ISVA VIRTUAL MEETING 2021

INTERNATIONAL SHEEP VETERINARY ASSOCIATION

23RD-25TH NOVEMBER

#ISVA2021

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Book of ABSTRACTS

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ISVA VIRTUAL MEETING

Meeting dates

23, 24, 25 and 26, November 2021

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ISVA Communications: Infectious reproductive diseases

OP-07

INFLUENCE OF IN VITRO AND MURINE VIRULENCE OF *TOXOPLASMA GONDII* STRAINS ON THE OUTCOME OF EXPERIMENTAL OVINE TOXOPLASMOSIS

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Objectives:

This study investigates how infection by 3 *T. gondii* isolates that showed variation in the *in vitro* (growth rate [GR] in trophoblast ovine cell line) and murine (mortality rate [MR] in outbred mouse) models, TgShSp1 (genotype ToxoDB#3; low GR; 0% MR), TgShSp16 (ToxoDB#3; low GR; 21% MR) and TgShSp24 (ToxoDB#2; very high GR; 18% MR) might influence the pathogenesis of toxoplasmosis in pregnant sheep.

Material and methods:

Fifty-six 90 days pregnant sheep , seronegative to *T. gondii* and of the same age and genetic background distributed in 3 groups according to the isolate used in the challenge were orally dosed with 10 sporulated oocysts. Sixteen pregnant sheep were kept as non-infected controls. Five animals from each infection groups and three from the control group were culled at 14 and 28 days post infection (dpi). The remaining animals from each group were left until abortion or delivery occurred. Rectal temperature, occurrence of abortions, serological antibodies, and histopathological lesions in placenta and foetus, as well as tissue distribution of *T. gondii* were analyzed and different non-parametric statistical tests were applied. All experimental procedures were approved by the local government after the recommendation from the CSIC Bioethics committee.

Results:

All isolates elicited early abortions (before 12 dpi) although they were more frequent, but not statistically significant, in sheep challenged with TgShSp24 (35 % vs. 20% in Sp1 and Sp16). Sheep dosed with TgShSp 24 and 16 showed hyperthermia (5 dpi) and specific serological antibodies (12 dpi) one day before those ewes challenged with TgShSp1 ($p>0.05$). Characteristic necrotic a non-purulent inflammatory histological lesions were mainly seen ($p<0.05$) at 28 dpi in the group infected with TgShsp1, while sheep infected with TgShSp16 scarcely showed any lesion and, when found, they were very mild. The detection of parasite in placentomes at 14 dpi was infrequent and only found in TgShSp1 group whereas its detection was confirmed in all infected sheep from all strains at 28 dpi with the exception of one sheep infected with TgShSp16 ($p>0.05$). However, at 28 dpi there were clear differences between the groups ($p<0.05$), as detection in both placental and foetal samples, was more frequent in the group infected with TgShSp1 (96% and 80% respectively) than in the groups challenged with TgShSp24 (55.5% and 80% respectively) and TgShSp16 (6% and 20%). Finally, a total of 6, 6 and 3 infected sheep with TgShSp1, TgShSp16 and TgShSp24, respectively lambed or aborted after 28 dpi and *T. gondii* was diagnosed in most of them (i.e. 100%, 72% and 100% respectively), through the finding of characteristic lesions or parasite DNA.

Conclusions:

These results showed slight differences in the body temperature, the outcome of infection and production of antibodies, and clear differences in the severity of the lesions and parasite tropism depending on the insolate. As no clear relation could be established between the severity of the lesions and parasites distribution with the occurrence of abortions, additional mechanisms must be participating on the pathogenesis of the disease.