FRIEDRICH-LOEFFLER-INSTITUT
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Federal Research Institute for Animal Health

Bovine Herpesvirus Type 1-Infection (BoHV-1)

Susceptible species

Cattle and other bovines belong to the host spectrum of Bovine Herpesvirus type 1 (BoHV-1). There is no infection risk for humans.

Distribution area

The infection is distributed worldwide with high prevalence rates in many countries. Denmark, Austria, the autonomous province of Bolzano, Sweden, Finland, Switzerland and the German federal states Bavaria, Thuringia, Saxony, Saxony-Anhalt, Brandenburg, Berlin, and Mecklenburg-Western Pomerania are declared officially free from BoHV-1. Meanwhile, more than 96 % of all dairy farms in Germany are free from field virus.

Causative agent

BoHV-1 belongs to the family of herpesviruses. With regard to their genetic material and structure these count among the largest and most complex viruses. A hallmark of herpesviruses is their ability to establish latent infection. An infected animal will remain infected lifelong. Stress factors may lead to excretion of infectious virus without development of clinical symptoms.

Transmission

Depending on the transmission route BoHV-1 causes different clinical pictures, while the immunological picture does not vary. The pathogen is mainly transmitted by droplet infection (Infectious Bovine Rhinotracheitis [IBR]) or during mating (Infectious Pustular Vulvovaginitis [IPV] in female animals, Infectious Balanoposthitis [IBP]) in bulls). In the respiratory form of the disease, virus is excreted by nasal and ocular discharge or feces, in the genital form by secretions and semen.

Clinical Picture

BoHV-1 infection is a mainly acute highly contagious general disease. IBR begins with fever, nasal discharge, redness of mucous membranes of muzzle and nose, and salivation. Already at the onset of disease milk yield will be decreased. Later on, anorexia, coughing, dyspnea, nasal and ocular discharge may occur. In calves IBR as a rule manifests as febrile general illness mainly characterized by respiratory symptoms. Pneumonia is a possible severe complication. Very rarely, fatal meningitis is observed in young calves. In pregnant cows abortions may occur in particular from months 5 to 8 after an incubation period of 3 to 6 weeks. The genital form of disease often is characterized by mild fever, redness and swelling of the genital mucous membranes, restlessness and painful urge to urinate. Later on the animal will develop blister-like greyish-white pinhead- or cherry pit-sized bumps surrounded by a red circular areola. These may develop into pustules or more prominent lesions of the mucous membranes. Often however infection in single animals or even in entire herds will remain clinically inapparent.

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Diagnostics

In the acute stage of infection virus can be detected in nasal or genital secretions/semen by virus cultivation or by detection of genetic material. Animals with latent BoHV-1 infection, so-called reagents, can be identified reliably by antibody detection. In vaccinated animals marker tests are used (gE-ELISA).

Similar clinical pictures

As differential diagnoses viral or bacterial respiratory diseases and lungworm infestation should be considered. IPV must be differentiated from bacterial and parasitic venereal infections (e.g. *Tritrichomonas fetus*). As infectious causes of abortion BVD/MD infection, bacterial diseases (Leptospirosis, Chlamydiosis, Coxelliosis) and parasitic infections (e.g. Neosporosis) should be considered.

Control

BoHV-1 is a notifiable animal disease. It is combatted by two different concepts which also may be applied in combination. The marker vaccine concept is based on extensive vaccination with gE-deleted vaccines to gradually eliminate circulating field virus from the vaccinated cattle population. The conventional concept aims at identification of infected animals and their elimination without use of vaccines. The latter concept is used in populations with a very low percentage of infected animals. As the eradication program which is mandatory throughout Germany progresses, vaccination will gradually be prohibited and all additions to a herd will have to be BoHV-1 negative and unvaccinated.

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