MANITOBA AGRICULTURE, ANIMAL HEALTH & WELFARE BRANCH

Veterinary Diagnostic Services Lab Notes

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An emerging threat? Blastomycosis in cats

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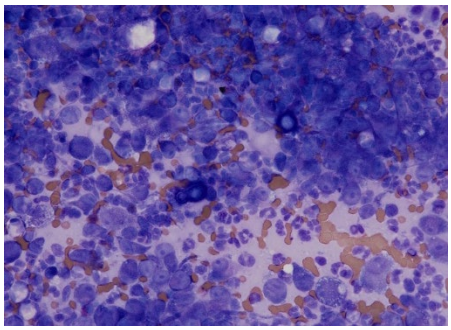
Blastomycosis signalment is well-documented in literature, with most suspected or confirmed cases of blastomycosis reported in dogs. Blastomycosis is seldom reported in cats and case studies are few and comprised of low numbers of cats, even in regions with endemic blastomycosis; as a result, the infectious agent is seldom on a differential list. A 2013 review published in the Canadian Veterinary Journal indicated of 143 cases of blastomycosis seen from 1990-2011 originating from Saskatchewan and Manitoba, only 6 were from feline patients (mean age 4 y). However, since March, 3 cases of presumptive feline blastomycosis have been diagnosed based on cytology at VDS, whereas no cases were diagnosed on cytology in the prior few years.

Blastomycosis is a systemic mycotic infection caused by the dimorphic fungus *B dermatitidis* and the indistinguishable *B gilchristii.* It is a thick-walled fungus, 8–12 µm in diameter, without a capsule. Most cases are acquired by inhalation of the spores from the environment. It has been found in both indoor and outdoor cats. Cats can present with acute or chronic respiratory signs, ulcerated or solitary skin masses, chorioretinitis and seizures as well as non- specific signs like fever, lethargy, anorexia, and weight loss. Hematology values are non-specific and indicative of an inflammatory process.



Note the broad based budding on the Wright's stain, 40x

The three feline cases diagnosed at VDS were aged 5 to 9 years; 2 female and 1 male, all neutered. All cats were from the Winnipeg area; one a farm cat, the others indoor/outdoor suburban cats. One cat presented with a history of being diagnosed with asthma 3 months prior, follow-up radiographs determined a lung mass was present, which was aspirated. One cat had weight loss, anorexia, and multiple skin lesions of 2 weeks duration. Skin lesions were aspirated. The third cat had a month history of limping, which resolved and then subsequently presented with lethargy, a swollen front foot and a periocular skin lesion. The foot swelling was aspirated.

All cases had similar cytology smears comprised of pyogranulomatous inflammation (degenerate neutrophils, macrophages, histiocytes, occasional plasma cells and eosinophils) with background hemorrhage and necrotic debris. Variable numbers of large, doubled walled, deeply basophilic fungal elements, often with broad based budding and without a capsule (distinguishing features) were present on all smears.

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Holiday Closures

VDS will be closed on the following days:

- National Day for Truth and Reconciliation– Monday, October 2, 2023
- Thanksgiving Monday – October 9, 2023
- Remembrance Day – November 13, 2023

