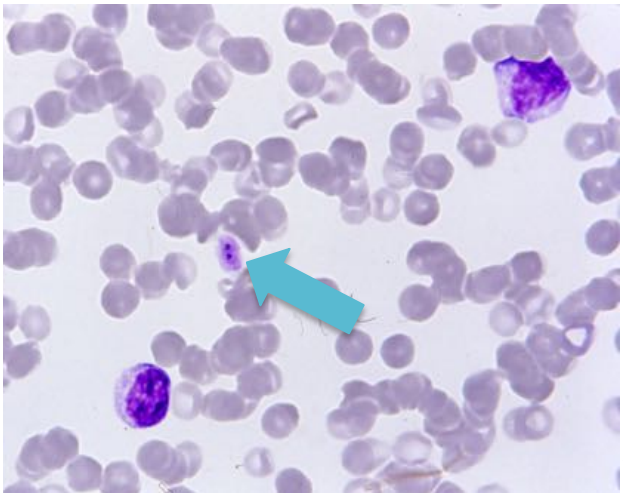
Working Group on Canine vector borne diseases

Anaplasmosis in dogs

FECAVA Federation of European Companion Animal Veterinary Associations

Anaplasma spp.

- Canine anaplasmosis is a tick-borne disease caused by *Anaplasma platys* or *A. phagocytophilum*, obligate intracellular gram-negative bacteria belonging to the Anaplasmataceae.
- *A. phagocytophilum* has a tropism for granulocytes and causes granulocytic anaplasmosis. It can also infect humans.
- *A. platys* has a tropism for platelets and causes canine cyclic thrombocytopenia.
- The main vector in Europe is *Ixodes ricinus* for *A. phagocytophilum* and *Rhipicephalus sanguineus* for *A. platys.*
- Rodents, domestic and wild ruminants and possibly birds serve as a reservoir.
- The seroprevalence for both diseases varies in different parts of Europe but can be as high as 70 %.
- The disease is frequently self-limited or asymptomatic.



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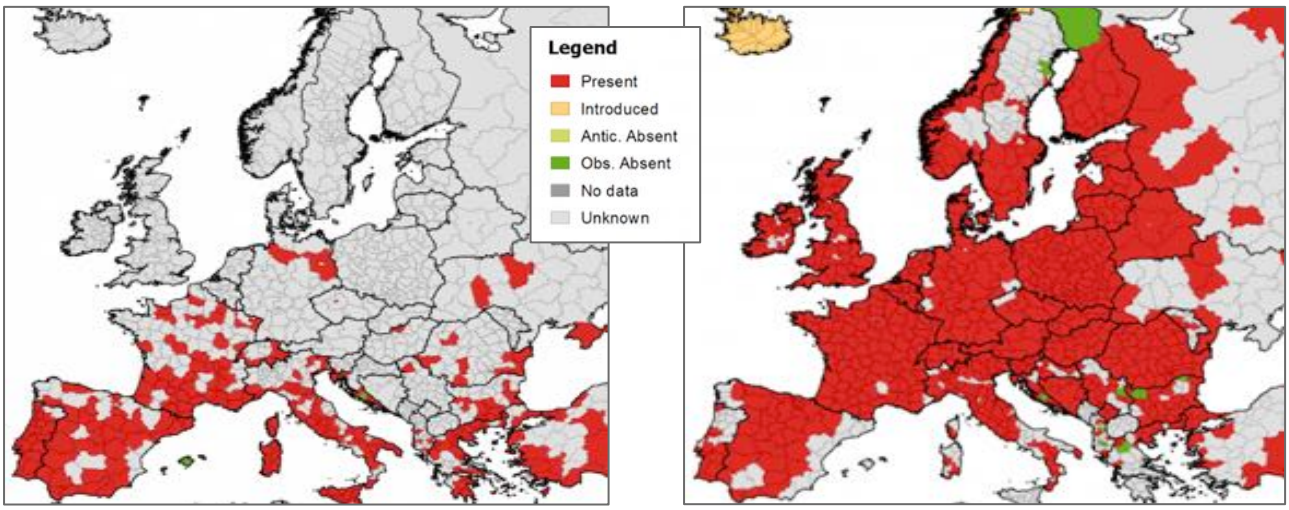
Anaplasma platys *can be seen in the thrombocyte (arrow).*

When to suspect infection?

- **Clinical signs**
  - Lethargy
  - Fever (cyclic in *A. Platys* infection)
  - Inappetence
  - Reluctance to move
  - Lameness
  - Diarrhoea
  - Bleeding disorders
  - Lymphadenopathy
  - Note: Infected dogs are often asymptomatic
- **Clinical pathology**
  - Thrombocytopenia (cyclic in *A. platys* infection)
  - Leukopenia
  - Moderate anaemia
  - Mildly elevated liver enzymes
- **Origin / travelling history**
  - Dogs that live in, originate from or have travelled to countries where the parasite is endemic are at risk.
  - Dogs in countries not currently considered endemic should not be considered free of risk.

