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Canine babesiosis in France

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Abstract

Canine babesiosis has a high prevalence in France and continues to constitute a diagnostic challenge. This paper presents essential data derived from epidemiological surveys in order to define the main features of this disease. Atypical forms are frequent, the diagnosis must be confirmed by blood smears and treatment is based on the use of imidocarb. Prophylaxis currently remains insufficient.

Keywords: *Babesia canis*; Babesiosis; Dog; France; Imidocarb; Epidemiology

1. Introduction

Classically, canine babesiosis in France is defined as an inoculable protozoan infection caused by a single species: *Babesia canis*, large *Babesia* (i.e. larger than the radius of a red blood cell) transmitted by two species of *Ixodid* ticks, *Rhipicephalus sanguineus* and *Dermacentor reticulatus*. Canine babesiosis or piroplasmosis presents clinically with a combination of a febrile syndrome and a hemolytic syndrome, sometimes causing severe renal failure, and even fatal shock (Bourdoiseau, 2000).

Recent data, particularly derived from molecular biology techniques, now allow more precise identification and classification of the parasite species responsible for this disease and emphasize the new epidemiological and clinical features of canine babesiosis (Bourdeau, 1993; Bourdeau and Guelfi, 1995; Schetters et al., 1997; Casapulla et al., 1998; Kjeltrup et al., 2000; Boozer and Macintire, 2003). This paper presents a review of the cases and surveys conducted in France.

2. Geographical distribution and prevalence

Few surveys have been conducted in France to assess the magnitude of this protozoan infection. These are devoted to the prevalence and sometimes the incidence of the disease, based on the number of cases observed within a ''standard'' population of dogs (Table 1), by recording the number of cases diagnosed by veterinary clinics (Table 2), or on the basis of epidemiology and clinical data (Table 3). These surveys also present defects inherent to all questionnaire-based investigations and all clinical research.

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Table 1
Results of epidemiological surveys conducted in France and classified according to decreasing chronological order

Reference	Region	Dog sample size	Method of investigation	Prevalence (%)
Beugnet and Bourdoiseau (2003)	PACA and Languedoc	632	PCR on blood	25 (4%)
Shaw et al. (2003)	Dogs imported into the UK	56	PCR on blood	15 (27%)
Cabannes et al. (2002)	Gironde	989	IIF[a]	140 (14%)
Wlosniewski et al. (1997)	Marne	43 (2 samples by dog)	Blood culture and enrichment	14 (33%)
Mas (1990)	Ain	295	Smear and IIF	60 (20%)

[a] Indirect immunofluorescence.

Table 2
Results of surveys conducted in France by questionnaire sent to veterinary surgeries and clinics (decreasing chronological classification)

Reference	Region	Number of surgeries and clinics	Percentage of clinics
Credoz-Taupin (1995)	France	1780	45% observed, 6–50 cases/year
Fayet et al. (1986)	France	700	60% observed, less than 100 cases/year
Fournier (1974)	France	365	High endemic zones centered in Bordeaux and Lyon
Bailenger and Jamin (1968)	Southwest of France	270	10,500 cases observed by 70% of veterinary surgeons

- The methods of investigation used (clinical examination, blood smear, serology, etc.) have very different sensitivities and relevance. Parasitemia is transient in infected animals, resulting in a high false-negative rate, and antibodies only reflect the existence of previous infection and disappear several months after infection. New molecular biology methods can now detect previously unrecognized asymptomatic carriers.
- Dog sample sizes are sometimes small or difficult to compare, as they correspond to animals exposed to different risks of infection according to their lifestyle, whether or not they receive acaricidal or piroplasmicidal prophylaxis.
- Surveys are always limited in time and space, and may therefore not totally take into account ecological and climatic factors that vary over time and that act on tick vector populations.

Table 3
Surveys conducted in France on the epidemiological and clinical features of canine babesiosis based on clinical observations (decreasing chronological classification)

Reference	Region	Dog sample size	Major clinical findings	Major epidemiological findings
Bernard (1997)	Loire	151	Hyperthermia Anorexia Urine changes Anemia	Outdoor animals Spring–autumn peak Young animals Both sexes Poorly protected animals[a]
Credoz-Taupin (1995)	France	Responses from 1780 veterinarians	Depression Hyperthermia Anorexia Anemia	
Ulmer et al. (1993)	Marne	Cumulative sample size of more than 2000	Classical syndrome Efficacy of chemoprophylaxis	Spring–autumn peak Young animals

[a] Prophylaxis was either by vaccination, by application of acaricide, or by chemoprophylaxis.