VDS Team

Dr. Scott Zaari – Chief Veterinary Officer

Dr. Md Niaz Rahim – Molecular Biologist

Dr. Neil Pople – Anatomic Pathologist/ Veterinary Microbiologist

Dr. Marek Tomczyk – Anatomic Pathologist

Dr. Brenda Bryan – Anatomic Pathologist

Dr. Vasyl Shpyrka – Anatomic Pathologist

Dr. Karlyn Bland – Clinical Pathologist

Shannon Korosec – Supervisor, Microbiology

Tracy Scammell-LaFleur – Supervisor, Virology

Rhonda Gregoire – Supervisor, Clinical Pathology

Agnieszka Gigiel – Supervisor, Accessioning

Genedine Quisumbing – Quality Assurance Officer

Sharon Niebel – SAP/Revenue Clerk

Lindsay McDonald Dickson – SAP Clerk

Barb Bednarski – Client Services Coordinator/Reception

Manitoba

Blastomycosis in Cats Continued

Diagnosis by visualization of the organism through histopathology, culture, or cytology is the gold standard, but culture can present a danger to laboratory personal and is not typically performed. While the urine antigen test is well documented in dogs, research is still needed to determine the sensitivity and specificity of the urine antigen immunoassay in cats, as the number of organisms may impact antigen development. Information on long-term outcomes for cats with blastomycosis treated with itraconazole, fluconazole, or amphotericin B is lacking, as many of the cases described were prior to current use, but outcome is poor without treatment.

Whether these cases represent a trend to increasing incidence of *B dermatitidis*, or are due to increased sampling is unclear. Cats still represent a fraction of cases seen in dogs in Manitoba, but *B dermatitidis* should become a differential for cases without resolution of clinical signs.

References:
1. Davies et al, Prevalence and geographic distribution of canine and feline blastomycosis in the Canadian prairies. Can Vet J, 2013; 54:753–760. Open access https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3711163/
2. Hecht et al, Case report: MRI findings with CNS blastomycosis in three domestic cats. Front. Vet. Sci., 16 August 2022. Open access https://www.frontiersin.org/articles/10.3389/fvets.2022.966853/full#B2
3. Lloret et al, Rare systemic mycoses in cats: blastomycosis, histoplasmosis and coccidioidomycosis. ABCD guidelines on prevention and management. Journal of Feline Medicine and Surgery, 2013; 15: 624–627. Open access https://journals.sagepub.com/doi/10.1177/1098612X13489226
4. Morris et al, Ocular findings in cats with blastomycosis: 19 cases (1978–2019). JAVMA, 2022; 260: 422- 427. https://doi.org/10.2460/javma.21.03.0135

ISO/IEC 17025 Accreditation Update

After going through the challenges of preparing the necessary documentation for ISO/IEC 17025 accreditation, an initial assessment for the Veterinary Diagnostic Services (VDS) was conducted on May 9 and 10, 2023, by the Standard Council of Canada (SCC) lead assessor, Canadian Food Inspection Agency (CFIA) technical assessor, and an observer. This assessment was carried out in full compliance with the ISO/IEC 17025:2017 accreditation for testing and calibration laboratories. The in-depth audit focused on the laboratory management requirements, with a primary emphasis on the operation and effectiveness of the quality management system. Additionally, the technical requirements at the microbiology laboratory were extensively reviewed, specifically for the Isolation and Identification of Salmonella from Poultry and Environmental Samples and Brucellosis-BPAT Approved Laboratory Operating Procedure and Test Protocol. After the comprehensive assessment, the SCC provided the Findings Report and collective efforts are currently underway to address the non-conformances. The team is diligently working on providing a corrective action plan which includes supporting documents and evidence ensuring adherence to standards.

Following the submission of the corrective action plan evidence, the SCC will review the supporting documents and an accreditation decision will be made based on the satisfactory completion of the corrective actions.

Benefits of an ISO 17025 Accreditation:

- **International recognition**: The globally recognized accreditation certificate validates the performance of the laboratory for customers and stakeholders. This recognition elevates the laboratory reputation on an international level, instilling confidence in the quality of the services. Accreditation opens doors to collaborations and partnerships on a global scale, facilitating the acceptance of test results across borders.
- **Technical competency**: ISO/IEC 17025 accreditation signifies that the laboratory adheres to the highest standards of measurement, traceability and calibrations. It demonstrates the technical competency of the laboratory staff in delivering accurate and valid results, which reinforces trust in the laboratory's capabilities and strengthens relationships with clients.
- **Increased lab efficiency**: ISO/IEC 17025 accreditation is a great way for testing laboratories to enhance operational efficiency and productivity. It evaluates staff procedures, testing methods, and laboratory equipment to ensure the lab is equipped to produce precise and reliable results. Reducing measurement uncertainties and errors is crucial for the success of a testing or calibration laboratory.

