DERMATOSIS IN A COMMON WOMBAT (*Vombatus ursinus*) (Case 760.1)

CASE HISTORY
An adult, male common wombat (*Vombatus ursinus*) was caught and found to have severe hair loss, and thickening of the skin (Figure 1). The thickened skin contained many fissures that oozed serum. Euthanasia of the animal was elected due to the animal's emaciated state and debility.

Fig 1. Wombat with thickened skin, hair loss and numerous deep fissures.

GROSS PATHOLOGY
External findings: The skin of the lateral body wall, rump, dorsal neck and shoulders is markedly thickened with a proliferative white crust. There are many cracks that penetrate up to 1 cm deep into the dermis. A small amount of serous discharge is evident within these fissures. The pinnae are markedly thickened with white crusts. The tips of the pinnae are missing and the remaining margins are bleeding and raw. The skin immediately beneath the ears is thickened and deeply fissured, as described above. The epidermis of the ventrum is mildly thickened with a 3 - 4 mm white crust. Several nodules of more deeply thickened skin are evident along the flap of skin that extends from the anterior surface of the hind limb to the body wall. The eyelids are markedly thickened and white mucopurulent material covers the corneas.
Examination of the white epidermal crust using a stereomicroscope reveals a markedly porous layer of keratin and debris, and several small mites (Figure 2).

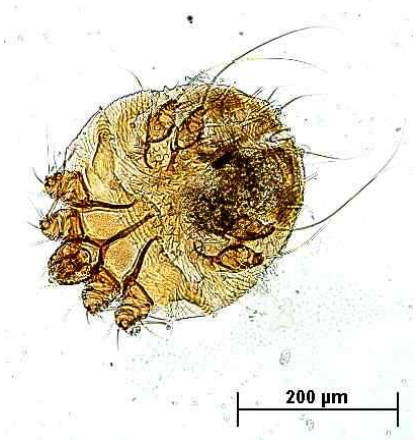

Fig 2. *Sarcoptes sp.* Whole mount 200x

Hydration: dehydrated
Muscle mass: emaciated
Fat deposits: absent

Internal findings: The peripheral lymph nodes are markedly enlarged (1 cm deep x 3-4cm diameter). The myocardium is diffusely flaccid and the right ventricle appears dilated. The stomach and small intestine is devoid of ingesta. The caecum contains a small amount of ingesta. The colon contains formed faeces. The mucous coating the gastric mucosa is multifocally tinged with blood. The gall bladder is distended with bile. The spleen appears quite small and has a granular, grey capsular surface.

HISTOPATHOLOGY
Significant lesions are not evident within the following tissues: salivary gland, kidney, bladder, peripheral nerve, myocardium, oesophagus, trachea, tongue, peripheral nerve, oesophagus, glandular stomach and duodenum.

The following observations are notable:

Lung: The pulmonary parenchyma is congested. The alveolar interstitium is diffusely and moderately thickened. Polymorphonuclear cells and mononuclear cells are prominent throughout the interstitium. A small number of dust granulomata are present within the interstitium adjacent to bronchioles.
Spleen: The splenic parenchyma contains numerous lymphoid follicles and perivascular cuffs; however, the central portion of the follicles contains many tingible body macrophages and abundant karyorrhectic cell debris.
Lymph node: The mantle zone is thin, but there are numerous subcapsular lymphoid follicles. The follicles are centrally depleted of lymphocytes, and contain abundant tingible body macrophages and karyorrhectic debris. The subcapsular and medullary sinuses contain moderate numbers of neutrophils and occasional eosinophils. The mantle zone is well populated with lymphocytes and lymphoid follicles.
Liver: Hepatocytes often have large nuclei with peripheralisation of chromatin and eosinophilic to amphophilic inclusion bodies. Moderate numbers of neutrophils are scattered throughout the sinusoids. Hepatocytes often have cytoplasmic vacuoles that appear to be empty or contain a light eosinophilic material.
Adrenal gland: There is mild interstitial oedema at the cortico-medullary junction. Small mononuclear cell aggregates are scattered throughout the medullary interstitium.
Colon: Large numbers of holo-ciliate protozoa are evident within the colonic lumen and occasionally within the colonic crypts.
Small intestine: Numerous cross sections of larval nematodes are scattered throughout the deep and superficial lamina propria. The intestinal lamina propria segmentally contains an aggregate of lymphoid follicles. Central lymphoid depletion, as described above, is evident within the follicles.

