

## BDVA Newsletter November 2024

### Epizootic Haemorrhagic Disease Virus

It is perhaps fortunate that the presence of Bluetongue virus (BTV-3) does not necessarily pose a significant risk to the six wild deer species in the UK. Historically it has been reported that fallow, muntjac, red, roe and sika deer may seroconvert when exposed to BTV infection and may be viraemic. They do not show overt clinical signs of disease. Reindeer in Germany have been reported to seroconvert to BTV. Reindeer with signs of clinical disease due to BTV infection have not been formally reported.

In North America it has long been recognised that white-tailed deer and several other New World deer species are susceptible to infection with BTV and develop signs.<sup>1</sup> Infection with the related Orbivirus Epizootic Haemorrhagic Disease Virus (EHDV) can lead to similar signs and it may not be feasible to differentiate infection due to BTV and EHDV – hence the term Haemorrhagic Disease (HD) is used to describe these infections.

In Europe deer have been described with signs of disease associated with infection with EHDV, particularly in red deer, also in fallow and roe deer. Found dead is not an uncommon presentation for wild deer.

**Clinical signs** may be inapparent, peracute, acute or chronic.<sup>2</sup>

Acute HD - Pyrexia, weakness, inappetence, excessive salivation, facial oedema, hyperaemia of the conjunctivae and the mucous membranes of the oral cavity, coronitis and stomatitis; death.

Chronic HD - Oral ulcers on the dental pad, hard palate and tongue, necrotizing glossitis; bloody diarrhoea, haematuria, dehydration and death.

A report of EHDV infection in reindeer in a zoological collection in the USA included neurological signs with ataxia, circling and excessive licking of the ground and limbs; lethargy and lameness were also reported.<sup>3</sup>

#### **Diagnostic methods**

Postmortem examination (acute HD) will show severe extensive oedema involving the head, neck, tongue, conjunctiva and respiratory tract, with effusions in the pericardial, pleural and peritoneal cavities. Widespread haemorrhages and oedema involving the mucous membranes, skin and viscera, especially heart and gastrointestinal tract. There may be erosions in the mouth, rumen and omasum; necrosis of the hard palate, tongue, dental pads, oesophagus, larynx, rumen and abomasum.

In chronic HD there may be growth rings on the hooves, sloughing of the hoof wall, erosions and ulcers in the rumen.

There are various serological and molecular methods to demonstrate exposure and to detect the virus.<sup>4-6</sup> These would only be deployed by APHA once the case is formally reported.

#### **Differential diagnoses**

Since both BTV and EHDV are notifiable it may seem academic to consider differential diagnoses – *it is critical to report suspicion of disease*. Acute HD may resemble foot and mouth disease. Sudden death may be associated with MCF, anthrax, clostridial intoxication and pasteurellosis. Chronic cases may have signs compatible with endoparasites, Johnes's disease, pestivirus or parapox virus infection, although the history is likely to dictate the differential diagnosis.

#### **Management**

Currently there are no vaccines licensed for use in deer (for BTV and EHDV). Supportive measures may be considered pending confirmation of the diagnosis.

It is likely that any deer managed in an enclosed system (farm, park and zoo) will be treated by APHA as “captive deer”.

For more information about EHDV see the Preliminary Outbreak Assessment published by Defra.<sup>7</sup> As part of their risk assessment APHA undertake the Airborne Orbivirus Assessment each week using the Numerical Atmospheric-dispersion Modelling Environment (NAME) model.<sup>8</sup>

## References

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- 2 EPIZOOTIC HAEMORRHAGIC DISEASE - Aetiology Epidemiology Diagnosis Prevention and Control References (OIE Technical Disease Card).  
[https://www.woah.org/Disease\\_cards/EPIZOOTIC\\_HEAMORRHAGIC\\_DISEASE](https://www.woah.org/Disease_cards/EPIZOOTIC_HEAMORRHAGIC_DISEASE)
- 3 Torii EH, Wünschmann A, Torchetti MK et al. Outbreak of epizootic hemorrhagic disease in captive reindeer (*Rangifer tarandus*). *Vet Pathol.* 2024;61:298-302. doi: 10.1177/03009858231196797.
- 4 WOAHA Terrestrial disease Manual.  
[https://www.woah.org/fileadmin/Home/eng/Health\\_standards/tahm/3.01.07\\_EHD.pdf](https://www.woah.org/fileadmin/Home/eng/Health_standards/tahm/3.01.07_EHD.pdf)
- 5 Batten C. Epizootic Hemorrhagic Disease Virus (Methods and Protocols); Series Title [Methods in Molecular Biology](#); DOI <https://doi.org/10.1007/978-1-0716-4035-7>; Humana New York, NY, USA.
- 6 Ruder MG, Howerth EW. Recognition of Field Signs, Necropsy Procedures, and Evaluation of Macroscopic Lesions of Cervids Infected with Epizootic Hemorrhagic Disease Virus. *Methods Mol Biol.* 2024;2838:17-64. doi: 10.1007/978-1-0716-4035-7\_2.
- 7 Defra - Updated Outbreak Assessment #6 - Epizootic Haemorrhagic Disease in Europe - 14 August 2024. <https://www.gov.uk/government/publications/epizootic-haemorrhagic-disease-in-europe>
- 8 Risk assessment: airborne introduction of bluetongue virus  
<https://www.gov.uk/government/publications/risk-assessment-airborne-introduction-of-bluetongue-virus>

## For more information about BTV

Bluetongue Virus – information for vets. <https://ruminanthw.org.uk/bluetongue-virus-information-for-vets/>

## For more information about EHDV

- i. EFSA <https://animal-diseases.efsa.europa.eu/EHDV/#Geographicaldistribution>
- ii. Avelino de Souza Santos M, Rojas Gonzales J et al. Epizootic Hemorrhagic Disease (EHD) – Systematic Literature Review report. EFSA supporting publication 2023:EN-8027. 43 pp. doi:10.2903/sp.efsa.2023.EN-8027.
- iii. Jiménez-Cabello L, Utrilla-Trigo S, Lorenzo G et al. Epizootic Hemorrhagic Disease Virus: Current Knowledge and Emerging Perspectives. *Microorganisms.* 2023;11:1339. doi: 10.3390/microorganisms11051339.
- iv. Thabet S, Sghaier S, Ben Hassine T et al. Characterization of Epizootic Hemorrhagic Disease Virus Serotype 8 in Naturally Infected Barbary Deer (*Cervus elaphus barbarus*) and *Culicoides* (Diptera: Ceratopogonidae) in Tunisia. *Viruses.* 2023;15:1567. doi: 10.3390/v15071567.