Reviewer's report

Title: Longitudinal monitoring of Ehrlichia ruminantium infection in lambs and kids by pCS20 PCR and MAP1-B ELISA in The Gambia

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Reviewer: Zerai Woldehiwet

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General
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Title: Longitudinal monitoring of Ehrlichia ruminantium in lambs and kids by pCS20 PCR and MAPI-B ELISA in the Gambia

Authors: Bonto Faburay et al

The aim of the study was to establish the kinetics of infection with E. ruminantium in newborn lambs and kids, which are thought to have a higher degree of resistance than adult sheep and goats, by testing for the presence of specific nucleic acids by PCR and for antibodies by ELISA under field conditions in the Gambia. Blood samples, which were collected on the day of birth or within 3 days after birth and every 1 or 2 week thereafter, were used for PCR or ELISA; the animals were monitored for tick infestation every week.

The main findings of the study were:

a) tick infestation was first detected 16 weeks after birth
b) E. ruminantium was detected by pCS20 PCR in 57 of 76 animals at least once
c) Some animals (14 of 73) were PCR-positive as early as 3 day after birth
d) The number of PCR-positive animals increased with age
e) Specific antibodies were detected by ELISA in most animals (90.2%) one week after birth
f) The number of sero-positive animals declined with age

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

The main conclusions were:

a) As ticks were not detected until 16 weeks after birth, the detection of E. ruminantium in lambs/kids as young as 3 days old suggests transmission other than tick feeding, including vertical transmission.

Suggestions for improvement

• Unfortunately the authors did not keep any of the lambs/kids under tick free conditions. This would have helped to clarify the possible role of non-tick transmission.
• Even if the lambs/kids were exposed to ticks, 3 days is too short, as the incubation period following tick transmission could be one week or longer.

b) The authors rightly concluded that the presence of specific antibodies in >90% of the animals during the first week of life was probably due to maternal antibodies.

Suggestions for improvement

• Unfortunately no information was given regarding the possible association between the detection of nucleic acid in particular period (say week 1) and seropositivity in subsequent periods (say week 2 and 3).
• Also it would have been of interest to establish whether the 57 animals which were PCR-positive were also found to be subsequently ELISA-positive. This would have helped to establish whether or not the PCR test was always detecting true positives and to rule out the detection of nucleic acids of other related organisms.
c) The resulting atypical antibody response is probably a reflection of vertical transmission.

Suggestions for improvement

• The issue of vertical transmission is a complex one. Depending on when the transmission occurred, the embryo lamb/kid may be born fully immune, without the presence of the agent, or immunotolerant and persistently infected, without detectable antibodies but with the agent being persistently present in the blood or other tissues. Immunotolerance usually occurs in foetuses infected before the first half of gestation (e.g. in humans infected with rubella virus and in ruminants infected with pestiviruses).

• Unfortunately the authors did not present data to support or to reject the null hypothesis that there was no vertical transmission.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests