

Malignant Catarrhal Fever in a Red Angus Cow



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History & Signalment



- Three year old Red Angus Cow
- Complaint: Blindness
- From 15 Red Angus Cow Herd
- Managed on Pasture
- Katahdin ewes and lambs housed in the barn on the farm property



- **Initial Physical Exam**
 - Temperature 39.8C
 - HR & RR: WNL
 - Harsh lung sounds
 - Significant bilateral corneal edema
 - Nasal ulceration & foul discharge
 - 5 months pregnant



- Corneal edema and nasal ulceration seen on initial physical exam

Differential Diagnosis



- **Infectious Bovine Rhinotracheitis**
 - Bovine Herpes Virus 1
- **Bovine Viral Diarrhea**
 - Bovine Viral Diarrhea Virus
- **Malignant Catarrhal Fever**
 - Ovine Herpes Virus 2

Initial Treatment & Follow up



- Oxytetracycline LA, 1mg/10kg BW SQ
- Free choice hay, grain and water
- Follow Up Visit
 - Temperature 39.6C
 - Respiratory noise had subsided, regular breathing pattern
 - Nasal ulceration resolved
 - Corneal edema persisted with episcleral & conjunctival hyperemia bilaterally
- Continued Oxytetracycline LA & added one dose of Predef (Isoflupredone) at 20mg/kg BW IM

One Week Later...



- Continual improvement in respiratory signs
- Absence of discharge or ulceration
- No improvement in regards to corneal edema, early signs of corneal ulceration
- At no time were there any coronary band or mucosal lesions detected

Laboratory Tests

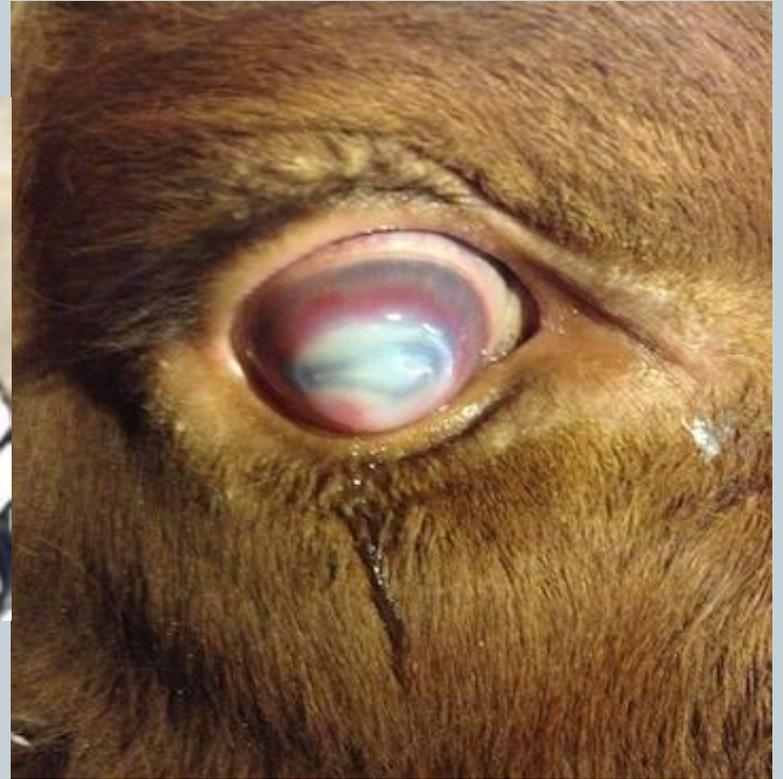


- Whole blood (EDTA) was collected for PCR to detect OvHV-2 DNA and sent to Prairie Diagnostic Services Inc. Saskatoon, SK
- Serum was submitted for virus neutralization for IBR
- Whole blood (EDTA) was submitted for PCR to screen for BVD
- The IBR and BVD tests were run at AHL, Guelph ON

Final Examination



- Three weeks post initial exam
- Temperature 39.5C
- RR was normal, however respiratory sounds had returned
- Corneal edema had progressed to granulation tissue centered on the eye and neovascularization of the cornea
- A slight menace was elicited however, vision was severely limited
- BCS decreased from 3/5 to 2/5



Results



- IBR and BVD: Negative
- MCF, OvHV-2: Positive
- The cow was humanely euthanized after the confirmation of MCF due to a guarded prognosis and non-improvement of ocular signs
- A necropsy was not performed

Discussion



- **OvHV-2 can cause sheep associated Malignant Catarrhal Fever (SA-MCF)**
 - Typically fatal to cattle and other ungulates
 - Transmission from direct or indirect contact with sheep
- **Alcelaphine herpesvirus 1 (AIHV-1) causes the wildebeest-associated MCF (WA-MCF)**
 - Causes outbreaks in cattle in Eastern and Southern Africa where wildebeest are found.
- **The natural reservoir species (sheep and wildebeest) do not exhibit clinical signs**

Clinical Signs



- This case described the “head and eye” form
 - High fever, anorexia, depression, profuse mucopurulent nasal discharge, dyspnea, stertor and diarrhea
- Ocular signs: exophthalmos, blindness, nystagmus, photophobia and lacrimation
- Pathognomic for “head and eye” MCF is corneal edema
- Prognosis is correlated with ocular signs. A poorer prognosis was assigned to a case where the signs do not resolve or progress

Why was this case unique?



- This case was particularly interesting because SA-MCF is a sporadic and rare disease in Ontario
- As well cattle typically are euthanized or die after 2-18 days after diagnosis, however this cow survived for 3 weeks
- Current research has showed it is possible for a cow to recover and survive with a chronic form of the disease
- Chronic lesions are often vascular and/or ocular

Areas of Future Research



- Development of a vaccine to protect populations of cattle, farmed deer and bison at risk
 - MCF virus-specific sera have been used to identify important diagnostic or protective antigens to incorporate into a vaccine
 - Cattle surviving natural infection remained immune despite a lower titre of serum neutralising antibody than the test immunized cattle (Russell et al, 2009)
- Promising results using an intranasal challenge model and attenuated AIHV-1 vaccine producing a protective mucosal response (O'Toole & Li, 2014)

Recommendations



- Recommendations to this client were to discontinue feeding the refusal hay from the sheep to the cows to prevent another case of SA-MCF
- Another method of transmission that could occur would be if the sheep manure was spread on the hay fields that were then harvested for cattle feed.

Summary



- SA-MCF can be fatal to cattle and other ungulates following direct or indirect contact with sheep
- Mortality is high for confirmed cases of this disease, there is no treatment and either vascular or ocular signs will persist.
- Even though a case of MCF would be rare it should be considered a differential diagnosis when a cow presents with ocular and nasal lesions especially if sheep are present on the farm

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