ECVP/ESVP Summer School in Veterinary Pathology

Marie Curie Training Courses

Summer School 2006 – Emerging Infectious Diseases Case 14

CASE 14 Provided by: Dr. Arnold Wünschmann, College of Veterinary Medicine, University of Minnesota, St Paul, USA

Signalement: Toad (*Bufo bufo?*), adult

History:
Zoo animal. Found dead.

Gross Findings:
Moderate emaciation. The skin at the ventrum exhibited multiple white spots (appr. 1-2 mm diameter). In the mesentery, multiple white nodules (< 1 mm diameter) were observed. The lungs were reddened and contained numerous nematodes (1-2 mm length).

Histology: Tissue from a toad.

1. DESCRIPTION OF HISTOLOGIC FINDINGS

Skin. There is multifocal erosion of the upper epidermis, represented by sloughing of superficial epidermal layers which exhibit eosinophilic cytoplasm, marked intracellular oedema and eosinophilic nuclei (necrosis). Between and within necrotic epithelial cells are up to 40 µm diameter, cyst-like spherical structures, with a thin eosinophilic outer wall and several central basophilic structures, 1-2 µm diameter (spores), surrounded by a clear halo. Occasional empty, similar structures are also seen. The lesions contain a few macrophages and erythrocytes. Focally, there are accumulations of spherical basophilic round structures of about 1 µm diameter adherent to the necrotic surface epithelial cells (coccoid bacteria). Within deeper layers of the epidermis, moderate intercellular oedema, scattered apoptotic cells and scattered multinucleated basal cells (epidermal hyperplasia/proliferation) are seen. There are scattered heterophils. Within the superficial dermis there are moderate numbers of macrophages some of which contain brown-black granular pigment (melanin) and, less frequently, pale brown to yellow material. Vessels within the dermis are intensely filled with erythrocytes (moderate hyperaemia) and lymphatic vessels are distended and often contain some fibrillar material (fibrin).

2. MORPHOLOGIC DIAGNOSIS

Skin; severe acute multifocal erosive and proliferative epidermitis, with necrosis of superficial epidermal layers and numerous fungal organisms in various morphological forms (sporangia with zoospores) and superficial coccobacilli.

3. ETIOLOGY

Batrachochytrium dendrobatidis (Chytridiomycota, aquatic fungus)