Asymptomatic dog macrophages show higher ability for parasite elimination, when in culture with autologous lymphocytes

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Visceral Leishmaniasis is caused by protozoa from the species Leishmania infantum. Dog is the main domestic reservoir of L. infantum. Infection with L. infantum varies clinically, from asymptomatic to poly-symptomatic disease. Macrophage (MØ) is the most infected cell with amastigotes of L. infantum and is also capable of antigen presentation and elimination of the parasite, by releasing reactive oxygen species (ROS) and nitric oxide (NO), which depends on IFN-γ production by CD4 and CD8 T cells. On the contrary, production of IL-4 is detrimental to parasite elimination. Thus, this study aimed to evaluate the effect of IFN-γ and IL-4 production by T cells on the release of NO and ROS by MØ and parasite elimination using a co-culture system of CD4 and/or CD8 T cells, with monocyte derived MØ after infection with L. infantum. For this purpose, naturally infected dogs, both asymptomatic (AD n=10) and symptomatic (SD n=9) and non-infected dogs (n=7) were used. Monocyte derived macrophages were infected with L. infantum GFP and co-cultured with CD4 and CD8 T cells. After 48h of culture IFN-γ and IL-4 intracellular production by CD4 and CD8 T cells and NO and ROS production by infected MØ was evaluated. We concluded that AD had lower infection rates in all co-culture systems, compared with SD. In MØ CD4 and MØ CD8 , percentage(%) of CD4 IFN-g and CD8 IFN-g was higher in AD and SD, compared with NID. In MØ CD4 ?4 IL-4 was higher in AD, compared with SD and NID. In MØ CD4 and CD8 , ?4 IFN-g and ?8 IFN-γ was higher in AD and SD compared with NID. ?4 IL-4 was higher in AD, compared with SD and NID. In all co-culture systems ?14 NO , was higher in AD, compared with SD and NID. ?14 ROS , was higher in AD, compared with NID in MØ CD4 co-culture system. Using a low invasive methodology, we concluded that SD CD4 T lymphocytes produce higher levels of IL-4, leading to lower levels of NO and ROS in MØ and higher infection rates, compared with AD.

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