



Animal Health Perspectives

Interesting Times

By: Betty Althouse, Chief Veterinary Officer, Saskatchewan Ministry of Agriculture

As I write my commentary we are in the midst of COVID-19 restrictions: social distancing, working from home, determining essential services; how do we keep food plants and veterinary services operating and employees, and ourselves and our families, safe? It truly does help bring “perspective”.

By the time this is published, we should know if this great social and disease control experiment has been successful in stopping or at least slowing the spread of pandemic COVID-19.

These events have made myself, and others, reflect on the role of veterinary services in society and the critical nature of the food supply. It also makes me value relationships built in peace time that help in any emergency response.

Veterinary services, including diagnostic laboratories, are considered critically important services in Saskatchewan, as are animal shelters and animal protection services. This re-

flects the importance that animals play in our lives- not only in livestock and food production, but also the companion animals that serve as company and emotional supports.

The need for veterinary services to keep livestock healthy, productive and safe is obvious, especially to address emergency situations through the busy spring calving and lambing season. Recognizing the entire food supply as critical from production through slaughter and meat inspection through the transport, wholesale and retail supply chains to the consumer makes everyone more aware of where food comes from. Any disruption in supply chains, including the integration across borders, can impact the food supply which is critical to human survival. To date, the supply chains have been adaptive and responsive. Surges in buying have left some empty shelves, but they are rapidly re-filled.

Small animal veterinari-

ans continue to respond to emergency and emergent conditions to protect animal welfare. Some seemingly routine services like vaccinations to prevent parvovirus or distemper outbreaks remain important for animal health. The public health role played by veterinarians can be seen in continued support for rabies sample collection and submission. As tick season starts preventive treatments can protect health of both pets and people.

The public health importance of veterinarians is further emphasized as research and scientific reviews are carried out to determine the role played by animals, if any, in transmission of COVID-19. At the time of writing, the role is thought to be limited, but cannot be entirely ruled out. It appears a very small percentage of animals may become infected by their sick owners, but have recovered. The role of animals as carriers or fomites appears limited at this time.

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Still, animal tests and testing decisions are to be worked out. Research is underway at the National Centre for Animal Diseases to see if poultry and swine can be infected. And Vaccine and Infectious Disease Organization (VIDO) is working with the COVID-19 virus and ferrets, hoping to translate some of their successes in animal corona virus vaccine development to human health. We are living through unprecedented times that we, our children and grandchildren will remember, talk about and study. I hope it is a positive lesson and we all contribute to a successful outcome.

Update: Non-esterified fatty acids (NEFAs) and Beta Hydroxybutyrate (BHB) Testing

The PDS Clinical Pathology laboratory will no longer be offering testing for NEFAs and BHB as a ‘diagnostic test’. We are rarely asked to perform this testing and the cost and short half-life of the reagents are

prohibitive. If requested these samples will be sent to Animal Health Laboratory, University of Guelph.

We will still offer NEFAs and BHB testing for research projects where there will be

a larger number of samples for testing. The necessary reagents will be ordered to accommodate this request order for a research project. If you have any questions please contact: Shelley

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Extracutaneous (Oral) Mast Cell Tumor in a Cat

By: Steve Mills, Veterinary Pathologist, PDS

A 7 year-old, male neutered, domestic shorthair cat from Northern Alberta underwent routine general anesthesia for dental extraction, prophylaxis, and treatment for feline acne. Incidentally during oral examination, a small, pale, well-demarcated, circular, plaque-like lesion was observed on the sublingual surface (Figure 1). A punch biopsy was performed and submitted for histopathology.

Histologic examination of the punch biopsy revealed a monomorphic population of round cells focally infiltrating the superficial lingual mucosa (see Figure 2). Individual cells were round to polygonal with moderate amounts of uniform, pale grey, stippled cytoplasm and round to oval, centrally-placed nuclei with clumped chromatin and indistinct nucleoli. Cellular pleomorphism included occasional mild irregularity of the nuclear contour and binucleation. The histologic diagnosis was an extracutaneous (oral) mast cell tumor (MCT). The tumor cells stained positively with a Toluidine-blue stain (Figure 3), confirming the diagnosis.

