Focus Article: Managing an outbreak of Equine Herpes Virus – 1

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Introduction

Equine Herpesvirus-1 (EHV-1) is the cause of outbreaks of fever, respiratory disease, paralytic disease and multiple abortions, sometimes with fever, abortion and paralytic disease all occurring on the same premises as it has been the case recently in Oxfordshire. EHV-1 can have a major economic and welfare impact on all sectors of the horse industry worldwide through both its direct clinical effects on the horse and through its impacts on the horse industry through interference for disease control purposes with horse movement for breeding and competition.

Given the importance of **EHV-1** for the horse industry, the disease is included in the **Horserace Betting Levy Board (HBLB) Codes of Practice**. These codes outline the minimum measures which should be implemented by horse owners, in conjunction with their veterinary surgeons, as a means of limiting and resolving disease outbreaks. Copies of the latest **Codes of Practice** are available on the **HBLB website** (http:www.hblb.org.uk/).

Epidemiology

EHV-1 is spread by direct horse-to-horse contact as well as indirectly by fomites and personnel. The most common transmission route is through the respiratory tract by aerosolized droplets of respiratory secretions. In EHV-1 abortions the aborted foal, fetal membranes and placental fluids contain large quantities of infectious virus and contact with these can be a major means of transmission.

The principal reservoir of infection for EHV-1, however, is latently infected horses. The large majority of recovered horses carry latent EHV-1 infections for extended periods. Periodically, these latently infected horses experience reactivation episodes (often linked to a stress factor) in which infectious virus is shed into respiratory secretions. Abortion or neurological disease may be the result of local reactivation of EHV-1 within blood vessels of the uterus, placenta, or central nervous system (CNS) and in this situation disease occurs without prerequisite respiratory infection, nasal virus shedding or viremia.

Early diagnosis of EHV-1 infection

When a case of EHV-1 neurological disease is suspected, it is essential that a diagnosis is reached as quickly as possible and that management measures are undertaken from the outset to minimize spread between horses on the affected premises and also to reduce the chances of spread to other premises. A nasopharyngeal swab and 30 mL of heparinised whole blood may be used for diagnosis by PCR and/or virus isolation to confirm presence of infectious virus and serum sample for antibody determination should be taken from all horses. In the event of death/euthanasia in an affected horse, the whole carcass (preferably) or the spinal cord and brain should be sent for *post-mortem* examination, histopathology and virological investigations (PCR and virus isolation).

In the event of an abortion and when EHV-1 is suspected, the whole fetus and placenta should be sent for *post-mortem* examination, histopathology and virological investigations (PCR and virus isolation). If the whole fetus can't be submitted, then two sets of tissues (fresh and fixed in 10% neutral buffered formalin) should be sent. The appropriate tissues for herpesvirus diagnosis are liver, lung, spleen, adrenal gland and thymus from the fetus and cervical star, body and both horns from the chorion.

Control

Control measures should be implemented as soon as there is a suspicion of EHV-1 infection, even if the diagnosis has not been confirmed. There should be immediate cessation of movement on and off the premises and any horses which had recently left the premises should be traced and treated as "in-contacts". Any affected animals (showing neurological disease or mares after an abortion) should be physically isolated and handled by different staff. The bedding should be disinfected and destroyed, and the stall cleaned and disinfected.

All horses in physical contact or sharing facilities with clinically affected animals should be considered as "in-contacts", and remain in small groups to minimize further exposure in the event that there are further abortions. Regular daily observation of the in-contact horses for signs of EHV-1 infection (pyrexia, nasal discharge, ataxia, abortion) and immediate removal of suspected cases as well as horses testing positive for EHV-1 by PCR and/or virus isolation into an isolation area are advisable. Pregnant in-contact mares should be maintained in the small groups until after they have foaled normally or aborted. Non-pregnant mares and other stock such as yearlings and horses out of training should always be segregated from pregnant mares.

Vaccination in the face of an outbreak is controversial for EHV-1 infection but is generally not recommended in horses that may have had contact with the virus and may therefore be incubating the infection as there is a theoretical risk of exacerbating neurological signs, it interferes with serological monitoring for infections, and it takes several weeks before immunological responses occur, especially if a primary course of vaccination has been started.

Clearance

Once EHV-1 is confirmed, isolation, movement restrictions and hygiene measures should be maintained for at least 28 days and mares which have aborted should be kept in isolation from other pregnant mares for 56 days after abortion. Virological and serological monitoring of all the horses on the premises is the key to determine that the virus is no longer circulating on the premises and can facilitate well informed lifting of movement restrictions.

In an outbreak of paralytic disease, clearance should be achieved when the affected horse and the in-contact horses test negative for PCR and virus isolation on a nasopharyngeal swab and heparinised blood in samples taken two weeks apart, or when the positives on the first samples are negative on second samples collected at least 10-14 days following the first samples.

Serological monitoring of all the horses on the premises should be carried out especially in EHV-1 paralytic outbreaks as by monitoring seroconversions it can be determined if the virus is no longer spreading within the premises. This information, along with the information gleaned from virological testing, informs decisions about continuing serological testing at 1-2 week intervals until it can be confirmed that EHV-1 is no longer circulating (i.e. no further seroconversions are seen).

Even though movement restrictions and multiple tests being carried out in all the horses involved in an outbreak can be timeconsuming, these procedures are essential for the protection of horses on the premises and also in the wider horse population.

Recommendations regarding movement, testing etc. in an outbreak of EHV-1 are laid out in the **Horserace Betting Levy Board (HBLB) Codes of Practice** which are available at the **HBLB website**