First Case of Anaplasma phagocytophilum Seroconversion and Seroepidemiology in Northern Switzerland

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Purpose
To document the seroepidemiological situation in Northern Switzerland in order to evaluate risk of contact with the Anaplasma phagocytophilum (AP), and to set a diagnostic threshold for the indirect immunofluorescence (IF) test.

Material and Methods
During 2004-2005 sera were collected from patients after a tick bite (PT0) and 2 months later (PT2, n=203).
Sera collected from blood donors in 2005 living around Jura mountains (Don05, n=89).
Sera from patients presenting with clinical signs of Lyme borreliosis in the period 2005 to 2009 (LB, n=123).
A. phagocytophilum IF slides (Focus Diagnostics, USA) were used to detect IgG antibodies. Screening was made at 1/32 dilution and reactive sera were further analyzed up to dilution 1/512.
On March 2009, Giemsa stained thin blood smears were observed for morula in granulocytes, and 16S rRNA PCR was performed on plasma and blood after EasyMag (bioMérieux) DNA extraction.

Results
PT2 group showed a 18.2% prevalence of antibodies against PA at titers >32 and 7.4 % at titers >32 (tab.1). Comparing to the control serum at PT0 taken after the tick bite, no seroconversion could be observed (PT0 = PT2).
Donors showed a prevalence of 19.8% positive sera at titers >32 and 9.3% at titers >32 (tab.1).
In LB group prevalence of positive sera with titer >32 was 6.4% (fig.1). The highest titer obtained was 256 for the three groups.

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<tr>
<th>Titer</th>
<th>PT</th>
<th>Don</th>
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<tbody>
<tr>
<td>&lt;32</td>
<td>166</td>
<td>69</td>
<td>235</td>
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<td>32</td>
<td>22</td>
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<td>64</td>
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Tab1: IgG titer against A.phagocytophilum

Discussion
Considering the distribution of A.phag. antibody titers, all three populations were identical. Positivity limit can be settled at titer 64. This correspond to diagnostic limits given by this kit and other publications. Seroprevalence is then from 6.4% (LB) to 9.3% (Don). Out of the global 403 sera, 13 (3.2%) gave positive titer at 128 or 256. No serum gave higher titer than 256.

Conclusion
Seroprevalence of antibodies against A.phagocytophilum is lower but comparable to results obtained in other European countries. No typical clinical feature could be associated with this first seroconversion in Switzerland presenting evidence of an A.phagocytophilum infection. However the prevalence in ticks of A.phagocytophilum is 1 to 4%. Human anaplasmosis should actively be investigated in patients presenting fever associated to tick bites.

Clinical Case Presentation
Male, born in 1946, presenting on July 2007 repeating episodes of FUO (39°C) preceded by chills and dyspnoea. CT-scan showing subpleural and bilateral pulmonary opacities.
On February 2009 hospitalisation for new repeating febrile episodes associated with cough and dyspnoea.
During hospitalisation, biological markers only showed a high CRP level of 134 mg/l in 2007 and 189 mg/l in 2009.
Serology showed no active infection for toxoplasma, CMV, HIV, EBV, brucella, coxiella in 2007.

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