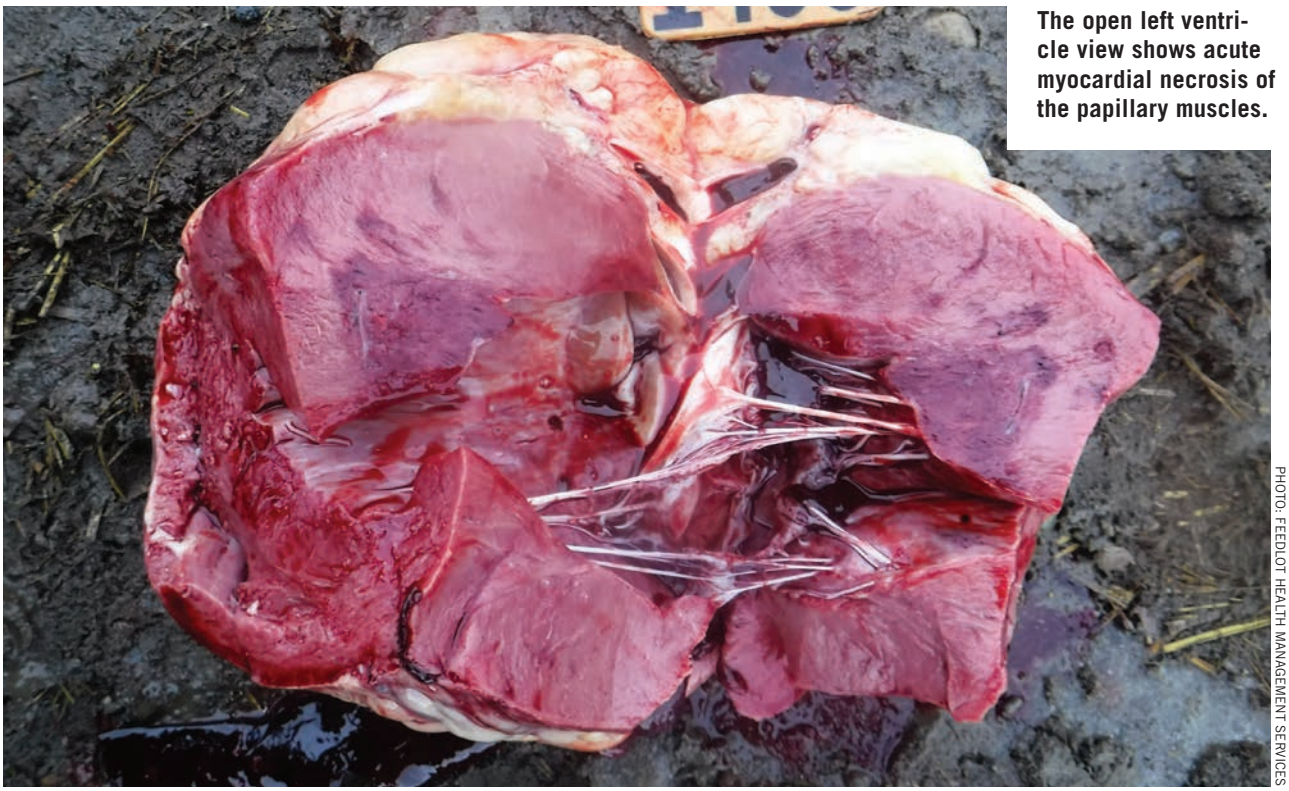
Post Mortem

Myocarditis and Chronic Myocarditis



The open left ventricle view shows acute myocardial necrosis of the papillary muscles.

PHOTO: FEEDLOT HEALTH MANAGEMENT SERVICES

BY JOHN MADAY AND FEEDLOT HEALTH MANAGEMENT SERVICES

This image depicts a heifer calf found dead on November 18th at 34 days on feed (DOF) with no prior treatment history for undifferentiated fever. Can you diagnose the cause of death?

This case continues our Post-Mortem Series, in partnership with Feedlot Health Management Services, Okotoks, Alberta.

The team diagnosed this case as "Myocarditis" most likely caused by *Histophilus somni*, a component of the bovine respiratory disease (BRD) complex; however, the septicemic form can cause myocarditis, pericarditis, pleuritis, arthritis, and infectious thromboembolic meningoencephalitis.

