

Camelid Dermatology

December 2017

Written by: Dr. Corey Regnerus
BVSc, BSc, DipSci – NZLA Committee



This is a simple reference guide reviewing common dermatological issues with the camelid patient in vet practice as evaluated by Perdue University's Dr. Sandra D. Taylor's publication on Jan 11, 2014

What to consider when approaching dermatology cases in New World Camelids

Camelids on their own are a bit of a mystery to most veterinarians, not including approaching diagnostics of dermatological cases in them. Dr. Tayler from Perdue University published a great synopsis of common causes of skin issues in New World Camelids, as well as evaluating the prevalence of those conditions in the USA, as well as the UK. Hyperkeratosis is commonly seen in patients, yet the causes of the condition can be wide spread; Anything from

infectious agents, to mineral deficiencies and congenital autosomal disorders.

The following is a link to the publication from Jan, 2014:
http://c.ymcdn.com/sites/www.ivanvma.org/resource/resmgr/2014_speaker_proceedings/hyperkeratotic_skin_ivma_201.pdf

This quick publication will provide you with the basics of differential diagnoses, diagnostics, and understanding of pathogenesis and prevalence

of the common causes of hyperkeratosis in New World Camelids.

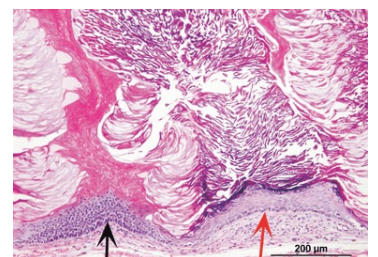
The main differentials are:

- Chronic Mite Infestation
- Zinc-responsive dermatosis
- Ichthyosis
- Idiopathic necrolytic neutrophilic hyperkeratosis (INNHN or 'munge')

Inside this issue:

2 Mites & Zinc-Responsive Dermatitis

3 Ichthyosis & Munge



Zinc-responsive Dermatitis

Also termed 'idiopathic hyperkeratosis,' tends to affect younger stock (1-2 years of age), and a predisposition to coloured fleece compared to white fleece. The name of idiopathic (unknown cause), is due to this form dermatosis possibly caused by a true deficiency of zinc, or coincidence of responding to therapies of high-dose zinc.

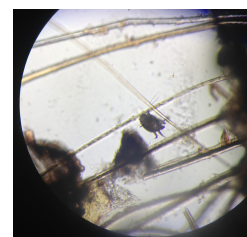
If this is a likely differential, there will generally only be a single animal affected in the herd. It is likely to be a younger breeding female, and generally of darker fleece, both due to increased demands on mineral metabolism, as well as higher levels of zinc and copper in darker fleeces.

Diagnosis should take form in serum Zn levels, and histopathology (NB: *Normal serum Zn does not rule out this condition*). Suggestive findings in histology should reveal mild-moderate dermatitis with lymphocytes, macrophages, plasma cells and occasional eosinophils; coupled with epidermal and follicular hyperkeratosis (inflammation and increased skin thickness).

While treatment with Zn is simple, it is a prolonged recovery (~12 m).



Mites are the most common ectoparasites likely to be encountered by Camelids



It was found that the most common mite infestation of camelids in the USA, is chorioptic mange, specifically *Chorioptes bovis*. Additional mites they are susceptible to are sarcoptic (*Sarcoptes scabiei* var. *auchinae*) and psoroptic (*Psoroptes spp*). Both *Chorioptes bovis* and *Sarcoptes scabiei* are found in New Zealand, and should be on your differentials list.

Diagnosis of mites can be complex in camelids, as with other species. Skin scrapings should be used to try and find mites present to identify which

mite is causing the problem for appropriate treatment to be given. Studies have shown that with *C. bovis* infestations in the UK, only 28% of animals with skin lesions tested positive on skin scrapings. The best chance of finding mites have been suggested for scrapings in the interdigital spaces of the forefeet.

Biopsy with histopathology can be used to aid in diagnosis, with possible mite visualization. Eosinophilia is a common finding, and micro-abscesses have been associated with *Chorioptes*.

Munge:

Munge, or INNH, is not clearly understood as to how and why it develops, but seems to be an immune response in the cutis that can result from a range of triggers/stimuli.

There are two general forms of munge, a diffuse and a local form. The local form is seen around the face, specifically the

perinasal (nose), perioral (mouth), periocular (eyes) and periaural (ears) regions of the face. The diffuse form is more commonly seen in young llamas (1-2 years).

Histology is crucial in diagnosis (hyperkeratosis, keratinocyte necrosis, and epidermal oedema). Secondary bacterial complications are common.



Ichthyosis:

A congenital disorder, either present at birth or in the first early days. The lesions can be either focal or diffuse lesions of hyperkeratosis or scaling. There is a genetic abnormality leading to inadequate sloughing of skin cells in the upper layers of the epidermis leading to an increase in skin thickness.

Two forms are recorded in other species, and it seems a full understanding within camelids is yet to be understood, but similarities would still exist. The less common form in other species, is the local form (large, diamond-shaped) called ichthyosis fetalis, or harlequin ichthyosis. The more common form in other species is the diffuse form called lamellar ichthyosis.

Biopsy with the lack of inflammatory cells helps to differentiate ichthyosis from zinc-responsive dermatitis. These plaques clinically will be non-puritic (itchy) and non-painful.

Key Points for differentials:

Signalment:

- Young adults (1-2 years): Zinc-responsive dermatosis or INNH
- At Birth: Ichthyosis
- Any age: Mites

Biopsy + Histopathology:

- Eosinophilia: Mites
- Inflammatory Cells Present: Zinc-responsive dermatosis
- Lack of Inflammatory Cells: Ichthyosis
- Epidermal oedema and keratinocyte necrosis: INNH