Bella is a 13 year old golden retriever, shown above with her best buddy Dr. Brenda Bryan. Bella loves coming to the office. She adores all of the attention and making people smile at work.

We love sharing photos!

We encourage VDS clients and Animal Health & Welfare staff to send any great animal photos or Manitoba moments our way to share with the veterinary community.

Photos can be sent to chiefveterinaryoffice@gov.mb.ca with the subject "VDS Lab Notes Pet Photos".

Training on Measurement Uncertainty

In July 2023, the management team arranged a comprehensive training session on measurement uncertainty (MU) with Jane Weitzel, an expert with over 30 years of experience in the field. Jane Weitzel has provided training for several prestigious organizations, including the U.S. Food and Drug Administration, the Centers for Disease Control and Prevention, and the CFIA, adding significant value to the workshop.

The training workshop was specifically designed for the core technical team. The primary objective of the training was to familiarize participants with the ISO/IEC 17025 measurement uncertainty requirements and provide the team with the necessary skills to evaluate uncertainty components effectively. Furthermore, the workshop offered information on how to estimate and evaluate measurement uncertainty, including practical application of methodologies for calculating uncertainty budgets by using examples. By participating in this training, the core technical team enhanced their expertise and proficiency in measurement uncertainty evaluation, aligning the laboratory's practices with the standards required by ISO/IEC 17025:2017.

VDS' New Chief Scientific Officer: Dr. Md Niaz Rahim

The AHW branch would like to congratulate Dr. Rahim on the progression of his role within the laboratory from Molecular Biologist to Chief Scientific Officer of VDS. He completed his MSc in Microbiology, Ph.D. in Virology, and postdoctoral fellowship in vaccine and antiviral research in the special pathogens group, National Microbiology Laboratory, Public Health Agency of Canada. The evolution of his Chief Scientist position acknowledges the advanced expertise and extensive research and development experience in the fields of virology, molecular biology, microbiology, and immunology in federal and provincial laboratories and academia. He is also appointed as an adjunct professor in the Department of Medical Microbiology and Infectious Diseases at the University of Manitoba. His publications include over twenty research papers in high-impact journals, including Cell Host & Microbe, Nature Communications, PLoS Pathogens, Journal of Virology, and the Journal of Infectious Diseases. The VDS is eager for his skills and experience to be applied in future projects, including Foreign Animal Disease (FAD) testing and research and development activities in other laboratory sections. His leadership and ongoing contributions to VDS and animal health are greatly appreciated!

VDS STEP Student: Riley Lapka

This summer, VDS was fortunate to hire second year veterinary student, Riley Lapka, through the STEP student employment program. This employment opportunity allowed Riley to take part in interesting diagnostic cases including a fox which tested positive for avian influenza and a pig containing a mystery foreign body in its thoracic cavity. She appreciated conducting a moose necropsy on her own and participating in the southern Manitoba goose banding project, an avian influenza surveillance program. Riley gained confidence at conducting necropsies and collecting diagnostic samples, noting that she conducted enough avian necropsies to do them in her sleep.

Her summer experience allowed her to apply the veterinary knowledge from the Western College of Veterinary Medicine and expand her knowledge of the diagnostic process through interpreting case histories and diagnostic findings to reach a diagnosis. One of the most unexpected aspects of her time in the laboratory included the quantity of wildlife cases submitted to VDS. She noted that the wildlife pathology and surveillance work demonstrated the interconnectedness of animal and human health.

Riley noted that the mentorship she experienced was extremely valuable and it reinforced her focus on seeking strong mentorship in future employment. Her exposure to the various lab sections at VDS also allowed her to develop an interest in clinical pathology, with her hopes to pursue a dual specialty, clinical and anatomical pathology, in the future. Riley thanks the students, technologists, and pathologists that took her under their wing this summer!

Happy Autumn!

Did You Know?

Manitoba has the second youngest population of farm operators in Canada with an average age of 54.6. (source)

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