PATHOMORPHOLOGICAL CHANGES IN SKIN OF *BESNOITIA BESNOITI* INFECTED CATTLE

Martin C. Langenmayer¹, Monir Majzoub¹, Nicole S. Gollnick², Julia C. Scharr², Gereon Schares³, Walter Hermanns¹

¹Institute of Veterinary Pathology, Veterinary Faculty, Ludwig Maximilian University Munich, Munich, ²Clinic for Ruminants with Ambulatory and Herd Health Services, Veterinary Faculty, Ludwig Maximilian University Munich, Oberschleissheim, ³Institute for Epidemiology, Friedrich-Loeffler-Institut, Federal Research Institute for Animal Health, Wusterhausen, Germany

*Besnoitia besnoiti*, an apicomplexan parasite, belonging to the cyst-forming coccidia, is the causative agent of bovine besnoitiosis. In chronically infected cattle *B. besnoiti* is predominantly localized in tissue-cysts in the skin, mucosal membranes and scleral conjunctiva. In severe cases, typical clinical signs of chronic disease are cutaneous lesions such as thickening and folding of the skin and hypotrichia or alopecia. The tentative diagnosis based on clinical signs can be confirmed by serology and the identification of tissue cysts by skin biopsy or cytology. There is still a significant lack of information concerning many aspects of epidemiology, immunology and pathogenesis of bovine besnoitiosis. Over a period of six to eight months, we investigated histopathological changes in the skin of two Simmental heifers and two Limousin cows infected with the parasite. Infection was confirmed by detection of *B. besnoiti* antibodies via immunoblot and immunofluorescent antibody test (IFAT). Skin biopsies were taken for the first time at the onset of acute signs of the disease (fever, LAMENESS, subcutaneous edema and nasal and ocular discharge). Thereafter, three of the animals were sampled twice a week over a period of three months, followed by a bimonthly sampling regime, while one Limousin cow was sampled for six months every other week. Skin samples were stained with H&E and Giemsa and histologically examined. During the acute phase of disease, hyperemia, edema in the dermis and infiltration with inflammatory cells were observed. Parasitic disease could be demonstrated histologically as early as two weeks after the onset of clinical signs. Typical Besnoitia-like cysts in the scleral conjunctiva were demonstrated another two weeks later. The Limousin cows were necropsied and a large number of parasitic cysts were found in the skin and subcutis, in fasciae, mucous membranes of the respiratory tract and in walls of blood vessels. Host response to *B. besnoiti*-cysts consisted of partially severe granulomatous, lymphocytic and eosinophilic inflammation; lysis of single cysts could be observed. Further studies have to be conducted to get more insights on exact pathogenesis of the disease, e.g. transition from acute to chronic stage.