TICK-TRANSMITTED DISEASES IN MEUSE (FRANCE)

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INTRODUCTION AND AIM OF THE STUDY

Since the middle of the nineties, the frequency of unexplained summer flu-like syndromes (SFS) has increased in the Canton of Souilly, Meuse. A local general practitioner (GP) realised a case-control study directing his investigations towards tick-borne diseases (TBD). The observation of his 1500 patients during 7 years has revealed 48 cases of Lyme Borreliosis (LB) and 11 cases of emerging rickettsioses (2 anaplasmoses, 3 bartonelloses, 2 coxielloses, 4 rickettsioses and Tibola). Those informations required further investigations.

MATERIAL AND METHOD

Prospective survey of Lyme Borreliosis in Meuse. Physicians from the studied area transmitted LB cases and epidemiologic informations to the "CNR des *Borrelia*"[a]. The estimated LB annual incidence was performed according the EUCALB's criteria[b].

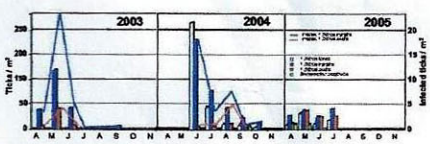
Monthly collection of exophilic ticks by flagging vegetation : 3 alloted zones - ticks's identification, density, phenology - test by PCR/RFLP to detect DNA of *Borrelia burgdorferi* sl (Bbsl) and DNA of *Anaplasmataceae*.

RESULTS

Prospective survey of Lyme Borreliosis in Meuse[a]. 90% EM & 10% different disseminated infections : neurological > rhumatological > dermatological > cardiological by decreasing order of frequency. 75% of the survey physicians being GP explains the surevaluation of the localised infection. 73.5% of the patients remembered of a tick-bite. 21 of the 74 cases of 2003 and 2004 related a fixation-time < 24h. The nymphal stage represents the main risk for human.

	2002	2003	2004
Participants	49/392 (12,5%)	77/361 (21,3%)	70/361 (19,4%)
Lyme disease cases	19	25	49
Incidence /100 000	79	83,9	156
Repartition	EM 16 Neurobor 2 Myocarditis 1	EM 22 ACA 1 Facial Palsy 1 Arthritis 1	EM 45 ACA 1 FPHEM 1 Myocarditis 1 Arthritis 2

Collection of exophilic ticks by flagging vegetation. The annual density of adult *Ixodes ricinus* seems stable from year to year, but not for immature stages, which density varies according to the climate. No autumnal increase has been observed. Only part of the *I. ricinus* collected and none of the *Dermacentor marginatus* found simultaneously during the cooler months could be studied.



***Borrelia* DNA Detection[a]**

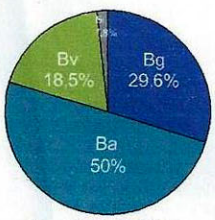
2003 54/403 positive (331 nymphs,72 adults) [*B. afzelii* (Ba) 27, *B. garinii* (Bg) 16, *B. valaisiana* (Bv) 10, *B. lusitaniae* (Bl) 1].

2004 22/245 positive (210 nymphs, 35 adults) [Ba : 14, Bg : 3, Bv : 3]. The preponderance of Ba is explained by the important quantity of nymphs, mainly infected by this species.

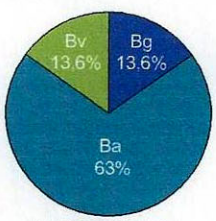
***Anaplasmataceae* DNA Detection[a]**

2004 18/245 *Anaplasma phagocytophilum* (Ap) 2, *Ehrlichia*-like (Esp) 4, *Wolbachia* 2, *Rickettsia* close to *R. heilongjiangii* (R#h) 6, Eubacteria 3.

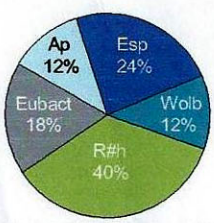
Coinfections 2004 5/22 Ap+Ba 1, Ap+Esp 1, Bg+Bv 2, Bg+Bv+Esp 1.



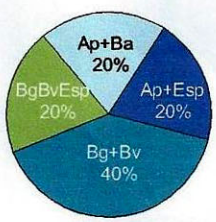
Repartition of Bbsl 2003



Repartition of Bbsl 2004



Repartition of *Anaplasmataceae* 2004



Coinfections 2004

CONCLUSIONS

- **The incidence of TBD is underevaluated in Meuse**, both for LB[c] or for emergent rickettsioses.
- The frequency of coinfections justifies a **systematic treatment of LB by doxycyclin.**
- After this study, the number of SFS has remained important, especially among the group at risk. Because of a lack of means, *Francisella tularensis*, arboviruses or protozoans have not been looked for, and *D. marginatus* has not been analysed either (density 15/100 m²). **A survey of the pathogen agents transmitted by ticks in the region is a must.**

a) Centre National de Référence des *Borrelia*, Institut Pasteur, Paris.
b) European Concerted Action on Lyme Borreliosis.
c) WHO workshop on Lyme Borreliosis Diagnosis and Surveillance, Warsaw, Poland, 20–22 June 1995.

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