

New insights of the local immune response against both fertile and infertile hydatid cysts

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Background Cystic echinococcosis is caused by the metacestode of the zoonotic flatworm *Echinococcus granulosus*. Within the viscera of the intermediate host, the metacestode grows as a unilocular cyst known as hydatid cyst. This cyst is comprised of two layers of parasite origin: germinal and laminated layers, and one of host origin: the adventitial layer, that encapsulates the parasite. This adventitial layer is composed of collagen fibers, epithelioid cells, eosinophils and lymphocytes. To establish itself inside the host, the germinal layer produces the laminated layer, and to continue its life cycle, generates protoscoleces. Some cysts are unable to produce protoscoleces, and are defined as infertile cysts. The molecular mechanisms involved in cyst fertility are not clear, however, the host immune response could play a crucial role. **Methodology/Principal findings** We collected hydatid cysts from both liver and lungs of slaughtered cattle, and histological sections of fertile, infertile and small hydatid cysts were stained with haematoxylin-eosin. A common feature observed in infertile cysts was the disorganization of the laminated layer by the infiltration of host immune cells. These infiltrating cells eventually destroy parts of laminated layer.

Immunohistochemical analysis of both parasite and host antigens, identify these cells as cattle macrophages and are present inside the cysts associated to germinal layer.

Conclusions/Significance This is the first report that indicates to cell from immune system present in adventitial layer of infertile bovine hydatid cysts could disrupt the laminated layer, infiltrating and probably causing the infertility of cyst. © 2019 Hidalgo et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.