Case interpretation: Karrie Rose. Ccase construction: Damien Higgins

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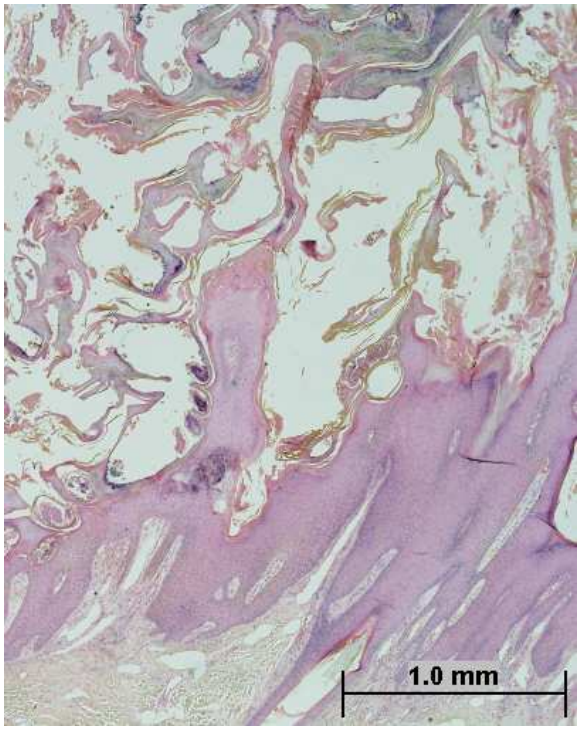

Fig 3. Skin H & E 40x

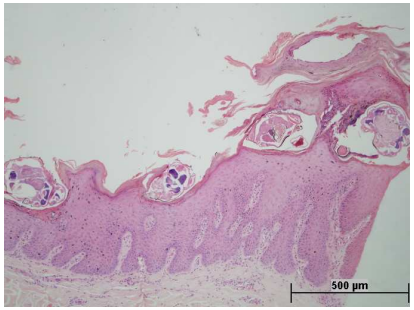

Fig 4. Skin H & E 100x

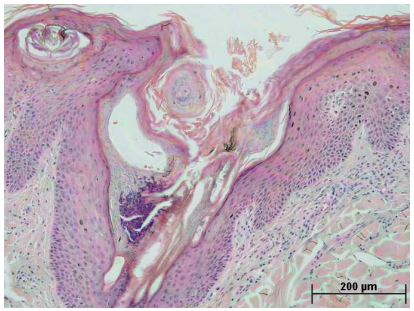

Fig 5. Skin H & E 200x

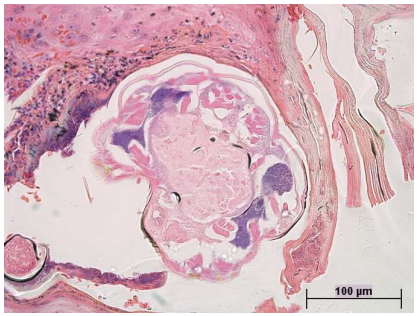

Fig 6. Skin H & E 400x

Skin - ventrum, dorsum, rump and facial: The epidermis is markedly thickened and there is a regular pattern of dermal pegs. The epidermis is covered with a remarkably thick layer of orthokeratotic hyperkeratosis that bears numerous cavernous chambers that contain cross sections and sagittal sections of mites (Figures 3 - 6). Many of the keratin chambers are flooded with proteinaceous fluid or erythrocytes. Bacterial colonies are also scattered throughout many of these chambers. Necrotic cellular debris is multifocally aggregated within the thick layer of keratin. The epidermis is multifocally affected by intercellular oedema and transmigrating neutrophils and eosinophils. The superficial dermis contains a mild to moderate infiltrate composed of mononuclear cells, neutrophils and eosinophils. There is a single granuloma within the superficial dermis. This granuloma contains central eosinophilic strands surrounded by 3 - 5 cell layers of macrophages, and multinucleate giant cells. Eosinophils are scattered throughout the dermis adjacent to this granuloma. Some eccrine glands have lumina distended with eccrine secretions. The sample from the left shoulder has a focal deep ulcer. The bed of the ulcer is composed of necrotic debris, a thick layer of neutrophils and superficial colonies of bacteria.

MORPHOLOGICAL DIAGNOSIS

Euthanasia
Marked, extensive hyperkeratosis and epidermal crust formation - Sarcoptic mange
Mucopurulent conjunctivitis
Lymphoid depletion - spleen and lymph nodes
Intestinal nematodiasis
Amphophilic intranuclear inclusion bodies - hepatocytes

COMMENTS

The wombat was euthanased due to severe and extensive sarcoptic mange. The peripheral lymph nodes were most likely enlarged either due to the sarcoptic mange, or due to secondary bacterial infection of the deep dermal fissures. Lymphoid depletion is often a non-specific indicator of infection or elevated endogenous or exogenous corticosteroid concentrations. The wombat had difficulty opening its eyes due to thickening of the eyelids and the mucopurulent ocular discharge. The ocular and skin lesions most likely prevented the wombat from eating. The loss of blood and serum protein through the skin lesions, and intestinal parasites most likely contributed to the animal's poor body condition. The thickened pulmonary interstitium may have progressed to full interstitial pneumonia had the animal not been euthanased.

The intranuclear inclusion bodies within hepatocytes are similar to those seen in some species with papovavirus infection. These inclusion bodies are not uncommon in Australian fauna, and they do not appear to be associated with other morphological change, thus they are thought to be an incidental finding. The ciliate parasites present within the colonic lumen are most likely represents normal intestinal flora.

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