Clinical Bovine Viral Diarrhoea Virus Infection with Secondary Mycoplasma bovis Infection in a Dairy Calf

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HISTORY AND BACKGROUND

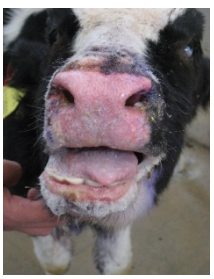
A 4-month-old Holstein Friesian male calf was presented to the Veterinary Health Center, Jordan University of Science and Technology for anorexia, respiratory distress and acute diarrhoea. The calf belonged to a small feedlot farm that contains 12 dairy calves used for feedlot purposes. Calves were vaccinated for enterotoxaemia, foot and mouth disease (FMD) and were given ivermectin. They had never been sick before. One of the calves was purchased from the auction market 2 weeks before this calf became sick. The calf became anorexic 7 days before presentation with increased temperature and respiratory rate. It developed watery diarrhoea 2 days later. The diarrhea was watery in colour. At that time, the calf was diagnosed with grain overload and was treated with magnesium sulphate and systemic and oral antibiotics.

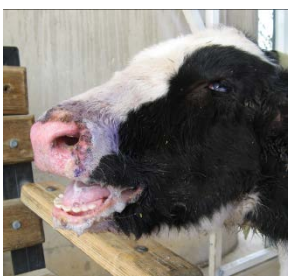
CLINICAL DESCRIPTION AND DIFFERENTIAL DIAGNOSES

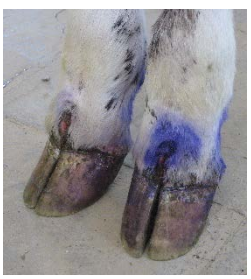
On presentation, the calf was in poor body condition. It was stressed, but alert and responsive. His temperature was 40°C, heart rate 120 beat/min and respiratory rate 85 breaths/min. The calf was panting and had severe respiratory distress. It had sunken eyes and separation of the eye balls from the sockets. It was about 10% dehydrated. It had watery diarrhoea and very weak rumen contractions. It was drooling saliva. There was severe stomatitis manifested by diffuse ulceration of the hard palate and inflamed oral papillae. There was interdigital ulceration in all four limbs. The eye had corneal opacity.

Differential Diagnosis List for mucosal ulceration

1. Bovine Viral Diarrhea
2. Foot and mouth disease
3. Malignant catarrhal fever
4. Infectious bovine rhinotracheitis
5. Bovine papular stomatitis
6. Vesicular stomatitis
7. Salmonellosis
8. Coccidiosis
9. Clostridia enteritis

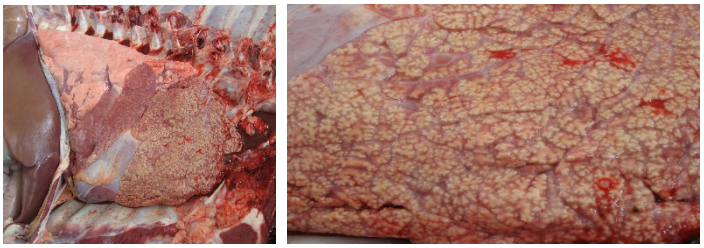






Differential Diagnosis List for respiratory signs :

1. Infectious bovine rhinotracheitis
2. Mycoplasmosis
3. Bovine Respiratory Syncytial virus
4. Parainfluenza type-3 virus
5. Pasteurellosis
6. Mannheimia haemolytica
7. Pasteurella multocida
8. Histophilus somni



ANCILLARY TESTS

A venous blood sample was submitted for complete blood count (CBC), fibrinogen and serum electrolytes measurements. CBC showed inflammatory leucogram manifested by severe leukocytosis (WBCs 38.5 · 103 C/ll), hyperfibrinogenemia (1000 mg/dl) and increased total protein (92 g/l). Serum sodium level was 121.2 mmol/l, potassium 3.74 mmol/l and chloride 73.7 mmol/l. Considering the clinical signs and the condition of the calf and the poor prognosis, euthanasia was recommended.

FINAL DIAGNOSTICS AND CONTROL ACTIONS

Post mortem examination revealed diffuse ulceration of the hard palate, oral mucosa & papillae, esophagus, and patchy hemorrhages of the abomasum. There was also suppurative diffuse pneumonia. Based on histopathological examination, the pneumonia was confirmed to be caused by Mycoplasma bovis and the gastrointestinal lesions were suggestive of BVD. Since BVDV infection was suspected, a whole blood sample and tissue was submitted for RT-PCR. Amplification of 290-bp fragment of the 5¢ non-translated region of BVDV genome was performed according to the published protocol of Givens et al., 2000. Because FMD is an endemic disease in Jordan and the high similarities of the clinical syndrome between the two diseases, the calf was also tested for FMD using PCR. PCR result was positive for BVDV and negative for FMD.

FOLLOW-UP OF THE CASE, CONCLUSION & DISCUSSION

The owner was recommended to test the rest of the calves to identify and cull any BVD PI animals and use BVD vaccination for the rest of the herd. This is one of the first reports that document the presence of clinical BVDV infection in Jordan. The clinical signs were typical of those reported for BVDV infection, and the disease was confirmed by PCR. There are two possible scenarios for this clinical presentation and course of the disease. First, it is possible that this case has suffered from the acute form of BVDV infection. This is also supported by the fact that the calf became sick 1 week after the introduction of the recently purchased calf. Perhaps this calf is persistently infected and introduced the virus to the farm. However, the other calves on the farm were reported to be healthy. The second possible scenario in this present case is that this calf was persistently infected and developed an acute mucosal disease. However, mucosal disease stemming from persistent BVDV infection is usually associated with marked leukopenia, which was not present in this animal.

In Jordan, antibodies against the virus were identified before in a seroprevalence study. (Talafha et al., 2009). The seroprevalence of the BVDV was reported to range between 31.6% and 80.7%. Also, the disease has been seen in the clinical form before this report (Abutarbush and Alqawasmeh, 2010). There are different possible reasons for that. BVDV infection is mostly subclinical. In addition, it is possible that the disease was present in its clinical form before but was not recognized because of its clinical similarity to another common vesicular disease in Jordan, which is FMD. Perhaps clinical cases of BVDV infection were misdiagnosed as FMD, since the diagnostic tests are not readily available at the farm level and farmers are not used to investigate such cases using laboratory tests, they usually consider it as FMD.