

Bovine Viral Diarrhea (*BVD*)

- Susceptible species** Bovine Viral Diarrhea (BVD) is a virus disease of cattle, which can also affect other ruminant species and, in rare cases, pigs.
- Distribution area** BVD is distributed worldwide and is one of the economically most important diseases of cattle.
- Causative agent** Together with Classical Swine Fever Virus and Border Disease Virus the pathogen forms the genus *Pestivirus* of the family *Flaviviridae*. It is an enveloped virus; the genome consists of a single-stranded RNA of positive polarity. Two genotypes of BVD Virus (BVDV) are differentiated as independent species (type 1 and 2), each with cytopathogenic (cp) and non-cytopathogenic (ncp) biotypes. Further subtyping on the genome level is possible.
- Transmission** Transmission occurs horizontally, mostly oronasally, through different body secretions or vertically as transplacental infection.
- Clinical picture** Acute infections as a rule are asymptomatic or manifest with rather mild clinical symptoms. Mainly calves can be affected from fever, anorexia, non-purulent nasal discharge, mild respiratory disease or diarrhea, in cows, milk loss can occur. Furthermore, BVDV, particularly of genotype 2, can manifest as hemorrhagic syndrome with severe pulmonary symptoms, bloody diarrhea and erosions of the gastrointestinal tract, and can cause high losses.
Depending on the time of infection, infection of pregnant animals results in fertility disorders, abortions, stillbirth, malformations and birth of weak calves. BVDV infection of the ncp biotype prior to day 90 of gestation leads to birth of persistently viremic calves, which may show poor growth but usually develop normally. Within the first twelve months of life, approximately 50 % of these animals develop the so-called Mucosal Disease (MD). Fatal MD develops if persistently viremic animals are

Bovine Viral Diarrhea

infected with a closely related cp BVDV or if the ncp biotype mutates into a cp virus in the animal. Chronic emaciation, fever, anorexia, bloody, therapy-resistant diarrhea, salivation, erosions of the hard palate, muzzle and nostrils, less frequently of the interdigital space and of the coronary groove of the hoof and of the udder are characteristic for MD.

Diagnostics BVD diagnostics consists of virus detection in blood samples, organ samples and skin punch biopsies. The admissibility of diagnostic methods for certification of freedom of BVD depends on the age of the animals and, in the case of follow-up testing of animals after an initially positive result, of the time elapsed since the initial investigation. Please mind erosive changes after acute infection with particularly virulent virus strains, which must be differentiated from MD.

Similar clinical pictures Bovine malignant catarrhal fever, rinderpest, foot-and-mouth disease, and other vesicular diseases, bovine papular stomatitis, chemical burns, intoxications.

Control BVD is a notifiable virus disease, the common principles of its nationwide control are stipulated in the “Regulation on the protection of cattle from infection with Bovine Viral Diarrhea” (BVDV regulation) of 4 October 2010 (Federal Gazette I p. 1320). The central issue of the regulation is mandatory testing of all farmed cattle until the end of the first month of life, which results in a lifelong certification as BVDV unsuspecting (virus-free). The test result and the associated status are registered in the HI-Tier tracing and information system for animals. To obtain a result as early as possible, there is the possibility to test a tissue sample collected during ear tagging of calves for BVDV. Only BVDV unsuspecting cattle are suitable for trading. Vaccination is possible.

Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health
Südufer 10, D-17493 Greifswald - Insel Riems, www.fli.de