



Vesicular Stomatitis in Cattle

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Background

There are two major vesicular (blister) diseases of cattle, foot and mouth disease (FMD) and vesicular stomatitis (VS). However, there are several diseases that can cause lesions similar to those that occur with ruptured vesicles. The most important diseases of that group are bovine viral diarrhea (BVD), bluetongue, malignant catarrhal fever (MCF), and bovine papular stomatitis. Two of the diseases, FMD and MCF, are foreign animal diseases in the United States and all but papular stomatitis are reportable in Utah. This makes distinguishing these infections significant for the veterinarian, the producer, and the agricultural industry of the state.

Outbreaks of VS generally occur seasonally on a regular basis throughout the south and southwest. There are several distinct strains, New Jersey, Indiana, Piry, Isfahan, and Chandipura. New Jersey and Indiana occur in the United States. It is a viral infection of cattle, horses, and swine and occasionally sheep, goats, llamas and alpacas. When outbreaks occur, they are usually in the summer and early fall. Species of *Culicoides* (gnats) and *Simulium* (black flies) have been found to be vectors (the virus multiplies within them). Other insects, such as stable flies, act as mechanical carriers. There is some association with water and river drainages.

Pathogenesis and Clinical Signs

The incubation period ranges from 2 to 8 days. The virus circulates in the blood for a short period and then blisters develop, primarily in the oral mucosa but foot and teat lesions also occur. Excessive salivation is often the first sign of disease. Initially, the lesions appear as a blanched, flattened bump or blister. These vesicles rupture leaving raw erosions that are painful and prevent

the animal from eating. Lameness occurs when the feet are affected. The lesions may coalesce to cover a large part of the tongue, dental pad, or lining of the cheek. These lesions cannot be distinguished from FMD which is why reporting the occurrence of VS is necessary and important.

Differential Diagnosis

Differentiating VS from FMD or other diseases that cause ulcerative lesions cannot be done on the basis of clinical signs although there can be some indications from the location of lesions, age and species of animals affected, and the presence or absence of systemic disease. Definitive diagnosis is made by antibody tests, and by virus isolation. Pigs are not affected by VS but are by FMD. Bovine Viral Diarrhea (BVD) usually causes significant systemic disease in at least some of the herd, and lesions can often be found throughout the intestinal tract. Bluetongue tends to affect sheep more than cattle, and causes swelling of the lips, muzzle and ears. MCF will also cause lesions throughout the intestinal tract, especially in the esophagus. The occurrence of inflamed eyes and lymphocyte proliferation can aid in distinguishing it from BVD. With bovine papular stomatitis, there are no systemic signs, and the erythematous papules do not form vesicles before ulceration. Erosions are surrounded by a slightly raised margin.

Disease	VS	FMD	BVD	BTV	MCF	BPS
Species Affected	Not pigs. Yes horses	All cloven hoofed-not horses	Cattle and most ungulates	Sheep, cattle	Sheep, cattle, deer, elk	Cattle
Primary Pathog.	Vesicles	Vesicles	Erosions, ulcers	Ischemic necrosis, edema	Graft vs. host reaction	Papules
Systemic Signs	Only due to pain	Yes	Yes	Yes, mild in cattle	Yes	No
GI Affected	No	No	Yes	No	Yes	No
Feet Affected	Yes	Yes	Yes	Yes	?	No
Immune Effect	None	None	Lymph. Depleted	None	Lymph. Prolif.	No
VS = vesicular stomatitis, FMD = foot and mouth disease, BVD = bovine viral diarrhea, BTV = blue tongue virus, MCF = malignant catarrhal fever, BPS = bovine papular stomatitis						

Report Suspicious Cases

Veterinarians or livestock owners who suspect an animal may have a vesicular disease should immediately contact the State Veterinarian or Federal Area Veterinarian In-charge (AVIC).

Utah State Veterinarian (801) 538-7162
Utah AVIC (801) 524-5010

Recommended Actions

There are no specific treatments or medications that will cure infected animals. When VS virus has been definitively diagnosed on a premise, actions that will prevent the spread of disease to uninfected animals are:

- Isolation of uninfected animals at a remote area of the property.
- Implementation of insect control by reducing breeding areas and applying insecticides.
- Use protective measures such as gloves when handling infected animals.
- Do not move animals from the premises for at least 21 days after the last lesion has healed unless the animals are being transported to slaughter.
- Mild antiseptic washes may provide comfort and speed healing.
- Follow the instructions of the state or federal health personnel involved in the investigation.

References

Maxie, MG, ed. Pathology of Domestic Animals, 5th edition. Saunders/Elsevier 2007

USDA-APHIS-VS Vesicular Stomatitis Factsheet, March 2007

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