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"The developmental stages of Sarcocystis ovicanis in specific-pathogen-free sheep and the host antibody response to infection."

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Twenty nine lambs were raised under specific-pathogen-free (i.e. Sporozoa-free) conditions and infected at weaning with 0.25 - 2.0 million Sarcocystis sporocysts harvested from the faeces of experimentally infected dogs. The lambs were euthanized from 1½ hours to 134 days post-inoculation (dpi) and 94 histological sections representative of all major organs and tissues were examined for developmental stages of the parasite.

Intact sporocysts and the remnants of excysted sporocysts were found between 1½ hours to 3 dpi within the gastro-intestinal tract. From 6 - 19 dpi, the first merogonous (or alternatively, schizogonous) stage of the parasite was found within the arteriole endothelia of most organs and tissues, except those of the nervous, endocrine and reproductive systems. From 21 - 34 dpi, a second merogonous generation was detected within the endothelial cells of capillaries throughout the body. This generation was smaller in size than the first but much more prolific. At 36 dpi, a few organisms morphologically different from the previous 2 stages were found in hepatic sinusoids and lymph node capillaries. These stages may possibly represent a third merogonous stage of the parasite.

Developing sarcocysts were detected within skeletal and cardiac musculature after 41 dpi and some were also found in the brain. Between 41 - 45 dpi, the sarcocysts appeared as small homogenous stages centrally located with the striated muscle fibres. From 50 - 55 dpi, these stages increased in size and underwent division forming numerous distinct merozoites. After 60 dpi, the sarcocysts assumed their characteristic appearance as they contained numerous merozoites, peripheral merozoites and were bounded by a thick radially-striated cyst wall.

The host antibody response to infection was examined using the Complement Fixation Test (CFT) and the Indirect Fluorescent Antibody Test (IFAT). Complement-fixing antibodies to S.ovicanis appeared at 10 dpi, peaked in intensity at 30 dpi and then gradually decreased thereafter. Antibodies detected by the IFAT appeared at 25 dpi, reached maximum intensity at 75 dpi and then persisted at a plateau level to 134 dpi.