

Isolation of *Mycobacterium avium* subsp. *paratuberculosis* from muscle tissue of naturally infected cattle

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Although dissemination of *Mycobacterium avium* subsp. *paratuberculosis* (MAP) from the gastrointestinal tract to liver, spleen, reproductive organs, and kidney has been reported; no previous studies have detected dissemination of MAP to muscle tissue of infected cattle. The purpose of this study was to assess whether MAP may also be present in muscle tissue of naturally infected cattle. Forty-seven cows, originating from farms with a prevalence of MAP infection ranged between 3-10 %, were slaughtered due to clinical signs associated to paratuberculosis (27 %) or for other reasons (73 %). Samples of gastrointestinal tissues, lymph nodes, blood and diaphragm muscle were taken and analyzed by histopathology and bacteriological culture. Our results revealed the presence of MAP in gastrointestinal tissues of thirty-one of the slaughtered animals (66 %). MAP was also detected by bacteriological culture, PCR and Real-Time PCR in the diaphragm muscle of six infected animals (19 %). The six animals showing evidence of MAP in muscle showed a diffuse type of paratuberculosis with heavy bacterial load in gut tissues and four of them showed severe clinical signs of paratuberculosis including diarrhea, weight loss and low milk production. The other two positive animals did not show clinical signs of paratuberculosis but had heavy bacterial load in gut tissues. This result suggests that the presence of Map in diaphragm muscle may also occurs at an early stage of infection with no identifiable clinical signs of paratuberculosis. MAP was also found in feces of three of the six animals showing evidence of MAP in diaphragm muscle and in blood of only one of them. In conclusion, we provide the first evidence that Map can be detected and cultured from muscle of MAP-infected cattle destined for human consumption and suggest a possible route of exposure of humans to MAP via contaminated meat.