PATHOGENESIS:

- Generally considered a normal inhabitant of the nasopharynx that gains access to the bloodstream (potentially due to immune stressors and/or respiratory tract infection)
- Predilection for vascular endothelium leads to adherence and thrombus formation followed by ischemia, necrosis, and eventually sequestration in specific organs.

EPIDEMIOLOGY:

- Most commonly observed in calves placed in late fall and early winter, but the seasonal effect is confounded by the high number of calf placements in these seasons
- Mortalities caused by *Histophilus somni* predominately occur between 30 and 60 DOF

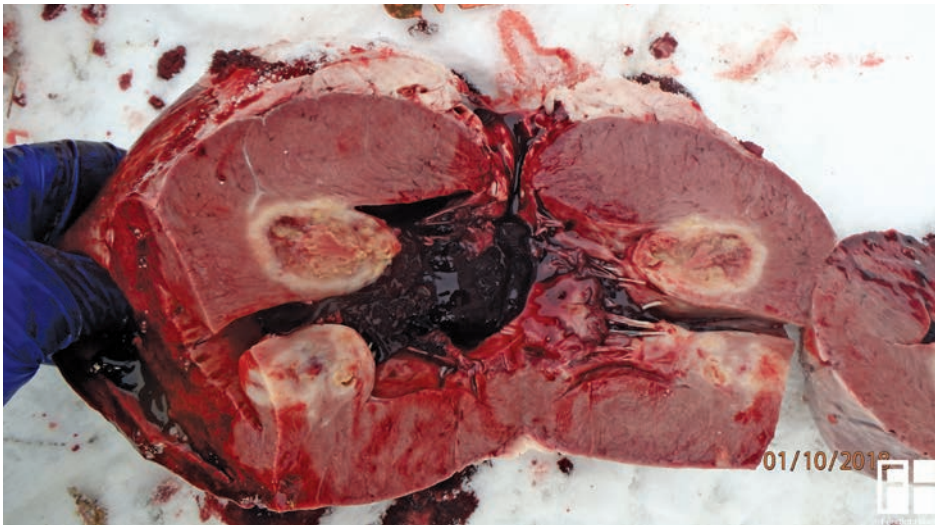
ANTE-MORTEM CLINICAL SIGNS:

- Animals may exhibit non-specific clinical signs such as depressed mentation, fever, anorexia, and/or lethargy
- In the acute stage of infection, it is difficult to clinically differentiate between *H. somni* caused myocarditis and BRD; therefore, ante-mortem cases of both disease syndromes are most accurately categorized as "undifferentiated fever"
- Compared to BRD, *H. somni* caused myocarditis is approximately 2 times more likely to be missed by stock attendants and animals are commonly found dead in the pen without prior treatment history

MANAGEMENT:

- In populations at high risk of BRD, metaphylaxis with tulathromycin has been shown to reduce *H. somni* specific mortality.
- Vaccination with an *H. somni* bacterin has been evaluated with mixed results; however, studies have generally used commingled experimental designs with vaccinates and non-vaccinates in the same pens
- In an outbreak scenario, *H. somni* is generally susceptible to tetracycline antimicrobials. Due to the difficult nature of identifying *H. somni* caused disease, mass medication may be warranted.

The open left ventricle view shows chronic sequestra in the papillary muscles.



The open-chest view shows cardiogenic pulmonary edema.

PHOTOS: FEEDLOT HEALTH MANAGEMENT SERVICES

POST-MORTEM LESIONS:

- Upon opening the left ventricle of the heart and incising the papillary muscles, acute myocardial necrosis appears as a circumscribed area that is darker in color (purple) than the surrounding tissue located within the papillary muscles (see photo on page 27).
- If the animal survives the acute phase of disease, a sequestra often forms in the papillary muscles of the left ventricle. The top photo shows the open left ventricle of a steer calf that died at 77 DOF and had previously been treated twice for undifferentiated fever.
- Upon observation of the open chest, cardiogenic pulmonary edema may be apparent with all stages of disease; however, it is most commonly observed in later stages of the disease (Bottom photo). BV

For more information about Feedlot Health Management Services, visit their website at *feedlothealth.com*