

WSC 2014-2015, Conference 12

Case 1. Tissue from a calf.

MICRSCOPIC DESCRIPTION: Haired skin: The epidermis is partially covered by a thick serocellular crust which entraps hair shafts. **(1 pt.)** Numerous hair shafts, both within the crust and the subjacent dermis often contain numerous 2-3 round dermatophyte arthrospores surrounding the cuticle of the hair shaft, and 1-2 um wide filamentous hyphae within the medulla. At one edge of the crust, there are low numbers of cross- and tangential sections of an arthropod parasite with a chitinous exoskeleton, jointed appendages, and striated muscle. The serocellular crust contains numerous degenerate neutrophils which form pustules, as well as abundant serous fluid as well as multifocal hemorrhage. The subjacent epidermis is diffusely hyperplastic with mild diffuse intracellular edema, and is covered by a thin layer of orthokeratotic hyperkeratosis. Superficial dermal vessels are moderately congested and the superficial dermis contains few neutrophils, eosinophils, and histiocytes. Apocrine glands are diffusely dilated.

MORPHOLOGIC DIAGNOSIS: Haired skin, follicles: Dermatitis, hyperkeratotic, with focally extensive crust formation, numerous dermatophyte arthrospores and hyphae and few larval mites. **(3 pt.)**

CAUSE: *Trichophyton verrucosum*, *Psoroptes bovis* (any other mite or louse of ox is OK, too) **(2 pt. apiece)**

O/C: **(1pt.)**

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Case 2. Tissue from a goat.

**MICROSCOPIC DESCRIPTION:** Haired skin: There is diffuse marked epidermal hyperplasia **(2pt.)** and acanthosis **(1pt.)** which extends into the outer root sheath of hair follicles and with formation of thick epidermal rete ridges **(1pt.)**. There is marked hypergranulosis **(1pt.)**, and there is a moderately thick layer of orthokeratotic **(1pt.)** and parakeratotic **(1pt.)** hyperkeratosis. There is infiltration of the superficial and deep dermis, most prominently in perivascular areas **(1pt.)** with moderate numbers of eosinophils **(1pt.)** and lymphocytes **(1pt.)**, with fewer histiocytes, neutrophils and plasma cells, which occasionally infiltrate the rete pegs **(1pt.)**. Hair shafts are often missing and follicles are filled with keratin debris. **(1pt.)** Approximately half of the epidermis is covered by a thick serocellular crust **(1pt.)** contain innumerable degenerated neutrophils **(1pt.)** admixed with cellular debris and serum.

**MORPHOLOGIC DIAGNOSIS:** Haired skin: Epidermal hyperplasia, with acanthosis, hyperkeratosis, eosinophilic and lymphocytic dermatitis, and numerous pustules. **(3pt.)**

**CAUSE** Zinc deficiency (and other primary cornification disease OK as well) **(2pt.)**

**O/C: (1pt.)**

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Case 3. Tissue from a cow.

MORPHOLOGIC DESCRIPTION: Haired skin: Throughout the superficial and deep dermis **(1pt)**, the walls of dermal arterioles are markedly expanded **(1pt)** by various combinations and concentrations of viable and degenerate neutrophils **(1pt)**, macrophages, lymphocytes, plasma cells, admixed with abundant cellular debris **(1pt)**, hemorrhage and polymerized fibrin **(1pt)** (fibrinoid necrosis) **(2pt.)** The cellular infiltrate often extends into the surrounding dermis **(1pt)**. Occasionally, the lumen of affected vessels contains and is occasionally occluded by lamellated adherent fibrin thrombi **(1pt)** with contains moderate numbers of degenerate neutrophils and cellular debris. There is diffuse necrosis **(1pt)** of the overlying epidermis **(1pt)** and follicular epithelium **(1pt)**, which is replaced by a coagulum of necrotic debris, serum, large numbers of degenerate neutrophils **(1pt)** and cellular debris, hemorrhage, and fibrin, and superficial bacterial colonies as well as entrapped hair shafts. The necrotic follicles are surrounded and infiltrated by large numbers of neutrophils **(1pt)**, many of which are necrotic and admixed with cellular debris. Adnexa **(1pt)**, including sebaceous glands are also necrotic; only very few follicles are lined by any viable epithelium, and these are located deepest within the dermis.

MICROSCOPIC DIAGNOSIS: Haired skin: Vasculitis, necrotizing, diffuse, severe, with thrombosis and diffuse epidermal and follicular necrosis **(2pt)**

CAUSE: Ovine herpesvirus-2 **(2pt)**

O/C: **(1pt)**

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Case 4. Tissue from a mouse.

(Just describe the section with external ear canal)

**MICROSCOPIC DESCRIPTION:** Haired skin, pinna: Multifocally, hair follicles are markedly expanded **(1 pt.)** up to 1mm in diameter (comedone) **(1 pt.)** by abundant densely packed keratin debris and numerous cross and tangential sections of arthropods, which are often closely adherent to the follicular epithelium. The arthropods **(2 pt.)** are 80 to 100 um in diameter, have a smooth chitinous exoskeleton, jointed appendages, bands of striated muscle, and a reproductive tract **(2 pt.)**. Centrally within the affected follicles, there are occasional mite eggs **(1 pt.)** measuring 40 um x 60 um with a thin shell and numerous 3-4um nuclei **(1 pt.)**. The follicular epithelium is mildly hyperplastic **(1 pt.)** up to 6-7 cell layers thick. Similar mites and eggs are present within the follicles and adjacent epidermis of the external ear canal, and enmeshed in a thick layer of orthokeratotic hyperkeratosis **(1 pt.)**. In this area, the epidermis is markedly hyperplastic **(1 pt.)**, up to 10 layers thick, and the subjacent dermis is moderately edematous and infiltrated by low to moderate numbers of histiocytes, eosinophils, lymphocytes, plasma cells, and mast cells. **(1 pt.)** Scattered cross-sections of mites and eggs along the epidermis, unassociated with follicles or a layer of orthokeratotic hyperkeratosis (this may be a separate species of mite, but difficult to tell in tissue). **(1 pt.)**

**MORPHOLOGIC DIAGNOSIS:** 1. Haired skin: Comedone formation with numerous intrafollicular mites and eggs. **(2 pt.)**

2. External ear canal: Otitis externa, hyperkeratotic, with numerous intrafollicular mites and eggs and mild lymphocytic and eosinophilic dermatitis. **(2 pt.)**

**CAUSE:** *Psorergates muris* **(2 pt.)**

**O/C:** **(1 pt.)**