Oral masses are frequently encountered in cats, and most are fundamentally hyperplastic or inflammatory in nature.¹ Bona-fide tumors that occur in the oral cavity are very often malignant, with squamous cell carcinoma comprising the overwhelming majority.² The presentation of oral lesions in cats can be strikingly similar, regardless of etiology, underscoring the importance of prompt cytological and/or histological evaluation. Oral MCTs, in particular, may closely resemble granulation tissue or eosinophilic granuloma,

Figure 1: Sublingual mass.

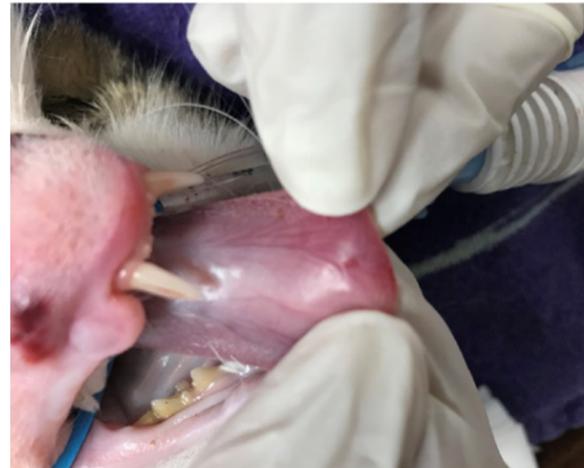


Figure 2: Monomorphic population of round cells with minimal cellular pleomorphism. (Hematoxylin and eosin stain, 200X)

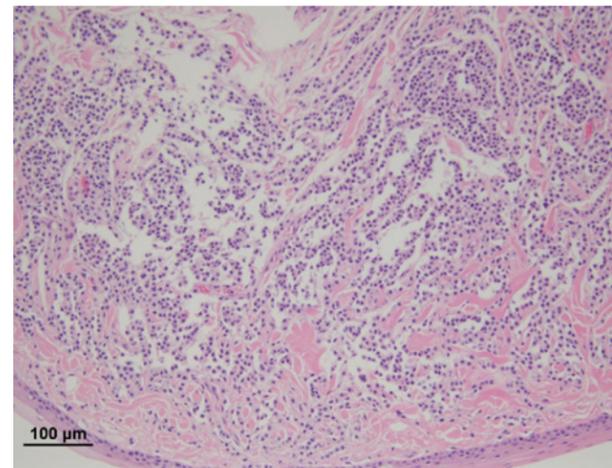
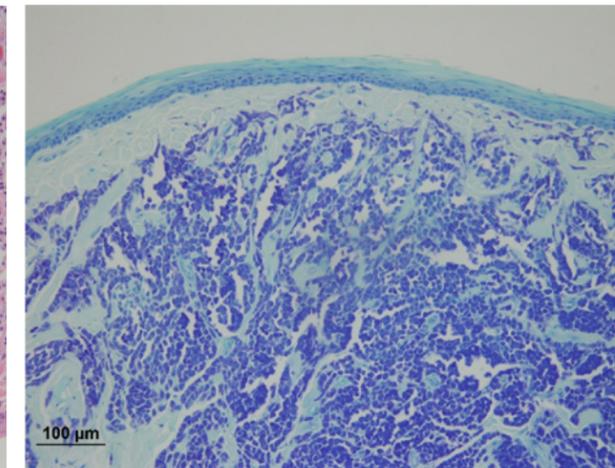


Figure 3: Positive staining with toluidine blue stain (200X)



even histologically.

