Isolated fever in horses: a new case of equine anaplasmosis in France

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Anaplasma phagocytophilum is an obligate intracellular bacterium that invades neutrophils, creating intravacuolar aggregates called morulae. It is transmitted to humans and horses through Ixodes tick bites and induces a febrile disease. This research note describes the second equine case confirmed in France.

A 14-year-old French saddle horse from an area where Ixodes ricinus ticks are endemic (Ecole Polytechnique, Paris) was referred in May 2007 to the military veterinary clinic for fever and depression. The horse was presented after having received a single-dose penicillin treatment 24 h before because of hyperthermia. The horse underwent thorough clinical examination and blood was collected for analysis, haematology and PCR. Blood was stained with Hemacolor 61650 (Merck, Darmstadt, Germany). DNA was extracted using the QIAamp Tissue Kit and amplified and sequenced by PCR using primers targeting the citrate synthase (gltA) gene and 16S rRNA gene [1].

Clinical signs included fever (39.5°C), depression, anorexia, lethargy, mild icterus and reluctance to move. No limb oedema was noted. The blood count revealed a lymphopenia (745/µm3), an anaemia and a thrombocytopenia (67000/µm3). The horse received prior to other examinations and analyses a single intramuscular dose of 1.2 g of imidocarb dipropionate. An attentive examination of the blood smears showed later basophilic morulae inclusions in the neutrophils, which was suggestive of Anaplasma phagocytophilum infection (Fig. 1). The PCR on blood was positive for both genes and sequencing analysis identified A. phagocytophilum (similarity 100%). The horse recovered within 5 days without any treatment and fever disappeared within 48 h.

The first case of European equine anaplasmosis was confirmed in 1998, by PCR and sequencing, in a 12-year-old Arabian mare from an area where ticks were endemic in Switzerland. The first case of Ehrlichia equi infection in an adult horse in France was reported in 2002 [2]. The diagnosis was confirmed by PCR of a blood product and serology (IFA). In France, many cases of fever of unknown origin (FUO) in horses are treated successfully with tetracycline by veterinary practitioners. This led to the hypothesis that A. phagocytophilum incidence might be underestimated and responsible for a part of these cases as suggested by previous epidemiological and molecular studies [3]. The diagnosis of equine anaplasmosis is a challenge if limb oedema and ataxia are lacking, as other clinical signs are not specific. Consequently, this diagnosis should be investigated systematically when facing ‘fever of unknown origin’, which is a frequent syndrome in horses. Horses, indeed, are not well protected from tick bites by ectoparasiticides because of their weak remanency due to equine sudation. This may explain the sporadic cases of ‘subclinical babesiosis’ and even unrecognised cases of mild anaplasmosis. In a case series of horses with FUO, 43% had a well-defined infectious disease, 22% had neoplasia, 6.5% had immune-mediated disease, 19% had miscellaneous causes, and in 9.5% the cause was not determined [4].

Consequently, diagnosis by both PCR and serology appears to be the most appropriate method to confirm a case. In an experimental infection of six horses in Sweden, PCR signal was consistently detected 2–3 days before appearance of clinical signs and persisted 4–9 days after the clinical signs cleared. Antibody response appeared 12–16 days after inoculation and rapidly increased within 3–7 days of clinical illness [5]. For an isolated fever in horses in endemic...
areas, blood smear examination easily detects *Anaplasma* morulae that are present in the acute phase.

The triad of blood smear/PCR-serology allows efficient diagnosis of equine anaplasmosis. Frequency of equine anaplasmosis is likely to be underestimated in France. Even if recovery is possible without it, treatment with intravenous oxytetracycline for 3–7 days improves the recovery and avoids more severe clinical signs.

**REFERENCES**


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**Fig. 1.** Morula in a neutrophil on a blood smear stained with the Haemacolor kit (arrow).