org)** and **(www.vet.k-state.edu/CE/index.htm)** for more information.
We will post more conference information as it becomes available.

KSVDL Specializations

Director
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Bacteriology
Dr. Brian Lubbers
785-532-4012

Companion Animal Outreach
Dr. Bill Fortney
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Clinical Pathology
Dr. Lisa Pohlman
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Comparative Hematology
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Field Investigations
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Histopathology
Dr. Brad DeBey
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Immunology
Dr. Melinda Wilkerson
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Molecular Diagnostics
Dr. Richard Oberst
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Parasitology
Dr. Patricia Payne
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Rabies
Dr. Cathleen Hanlon
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Serology
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Virology
Dr. Richard Hesse
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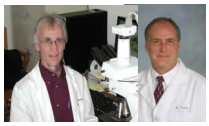
The Diagnosis of Fungal Kerion in Dogs

Dr. Gordon Andrews and Dr. Bill Fortney



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 *Microsporum gyseum* or *Trichophyton 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 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 4 – 8 weeks for the lesion to resolve. Rarely, the infected hair follicles are sufficiently damaged and never re-grow.

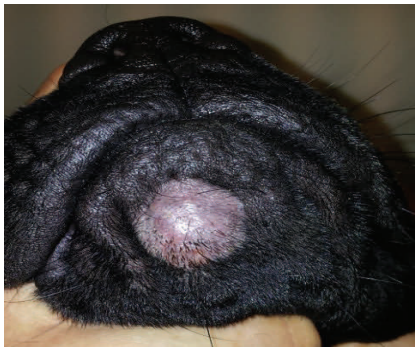


Figure 1.
Gross photo of a raised hairless cutaneous nodule on the chin of a dog diagnosed as a fungal kerion.

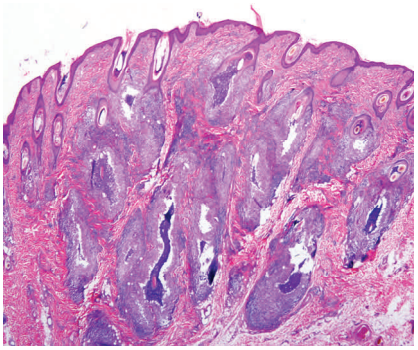


Figure 2.
Low magnification photomicrograph showing multifocal areas of pyogranulomatous inflammation oriented around and replacing hair follicles. H&E stain

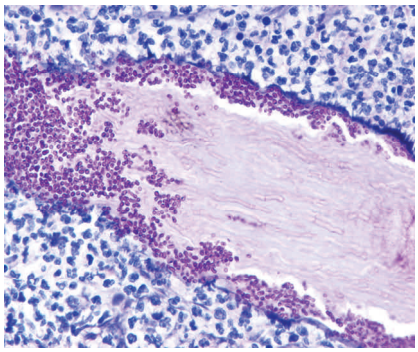


Figure 3.
High magnification photomicrograph showing a hair shaft with dermatophyte hyphae within the hair shaft and fungal spores surrounding the hair. The hair shaft is surrounded by neutrophils and macrophages. PAS stain

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

A Case of Mistaken Identity

Dr. Kelli Almes

Feline gastrointestinal lymphoma is becoming a more common diagnosis in our patients for multiple reasons, a few being that the gastrointestinal tract contains abundant lymphoid tissue and is constantly immunologically stimulated. The majority of these lymphomas are of mucosal T cell origin and most of those are characterized as epitheliotropic with neoplastic lymphocytes located in the villous and/or crypt epithelium.

A recent case presented to the KSVDL was an intestinal resection/biopsy from a 10 year old domestic short hair feline with a history of weight loss, anorexia, and suspected abdominal mass believed to be an abscess.

A fine needle aspirate performed on a mesenteric lymph node revealed abundant neutrophilic inflammation. Culture and sensitivity was performed on abdominal fluid. Following those diagnostics, an abdominal exploratory was performed and a biopsy was obtained from the jejunum which included an adjacent mesenteric mass, all of which were believed to be an abscess.

Multiple sections were examined via histopathology and revealed that the small intestine and mesenteric lymph node contained neoplastic lymphocytes in addition to suppurative inflammation. (Figure 1) The inflammation was believed to be the result of leakage of intestinal contents from an area of neoplasia within the small intestine.

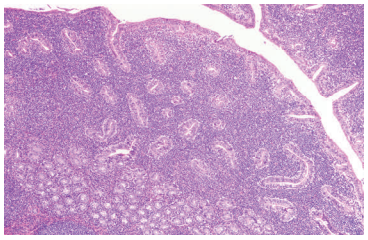


Figure 1. Neoplastic lymphocytes in feline small intestine and mesenteric lymph node.

Immunohistochemical stains were completed to determine whether this was a B or T cell lymphoma, a vital distinction for prognosis and treatment. (See included article "What is immunohistochemistry" for additional information and the CD3 positive IHC stain from this biopsy.)

This case exemplifies the need for multiple diagnostic modalities to complete the clinical picture for our patients. Diagnosing the neoplasia along with the determination of T cell lineage greatly aided in the treatment of this animal.

KSVDL Outreach Activities

KSVDL had a booth, which Dr. Fortney manned, at the Southwestern Veterinary Conference in Dallas Texas. He reports he met a lot of KSVDL clients, KSU-CVM alumni, and many veterinarians interested in KSVDL services.

Dr. Lubbers recently conducted a field investigation concerned with dairy-goat milk quality issues.

Drs. Fortney, Lubbers, and Hanzlicek will be presenting small animal and bovine diagnostic information at several KVMA District meetings in October and November. Contact your KVMA trustee for time and place!

The KSVDL will have a booth at the KVMA Fall Conference at KSU-CVM on November 10th.
Stop by the booth for the latest information on new tests and services.

Several KSVDL veterinarians will be presenting at the KVMA Fall Conference on November 10th.

KSVDL's 2nd Annual Conference on Animal Diagnostics and Field Applications: Food Animal Medicine is scheduled for February 9th at KSU-CVM. See page 2 of this newsletter for more information.

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!
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Continuing Education

KVMA Fall Conference: November 10, 2012

Inaugural Kansas Horse Council Equine Clinic: Horse Care 101: November 17, 2012

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

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

Lab Schedule: 2012

KSVDL will be closed on the following days:

November 12

November 22, 23

December 24, 25

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