Mast cell neoplasia is relatively common in cats, comprising approximately 20% of all cutaneous tumors and 15% of all feline neoplasms.^{3,4} It is most frequently encountered by primary practitioners in the form of solitary skin nodules, typically located on the head or neck. A large majority of solitary mast cell tumors arising in the skin are benign. The reported prevalence of more aggressive MCT's varies significantly, but up to 22% exhibit systemic disease post-excision and local recurrence rates can range up to 30% regardless of excision margins.^{3,5}

Tumors involving the spleen, liver, and intestine represent nearly half of mast cell disease in cats. Relative to cutaneous forms, these cases carry a poorer prognosis due to frequent metastasis and/or multi-centric disease. Visceral mast cell neoplasia is generally acknowledged to be distinct from cutaneous forms, although broad consensus on this dichotomy is lacking. Disseminated mast cell disease (so-called mastocytosis

or mastocytoma) or multiple cutaneous nodules are sometimes identified as separate entities entirely, confounding the picture. This is perhaps not surprising given the aggressive nature of this particular neoplasm and unavoidable variability in the stage of disease upon presentation, diagnostic workup, and treatment approach.

Oral mast cell tumors are a rare finding in cats. An older survey of 371 cats with oral neoplasia conducted over 10 years reported only 3 (0.8%) mast cell tumors.⁶ The lone case report available in the veterinary literature, describes the diagnosis and treatment of an infiltrative mast cell tumor identified on the sublingual surface in a 9 year-old, neutered male, domestic medium hair cat that presented with lethargy, anorexia, dysphagia, and submandibular lymphadenopathy. Rare mast cells were subsequently observed on submandibular lymph node cytology. A recent review article showcased a 9 year-old, spayed female, domestic shorthair with a mast cell tumor involving the

gingival and buccal mucosa. The patient was also reported to have widespread metastasis at presentation.⁵

All attempts to construct a robust histologic grading scheme for feline mast cell tumors have met with disappointment, and conventional immunohistochemical staining does not correlate with prognosis. Numerous studies however point to mitotic count as the most reliable prognostic factor, at least with respect to cutaneous mast cell tumors.⁴ Tumor diameter and atypical nuclear features on histological exam also retained prognostic significance in a recent retrospective survey.³ Currently, the presence of vascular invasion/emboli on histology of the 'primary' tumor or direct evidence of metastatic spread or disseminated disease remain the primary prognostic considerations in feline patients diagnosed with visceral (and presumably oral) mast cell disease.

When an oral mast cell tumor is suspected or confirmed, it should be considered aggressive. Systemic illness may

or may not be present, and is often non-specific. Approximately 30% of cats with mast cell disease are anemic, and eosinophilia is common.⁵ Collective degranulation of mast cells can cause significant secondary inflammation and variable clinical signs depending on tissue involvement. Appropriate staging may include evaluation of regional lymph nodes (ie. submandibular or pre-scapular), abdominal ultrasound, thoracic radiographs, CBC/Serum biochemistry panel/urinalysis, blood smear and buffy coat evaluation. The latter has been used successfully to diagnose or monitor disseminated mast cell disease in cats but should only be used as an adjunct. Mast cells can be observed in peripheral blood in a variety of clinical contexts, both reactive and neoplastic.

Prognosis in the present case is uncertain. The neoplastic mast cell population was well-differentiated and exhibited very minor cellular atypia. The excision margins were complete although considered narrow along the lateral

aspects. The patient remains asymptomatic for mast cell disease, and further workup has not been pursued.

References:

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2. Munday JS, Lohr CV, and M Kiupel. 2017. Tumors of the Alimentary Tract IN Mueten DJ (Ed.), *Tumor in Domestic Animals*, 5th Ed. (pp. 507). Ames, Iowa: Wiley Blackwell.
3. Sabattini S and G Bettini. 2019. Grading Cutaneous Mast Cell Tumors in Cats. *Veterinary Pathology* 56(1): 43-49.
4. Kiupel, M. 2017. Mast Cell Tumors IN Mueten DJ (Ed.), *Tumor in Domestic Animals*, 5th Ed. (pp. 195-199). Ames, Iowa: Wiley Blackwell.
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PDS Welcomes New CEO, Dr. Yanyun Huang

By: Wayne Lees, Chair, PDS Board of Directors

On behalf of the Board of Directors, I wish to announce that Dr. Yanyun Huang has been appointed as Chief Executive Officer of PDS. Yanyun had been serving as Interim CEO for the last number of months and the members of the Board present at its January 2020 meeting voted unanimously to appoint Yanyun as CEO, beginning February 1, 2020.

