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Immunological characteristics of cattle with *Mycobacterium avium* subsp. *paratuberculosis* infection

M. Toman, M. Faldyna, IPavlik

<https://doi.org/10.17221/5762-VETMED>

Citation: Toman M., Faldyna M., IPavlik (2003): Immunological characteristics of cattle with *Mycobacterium avium* subsp. *paratuberculosis* infection. Veterinarni Medicina, 48: 147-154.

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Several years lasting clinical and microbiological monitoring of a cattle herd infected with paratuberculosis allowed to identify three groups of animals showing different courses of the infection. Group N (non-shedders) included animals negative by faecal culture throughout the monitoring period. Animals of Group L (low shedders) shed sporadically small quantities of mycobacteria (1 to 9 CFU), but remained clinically healthy throughout the monitoring period. Group H (high shedders) included animals shedding repeatedly large quantities of *Mycobacterium avium* subsp. *paratuberculosis* (10 CFU) with a progressive deterioration of the state of health in most of them. Animals with specific antibodies detected by agar gel immunodiffusion and complement fixation test were found in all groups, but the percentage of serologically positive animals was higher in animals of Group L and significantly higher ($p < 0.01$) in animals of Group H than in animals of Group N. Specific cell-mediated immunity was demonstrated especially in the group of low shedders (Group L), the differences in the percentages of interferon gamma assay positive animals in this group and other groups was highly significant ($p < 0.01$). Only insignificant differences in the counts and activity of peripheral leukocytes were found among groups of clinically healthy animals differing in intensity of *M. paratuberculosis* shedding. However, the progressive development of clinical signs of paratuberculosis in Group H was associated with a significant ($p < 0.01$) decrease of lymphocytes and monocytes, a non-significant decrease of neutrophils, a significant ($p < 0.05$) increase in the percentage of CD4⁺ cells and a insignificant decrease in the percentage of CD8⁺ cells; consequently the CD4/CD8 ratio increased.

Keywords:

Johne's disease; cattle; resistance; cell-mediated immunity; interferon-gamma

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