How can it be confirmed?

- **Blood smear**: the microscopic identification of intracytoplasmic clusters of bacteria (morulae) in granulocytes (*A. phagocytophilum*) or platelets (*A. platys*) in Giemsa or Wright's stained blood smears. Rapid, inexpensive. Low sensitivity, poorer specificity if the person performing test is inexperienced. Useful initial test. Negative smears do not rule out infection.
- **Serology (ELISA and IFAT)**: Highly sensitive. Demonstrates exposure to infection but not necessarily current infection or disease. It takes 3-4 weeks post-infection for antibodies to develop. Cross reactivity between *A. phagocytophilum* and *A. platys.* Useful screen for exposure to infection but should always be interpreted in light of clinical signs and patient history. Demonstration of a 4x or greater increase in antibody titre in acute and convalescent-phase serum confirms the diagnosis. Quantitative serology (in-house rapid tests) is not sufficient.
- **PCR**: very specific and indicative of current infection. Blood PCR sensitive for *Anaplasma* spp detection. Detection as early as 4-10 days post infection.



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Distribution of the ticks **Rhipicephalus sanguineus** *(left, January 2018) and of* **Ixodes Ricinus** *(right, June 2018)*

Produced by the FECAVA working group on canine vector-borne diseases in collaboration with ESCCAP and ESDA

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Anaplasmosis in dogs

Disease management

- Doxycycline 5 mg/kg/12h or 10 mg/kg/24h PO for 28 days. In young animals with granulocytic anaplasmosis, doxycycline is still considered the drug of choice, despite the risk of enamel hypoplasia or discoloration.
- Prognosis and efficacy of treatment is improved if antibiotics are administered early on in the course of disease. Response should start to be seen within 48 hours. Treatment should be continued however, to reduce the bacterial load.
- Supportive care - in cases of bleeding disorders due to severe thrombocytopenia (rare in *A. phagocytophilum* infection) - platelet/plasma transfusion, vincristin 0.02 mg/kg IV bolus once
- Repeat serology 6 months after the start of treatment and then every 6-12 months.

Dogs should be checked for ticks at least every 24 hours. Ticks should be removed immediately.

In Europe, the tick Ixodes ricinus *is the main vector for* Anaplasma phagocytophilum.

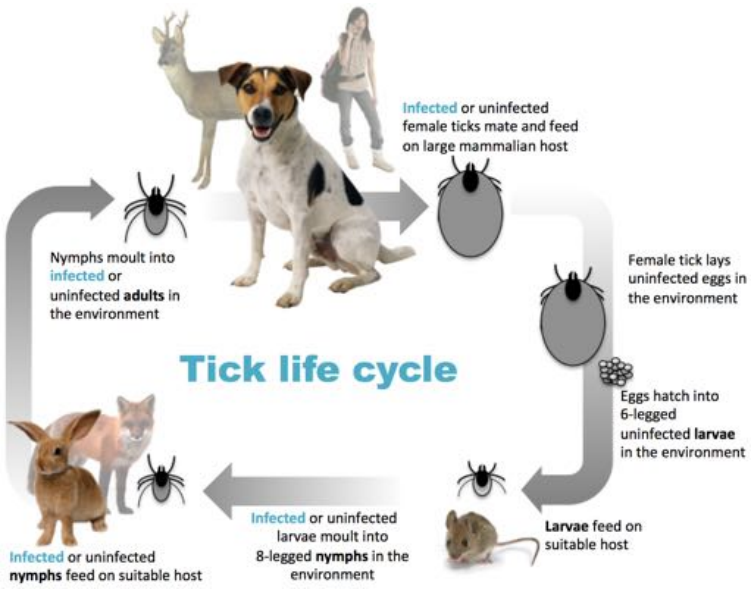
Prevention

- **Use of tick preventative products** - transmission is positively related to attachment duration, a product which kills or repels ticks will reduce the risk of disease transmission and the more rapidly this is affected, the greater the protective effect. Choice of product must also be based on compliance, lifestyle factors, owner capabilities and other parasiticide needs for the pet.
- **Checking for ticks** - dogs should be checked for ticks at least every 24 hours. Ticks found should be removed immediately without stressing them - this again increases the risk of disease transmission.

Travel advice

- Use of a product which kills or repels ticks will reduce the risk of exposure to tick-borne pathogen transmission while travelling to an anaplasmosis-endemic region.
- While greatly reducing tick-borne pathogen transmission, no tick preventative product is 100% effective. Dogs should therefore also be checked at least every 24 hours for ticks and any found tick immediately removed.

Anaplasmosis: ticks transmit the infection between hosts



- *Anaplasma* has a wide range of reservoirs due to the large number of species on which the ticks can feed (including humans, wild and domestic mammals and even birds).
- There is a transstadial transmission: any stage of the tick may be infected by or infect the host animals. However, the transmission is not transovarian: all tick eggs are uninfected.