Introduction

Serology is the only reliable method to diagnose Q Fever. The aim of this study is to assess the reliability of two commercial tests for Coxiella burnetii serology in order to implement C. burnetii diagnosis in our laboratory.

Materials and Methods

Thirty five sera from 28 patients were tested by immunofluorescence (IFA) on antigen phase I and II slides for IgM and IgG (Vircell). Nine sera collected from the 2 patients presenting acute Q Fever and convalescence stage form the clinical group (QF). The other 26 sera were selected from patients defined as negative for Q Fever but tested in routine and presenting seroprevalence or non specific reactivity (NQF). Results obtained on clinical samples sent during the period 2007-2014 to ICHV were considered as reference (an in-house IFA).

To evaluate the Immunodot (IDot), 57 sera tested by IF (Vircell) were analysed on strips with phase I and II for both IgM and IgG (GenBio).

Discussion

The sera showed concordant results between both IFA tests. Variation obtained with IgG and IgM on both phase I and II was acceptable with two or less dilution differences.

Contamination of phase I has been observed on slides provided by another manufacturer, this is a very important quality control when choosing slide provider. In any case, to confirm/refute and determine patient disease status, every positive serum has to be followed and compared with another sample collected seven days later.

The IDot assay showed several discordant results and requires additional investigations. Phase II results positive on IFA but negative on IDot were obtained at limit titer of 20. As IgG and IgM were detected together, phase I spot showed no interest because this reaction appears later in the disease and phase II stays positive. Nevertheless, we consider this assay as a possible screening test which requires IFA confirmation with titrations in both phases IgG and IgM.

Results

The tables below show the results obtained for IFA and IDot.

<table>
<thead>
<tr>
<th>Discordance</th>
<th>Nb.</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICHV neg. / Vircell pos.</td>
<td>12</td>
<td>Sera showing reactivity at a the limit titer of 20. Determination of reactivity has to be adapted at our lab with experience.</td>
</tr>
<tr>
<td>ICHV pos. / Vircell neg.</td>
<td>1</td>
<td>Serum positive at phase I titer 640 due to strong cross reactivity on the acute Q Fever sera.</td>
</tr>
<tr>
<td>ICHV pos. / Vircell neg.</td>
<td>4</td>
<td>Possible alterations of sera (collected between 2007-2014 and submitted to successive freezing and thawing). A mistake during antigen generation is also possible.</td>
</tr>
</tbody>
</table>

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Conclusion

The sera panel enabled us to validate the implementation of Vircell slides for the diagnosis of Q Fever. The IDot Assay can be used as a screening test giving rapid answers but requiring confirmation by IFA. Final serological diagnosis can only be attained by two blood samples.