The γδ cells as marker of non-seroconverted cattle naturally infected with *Mycobacterium avium* subspecies *paratuberculosis*

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Early diagnosis of MAP infection is a pressing need for the disease intervention. Lymphocyte subsets and their expressed adhesion molecules could contribute in defining a distinct diagnostic marker (or markers) at the subclinical period of the infection. In accordance with this objective, milk and blood samples were collected from two groups of cattle naturally infected with MAP and their corresponding negative controls. Group (C) represented by 3-4 year-old ELISA negative/PCR positive-cattle that were considered as subclinical seronegative low shedder group (early stage). Group (A) included 6-8 year-old ELISA positive cattle, which were considered as a clinical seropositive group (late stage). Flow cytometry of B cells, CD8⁺, CD4⁺ and γδ cells and the adhesion molecules CD44⁺, CD62L, LFA-1 and LPAM-1 indicated increase in CD4⁺ and B levels, with higher levels in blood than milk of group A, and significant expression of CD44⁺ in blood and milk and LPAM-1 in blood only. The CD8⁺ cells count in milk was higher than blood in the late stage. The peculiar feature of the early stage (group C) was the high level of γδ cells in the blood and milk, with tendency to express high level of CD62L. Compelling evidence could support the assumption that the dominated γδ cells at early stage of MAP infection could be of CD8CD2⁻ WC⁺ phenotype. γδ cells appear as promising markers in defining early changes of MAP infection due to their important role in priming innate and cell mediated immunity.