

The Laboklin Expert Panel on Granulocytic Anaplasmosis (*Anaplasma phagocytophilum*)

Laboklin's expert panels continue to be very popular. This session focused on **granulocytic anaplasmosis in dogs, cats, and horses**. We have summarised the key insights and assessments from the experts for you. The discussion was lively, practice-oriented, and full of valuable advice from clinical practice, laboratory diagnostics, and research.

The expert panel included **Prof. Dr. Reto Neiger**, PhD, EBVS Specialist and Diplomate ECVIM-CA (Internal Medicine), Dipl. ACVIM (SAIM), Medical Director of IVC Evidensia DACH; **Prof. Dr. Jessica-Maximilliane Cavallieri**, EBVS Specialist and Diplomate ECEIM, Head of Internal Medicine at the Clinical Centre for Horses, Vetmed Uni Vienna; **PD Dr. Barbara Willi**, PhD, EBVS Specialist and Diplomate ECVIM-CA (Internal Medicine), Dipl. ACVIM, Lecturer and Senior Clinician at the Small Animal Clinic, Vetsuisse Faculty, University of Zurich, and Specialist in Internal Medicine and Infectious Diseases at Tierklinik Aarau West; **Dr. Ingo Schäfer**, M.Sc, Resident ECVCP in Laboratory Diagnostics at Laboklin, with a focus on vector-borne diseases; and **Prof. Dr. Christina Strube**, PhD, Director of the Institute for Parasitology at the University of Veterinary Medicine Hannover.

Clinical Signs and Observations

Reto Neiger provides an introductory overview of the clinical signs of anaplasmosis in **dogs**. He describes the clinical signs as largely nonspecific, with lethargy, anorexia, and fever being common, but lameness, gastrointestinal disturbances, coagulation disorders, and even pericardial effusions can also occur. He emphasises that lameness is often more accurately described as general reluctance to move.

Ingo Schäfer notes that cases of encephalitis have been reported in dogs, although these are rare, and he refers to individual cases in which the pathogen was detected in cerebrospinal fluid. Barbara Willi adds that in **cats**, the symptoms are similarly nonspecific, most commonly including lethargy, fever, anorexia, and reduced appetite.

In **horses**, Jessica Cavallieri reports that high fever, apathy, and icterus are the most prominent signs.

Ataxia and even epileptiform seizures can occur, and atypical courses involving rhabdomyolysis or dysphagia have also been described.

Typical Changes in Blood Tests

When discussing laboratory findings, Ingo Schäfer explains that **thrombocytopenia** is the most common haematological abnormality in **dogs**.

Other notable changes include anaemia, lymphocytosis, and increased globulins accompanied by hypoalbuminaemia.

Barbara Willi notes that in **cats**, thrombocytopenia is often less pronounced. As platelet counts may be measured inaccurately in cats due to aggregation, microscopic examination is essential to confirm thrombocytopenia.

Jessica Cavallieri describes that in **horses**, hyperbilirubinaemia is frequently observed, often accompanied by leukopenia and mild anaemia. Serum amyloid A (SAA) and fibrinogen levels are usually markedly elevated, while albumin is decreased.

Transmission and Prevalence

When asked about *Anaplasma*, Jessica Cavallieri explains that these are intracellular bacteria that depend on host cell components. *Anaplasma (A.) phagocytophilum* primarily infects neutrophil granulocytes, and to a lesser extent eosinophilic granulocytes, hence the term granulocytic anaplasmosis.

Christina Strube emphasises that **transmission occurs via ticks** of the genus *Ixodes ricinus*.

Although *Anaplasma* DNA has been detected in other tick species, this does not necessarily mean that they function as vectors. She notes that transmission typically occurs only 48 hours after a tick bite. While the disease shows a seasonal pattern with a spring peak, it should be considered a year-round concern.

