

## Eosinophilic myositis due to sarcocystosis in a herd of beef cattle

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### Abstract

*Sarcocystis* is a genus of cyst-forming coccidia with an obligatory two-host life cycle. Cysts are found in muscles of herbivore intermediate hosts, whereas carnivores serve as definitive hosts. Three species of *Sarcocystis* have been described in cattle: *S. cruzi* (*bovicanis*), *S. hirsuta* (*bovifelis*) and *S. hominis* (*bovihominis*). Sarcocystosis is widespread in bovines but the infection is usually asymptomatic. However, eosinophilic myositis, which may lead to condemnation of carcasses has been associated with sarcocystosis. Rarely, sarcocystosis may cause abortion in bovines.

In this case report we present data of a Blonde d'Acquitaine beef cattle herd, which had a high incidence of eosinophilic myositis. Suckled cows (on average 80) with their calves as well as the eldest groups of female replacing stock were pastured during the summer months. The younger replacement animals and the fattening bulls were housed during the whole year. Drinking water was supplied by a groundwater pump at the farm.

Of the suckled cows, which had been culled during the last 2 years, approximately 30% had shown grossly visible lesions of eosinophilic myositis at slaughter. Especially, mature animals over 5 years of age were seen to be affected. No lesions were seen in fattened male animals that were slaughtered at an age of 24 to 26 months.

Affected skeletal muscles showed more or less well-demarcated greenish lesions, which were disseminated throughout the carcass. Samples of affected muscle were examined histologically. Lesions consisted of a central core of suppuration

with eosinophilic leucocytes predominating and associated muscle fibre necrosis, surrounded by a rim of granulomatous reaction. Beyond this border a predominantly eosinophilic infiltrate radiated outward into the intermysium. Degenerating sarcocysts were present in the suppurative centre of most lesions examined. Also vital sarcocysts lying inside muscle fibres, without inflammatory reaction, were observed. Measured sarcocysts were up to 100 µm wide and up to 1300 µm long. All sarcocysts had a distinct cyst wall, which was radially striated by the presence of palissading villar protrusions. The thickness of the cyst wall, including protrusions, varied from approximately 7 to 9 µm. Based on these morphological characteristics, particularly the thick cyst wall with radiated structure, the sarcocysts were provisionally classified as either *S. hirsuta* (*bovifelis*) or *S. hominis* (*bovihominis*), which cannot be distinguished from each other light-microscopically (J.P. Dubey, personal communication).

Circumstantial evidence indicated the involvement a human (*S. hominis*) rather than a feline final host (*S. hirsuta*). An inquiry of the farmer revealed, for instance, that during January or February of the year 2003 his neighbour's cesspit, containing human faecal material, had been emptied, its contents being spread into the pasture. A single, 10 year old, cat present at the farm never had been fed raw bovine meat, according to the farmer.

In conclusion: evidence is provided for a causal relationship between sarcocystosis and eosinophilic myositis in cattle. Further characterization of the sarcocysts, possibly by DNA analysis, is required to clarify the source of infection.