After first joining PDS in 2013 as an anatomic pathologist, Yanyun has consistently demonstrated dedication to continuous learning, excellence in service, and care for the well-being of his colleagues. The Board was especially im-

pressed by Yanyun's commitment to making PDS a vibrant, well run organization pursuing excellence in diagnostic services that support regional agricultural health certification and disease control programs. In a changing and challenging environment, Yanyun's commitment to continuous improvement will serve PDS well.

We wish Yanyun all the best in his new role and want to acknowledge the contribution of the previous Chair, Dr. Craig Dorin, and the previous CEO, Dr. Carl Johnson, who first recognized Yanyun's untapped potential.

Surveillance on *Coxiella burnetii* (Q Fever) in Saskatchewan

By: Wendy Wilkins, Disease Surveillance Veterinarian, Saskatchewan Ministry of Agriculture

Coxiellosis is a zoonotic bacterial infection that is mainly associated with ruminants. Infection in ruminants is usually subclinical but can cause infertility and sporadic abortion. The zoonotic infection in people associated with *Coxiella burnetii* is widely known as Q fever. Clinical signs in people are highly variable and range from influenza-like illness to pneumonia, hepatitis, and endocarditis. It has been known to cause miscarriage, stillbirth, and pre-term delivery in pregnant women. The greatest risk of transmission between animals, or between animals and people, occurs at parturition by inhalation, ingestion, or direct contact with birth fluids or placenta.

The prevalence of *C. burnetii* in ruminant populations in Saskatchewan is unknown. It is infrequently diagnosed as a cause of reproductive problems in livestock. Coxiellosis was named a provincially notifiable animal disease in 2014 and, from then until December 2019, there were only four laboratory confirmed livestock cases reported, two which resulted in clinical disease in humans. It is suspected that actual prevalence may be relatively high, given recent studies published in Ontario that found that 75 per cent of

sheep and goat farm workers and 59 per cent of small ruminant veterinarians and veterinary students tested were seropositive.

There were two incidents in 2019 where people were confirmed to have Q fever in Saskatchewan, resulting from exposure to aborting livestock or tissues collected from those animals; circumstances surrounding these cases resulted in a significant increase in requests for testing within both the human and animal health fields. Prairie Diagnostic Services (PDS) laboratory has since changed its protocols and now all submissions involving ruminant abortions are treated as Risk Level 3 to protect staff from possible infection.

The Ministry of Agriculture has provided funding to PDS to investigate the prevalence of *C. burnetii* in submissions involving ruminant abortions over the next year. Testing is being done on all ruminant submissions where placenta is included in the submission, and in cases without placental tissue if the pathologist believes testing is warranted. There have been two outbreaks of coxiellosis identified so far in 2020; one in February (goats) and one in March (sheep). Both cases involved

multiple late-term abortions, and in both cases other pathogens were also identified that may have been contributing factors in the abortions.

Information generated by this project will help fill the

knowledge gap around Q fever prevalence in Saskatchewan and help inform decisions regarding biosecurity and testing needs in both the animal and human health fields.

New Face at PDS



PDS is very pleased to welcome Dr. Sarah Wood to its roster of veterinary anatomic pathologists effective Mar 30th. Originally from Ebenezer, SK, Sarah is a second generation veterinarian. She obtained her DVM from the Western College of Veterinary

Medicine in 2012. After two years in private practice, she returned to WCVM to pursue graduate training in anatomic pathology in the Department of Veterinary Pathology and is close to completing her PhD. In her spare time, Sarah enjoys beekeeping.

READERS' FEEDBACK

The **Animal Health Perspectives** editorial team (Dr. Moira Kerr, Brian Zwaan and Kathryn Tonita) invite readers' comment on material published in the newsletter or questions on material submitted by contributors.

Submit your comments or concerns to Dr. Moira Kerr (email: moira.kerr@pds.usask.ca) and they will be forwarded appropriately.