Ingo Schäfer confirms that seroprevalence is high, around 20–30 % in central Europe for both **dogs** and **horses**, with regional variation. Reto Neiger reports that the clinical incidence of disease in dogs has

not increased over the years. Jessica Cavallieri adds that, in **horses**, the risk of infection is widespread including higher altitudes, though the disease incidence remains relatively moderate.

Diagnostics

Barbara Willi cautions against **overestimating the value of antibodies**. Due to the high seroprevalence, they are not reliable for detecting an acute infection and should not be used as the sole basis for determining whether a clinically relevant and treatable granulocytic anaplasmosis is present. A single positive antibody titre does not justify therapy; diagnosis should instead be based on **direct pathogen detection**.

Reto Neiger emphasises the importance of PCR for diagnosis. In animals showing clinical symptoms, **morulae** should first be sought in a blood smear, followed by PCR confirmation. Barbara Willi explains that morulae are typical basophilic inclusions in granulocytes and can serve as evidence of infection. Blood smear examination for morulae offers a rapid, indicative diagnostic tool, though she agrees with Ingo Schäfer that identifying them requires practice. Moreover, morulae are present only within a limited time window after infection and can easily be missed.

Jessica Cavallieri confirms that these considerations also apply to horses, where a positive **PCR** is essential for diagnosis. Therapy based solely on suspicion from a positive antibody result is not appropriate. Ingo Schäfer adds that antibody testing may be unhelpful even if negative, as it may be too early for antibodies to have formed in acute cases; a negative titre therefore does not automatically rule out infection.

Asked whether paired serum samples showing a rising titre could be used diagnostically, Reto Neiger takes a critical view of this approach, noting that granulocytic anaplasmosis is an acute disease that must be treated during its symptomatic phase. Decisions regarding therapy cannot rely on a titre increase detectable 2–4 weeks later.

Therapy and Prognosis

When asked about treatment recommendations, Reto Neiger mentions a **doxycycline** dosage of 5 mg/kg twice daily (BID) or 10 mg/kg once daily (SID). Unlike the previously common recommendation of a four-week course, current practice often limits therapy to **two to three weeks**. Barbara Willi confirms that in most cases, two to three weeks of treatment is sufficient,

although evidence-based data are lacking. From an antimicrobial stewardship perspective, shorter treatment durations are desirable. A large systematic literature review of *A. phagocytophilum* infections in humans reported a mean treatment duration of 13 days. A treatment period shorter than two weeks is currently not recommended.

For **cats**, Ingo Schäfer reminds us that it is crucial to administer doxycycline with food or water, as tablets remaining in the oesophagus can cause severe inflammation and strictures.

Jessica Cavallieri explains that in **horses**, oxytetracycline or doxycycline is used depending on the clinical situation and tolerability. Monitoring therapy using PCR is not necessary, a point also confirmed by the other experts for dogs and cats. Treatment success is assessed primarily through improvement in clinical signs and the resolution of laboratory abnormalities.

All experts expressed an optimistic **prognosis**. Chronic infection does not appear to occur, although reinfections are possible. Infection with *A. phagocytophilum* induces antibodies but does not appear to confer lasting immunity.

Prophylaxis and Tick Protection

Christina Strube emphasises that veterinary-prescribed **tick repellents** provide the most reliable prevention. Caution is advised when using alternative products from pet shops, as some do not offer consistent protection. Regarding popular household remedies, such as lavender or rosemary extracts, she is similarly critical, noting that these do not achieve the necessary level of tick protection. Instead, she recommends using products that are tailored to the individual animal's lifestyle, following veterinary advice.

It is important that the products act quickly—ideally within the time frame before pathogen transmission occurs. Protection is also advisable during winter, as ticks are now active year-round due to milder temperatures. While many proven, effective antiparasitic products are available for dogs and cats, tick prophylaxis in horses is more challenging. Permethrin-based products require very frequent application to maintain consistent efficacy. Oral antiparasitics, which are commonly used in dogs and cats, show poor bioavailability in horses and are therefore unlikely to serve as a viable alternative in the future.

Dr Jennifer von Luckner