

GUIDELINES ON PIROPLASMOSIS

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The Disease

Piroplasmosis is caused by blood-borne intracellular parasites that are spread naturally by a specific tick species, when they feed on a horse but may also be transmitted iatrogenically through transfer of infected blood via contaminated equipment such as re-using needles or syringes between horses. The two parasites species that cause disease in horses are *Babesia caballi* (*B. caballi*) and *Theileria equi* (*T. equi*). The parasite enters red blood cells and destroys them and the clinical signs a horse displays are associated with the rupture of these infected blood cells. The disease is widespread and although the UK is currently considered free from endemic natural disease, cases have been occasionally confirmed and do occur in other European countries. With no formal UK requirement for pre-import screening, the international movement of horses and the demonstration of the presence of the tick species capable of transmitting the disease, there is a risk that the disease could be present and establish in the UK.

Notification

There are no legal notification requirements for piroplasmosis in the UK although it is recommended that owners inform their national breeders' association if disease occurs. In the UK, Thoroughbred breeders should notify the Thoroughbred Breeders' Association and non-Thoroughbred breeders their relevant breed association.

Piroplasmosis is endemic in many parts of the world. Although the UK is currently considered free from endemic natural piroplasmosis, disease can be introduced through importation of infected subclinical 'carrier' animals that have no outward signs of disease or through the introduction of infected ticks. Pre-import piroplasmosis screening is not currently a requirement for entry into the UK and there is an increased concern for the disease to establish in the UK as the tick species capable of transmitting the infection has been demonstrated to be present.

Clinical signs

Horses can have a range of severity and duration of clinical signs. Early stage, acute clinical signs include fever, inappetence and lethargy. A subacute form exists in which horses have these acute signs with an intermittent fever, weight loss and pale mucous membranes. They may also appear jaundiced with yellowed mucous membranes, such as the white of their eyes (sclera). Bleeding and/or bruising (petechiation and/or ecchymoses) may also be visible on mucous membranes.

Horses can be chronically infected, sometimes referred to as a 'carrier state'. Clinical signs can be absent or non-specific and include weight loss and poor performance. Horses can also become carriers of the infection with no overt clinical signs although flare ups of disease are possible and may be associated

with factors causing immunosuppression, such as stress following transportation. Severe disease can be fatal. If a pregnant mare is infected, the infection can be transmitted to the unborn foal, causing abortion, or neonatal infection which can be fatal.

Transmission of disease

B. caballi and *T. equi* are spread by ticks and ticks become infected from feeding on infected animals. Tick species capable of transmitting the disease include Ixodes, Dermacentor and Haemaphysalis. Disease can also be transmitted through transfer of infected blood between horses, such as through contaminated needles, syringes or blood transfusions and associated equipment.

Prevention

As disease is most likely to be introduced through the importation of an infected animal, horses should be subject to pre-movement screening including a veterinary examination to confirm they are not demonstrating any clinical signs of disease prior to movement, that negative diagnostic test results have been obtained and that the horse was free from tick exposure 30 days prior to travel.

In countries where disease is endemic, measures should be in place to reduce the exposure of horses to ticks and these include regular inspection of horses for ticks and the applications of repellents or acaricides. This is applicable to horses in the UK travelling to countries with endemic infection, where the risk of exposure is considered plausible.

Precautions should be taken to avoid transmission through blood, including stringent use of single-use needles and syringes and screening of horses prior to the collection of blood for transfusion purposes.

Diagnosis

Haematology and biochemistry analysis on a blood sample may be suggestive of piroplasmiasis, with findings including anaemia and evidence of red blood cell break down. Laboratory testing is required to definitively diagnose disease and tests can either identify the agent or an immune response to infection. Agent detection tests are applied to whole blood and include microscopic examination of blood smears, however, the parasites may not be easily visible in the blood, despite a horse being infected. A PCR test helps to overcome the issue of detection of a positive case, particularly if parasite levels are low. However, due to the chance for false negative test results when applying agent detection tests, the use of serology to detect specific antibodies against *B. caballi* and *T. equi*, alongside agent detection tests, is strongly recommended. There are three different serological tests available that are commonly used to detect piroplasmiasis and their relative merits will need to be taken into account when interpreting the results of these tests. It may be appropriate to use a second test to confirm the results if a first test gives a positive or borderline result.

Control of Infection

If horses in the UK are found to be PCR positive or seropositive with antibodies against

B. caballi or *T. equi*, they should be isolated from other horses and tick vectors until treatment has been conducted, to avoid onward transmission to vectors and subsequently to other horses.

Treatment

Treatment approaches will depend on the disease status of a country and whether a country has endemic disease. In some endemic countries, treatment may be aimed at reducing the severity of clinical signs and preventing fatalities, but it may not be advised to treat 'carrier horses' as a low level of infection may be deemed to be protective in preventing severe acute disease, as horses will have continued re-exposure from infected ticks.

Treatment in a non-endemic country such as the UK is applied with the intention of complete clearance of infection, although this may not be readily achievable with currently available treatments. There is no licensed treatment for piroplasmiasis, but off-license use of antiprotozoal agents has been reported, with varying success at clearing infection.

Confirmation of Freedom from Disease

Following confirmation of infection in a horse, freedom from disease may not be possible to confirm due to the complexities of the disease's epidemiology and limitations of current available treatments and diagnostic testing methods to confirm freedom from disease. Therefore, freedom of disease may not be an appropriate term for piroplasmiasis cases.

Export Certification

Piroplasmiasis is not notifiable by law in the UK. However, no horse with clinical signs or recent contact with ticks in a country where disease is present, should be exported to the UK.

Further information for veterinary surgeons

<https://onlinelibrary.wiley.com/doi/epdf/10.1111/jvim.12168>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6572709/>