Vesicular Stomatitis

Clinic 4 - Hamburger Helpers Veterinary Clinic
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Overview

Vesicular Stomatitis is caused by a Rhabdoviridae virus that is found in N. and S. America and affects horses, cattle, and pigs. The virus can be spread through direct contact, contaminated feed and water, and insect vectors (namely blackflies, sandflies, and biting midges). The virus is easily destroyed via sunlight, boiling, and the use of common disinfectants, but in some cases it has been shown to persist in cool, dark environments. Vesicular Stomatitis is endemic in Mexico, Central America, northern South America, and eastern Brazil, and is often seen annually in the southeastern United States. Vesicular Stomatitis primarily infects equids (horses, donkeys, and mules), but also often causes disease in cattle and pigs. Occasionally, humans, sheep, goats, and camelids will also develop disease. In endemic areas, antibodies to VSV have been found in many wildlife species, including but not limited to; deer, pronghorn antelope, bighorn sheep, bats, bears, raccoons, coyotes, turkeys, and rabbits. Calves are more resistant to infection than adult cattle. Morbidity is usually 5-10%, but can reach as high as 80%. There is usually no mortality, but cases in beef herds can reach a 0-15% mortality rate.

Clinical Signs

There is an incubation period of 3-15 days. Vesicular stomatitis in cattle is characterized by vesicles, papules, erosions and ulcers which mainly occur in and around the mouth, on the feet, and on the udder. Excessive salivation is usually the first sign followed by a transient fever, anorexia, refusal to drink, lameness, and nasal discharge. Ulcerative lesions may contribute to animals developing secondary infections. Horses present similarly to cattle, but may rub their lips on troughs or jaw champ. Pigs display lameness more severely than the other animals.

http://www.cfsph.iastate.edu/DiseaseInfo/disease-images.php?name=vesicular-stomatitis&lang=en

Pathogenesis/Pathophysiology

After a short incubation period, a fever occurs and there is viral invasion of the germinal layer of the epithelial cells. Local infection of the mouth, skin surrounding the mouth and coronary bands precedes the development of vesicles on those mucous membranes of the lips, muzzle, teat of mammary glands, tongue and interdigital clefts. Vesicles are formed due to necrosis of epithelial cells in the germinal layer which results in an accumulation of fluid between layers of epithelial cells. Regularly, vesicles will rupture before they can be seen by the veterinarian or client, leaving behind ulcerative lesions. Field outbreaks lead to meticulous examination of the lesions. Only a small percentage (30%) of the lesions develop vesicles. Those that remain become crusty from dehydration due to seeping and become dry, necrotic tissue. Viremia has not been detected naturally, unlike other vesicular diseases.

Diagnosis

The diagnostic method of choice is an indirect sandwich ELISA, which can be used to differentiate VSV serotypes as well as other vesicular disease pathogens. Virus isolation can also be performed on swabs of the vesicles.

https://www.horsetalk.co.nz/2016/02/12/horses-hit-hardest-us-vesicular-stomatitis/

Treatment Plan

Little can be done to treat the condition. NSAIDs can be administered to alleviate pain and may accelerate animal recovery. The disease is self-limiting and most animals recover within 3-10 days.

Prevention

This disease can be transmitted directly from animal to animal or via fly vectors. To prevent animal to animal spread it is important to keep animals showing clinical signs separated from healthy animals. It is also important to control the black fly and sand fly populations on the property. Some ways this can be done is to install insecticidal dust bags, use Pour-on Ivermectin, or utilize a pesticidal cattle dip.

References

⇒ Letchworth GJ, Rodriguez LL, Barrera JDC. Vesicular stomatitis. Vet J. 1999;157:239-260.

⇒ Reis Jr. et al; Transmission and pathogenesis of vesicular stomatitis virus. Braz J Vet Pathol, 2009, 2 (1), 49-58

⇒ Schmitt B. Vesicular stomatitis. Vet Clin North Am Food Anim Pract. 2002;18:453-459.

Important Differentials

⇒ Horses: Blister Beetle Toxicosis, Equine Infectious Arteritis, Equine Herpesvirus infection, Bullous Pemphigoid

⇒ Cattle: Foot and Mouth Disease, Malignant Catarrhal Fever, Bluetongue, Bovine Viral Diarrhea (Mucosal Disease)

⇒ Swine: Foot and Mouth Disease, Swine Vesicular Disease, Vesicular Exanthema of Swine, Malignant Catarrhal Fever

⇒ Sheep: Foot and Mouth Disease, Bluetongue, Contagious Ecthyma, Ulcerative Dermatosis

Public Health Concerns

Vesicular Stomatitis is a reportable disease and is classified by the OIE as a Class A disease. In the United States, if an animal displays signs of VSV, it must be inspected by a USDA-APHIS agent. Premises with a confirmed case of VSV must be quarantined for at least 21 days after the resolution of the last clinical signs. VSV presents similarly to Foot and Mouth Disease so noticing clinical signs and taking appropriate precautions is of utmost importance. In addition, VS is of economic importance as there are losses associated with decreased production during the time of the disease, secondary infections, and due to the quarantine. VSV is a zoonotic disease, although human infections are rare and symptoms are often mild, flu-like symptoms.

Species Affected	Foot and Mouth Disease	Vesicular Stomatitis	Vesicular Exanthema of Swine	Swine Vesicular Disease	Bluetongue Virus	Malignant Catarrhal Fever
Cattle	+	+	—	—	+	+
Swine	+	+	+	+	—	+
Sheep & Goats	+	+	—	—	+	—
Horses	—	+	—	—	—	—

Adapted from Veterinary Medicine: A textbook of the diseases of cattle, horses, sheep, pigs, and goats. 11th Edition