Association between milk antibody and interferon-gamma responses in cattle from Mycobacterium avium subsp. paratuberculosis infected herds

Paratuberculosis is a chronic infection of ruminants caused by Mycobacterium avium subsp. paratuberculosis (MAP). It is possible to detect infection with paratuberculosis at different stages of disease by means of various diagnostic test strategies. The objective of the present study was to evaluate if early cell-mediated immunity could predict the antibody results of milk samples in cattle with different faecal culture (FC) status. A group of 975 cows from 18 Danish MAP infected dairy herds was studied during a 3-year period. Cell-mediated immunity was measured in blood samples from heifers by use of an IL-12 potentiated IFN-g protocol. Following calving, milk samples were collected and analysed for MAP specific antibodies by ELISA and faecal samples were cultured. The relationship between the variables IFN-g and FC and the outcome of ELISA was assessed using generalised additive models. The results of the study showed that a significant association exists between early IFN-g and later FC status with occurrence of antibodies. In addition, the early IFN-g and FC status affect the antibody ELISA result at different stages post calving. We observed that only some IFN-g positive animals developed a positive antibody response against MAP, which indicate that cell-mediated immune responses can control or eradicate MAP in many animals.

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