

SKIN DISEASES OF SOUTH AMERICAN CAMELIDS

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Introduction

The South American camelids (SACs): *Lama glama* (llama), *L. guanicoe* (guanaco), *Vicugna pacos* (alpaca), and *V. vicugna* (vicuña) have been growing in popularity as sources of hair (fibre) in North America and Europe. Dermatological problems can be a major challenge for veterinary clinicians dealing with alpaca herds. The aim of this article is to review some of the ectoparasitic skin conditions that may be found in alpacas and llamas in the United Kingdom. Other aspects of skin conditions in SACs have been briefly reviewed elsewhere (Foster *et al.* 2007).

Chorioptic Mange

Chorioptic mange in SACs is usually assumed to involve *Chorioptes bovis*. Clinical signs may include mild pruritus, alopecia and scaling of the feet and tail base with extension to the ventral abdomen, medial limbs, and the ears. *Chorioptes* mites may be found by collecting superficial skin scrapings from animals with or without overt signs of skin disease. While the distribution of clinical signs may be similar to Sarcoptic mange some authors propose that one difference is that the skin can be very thickened in sarcoptic mange. However, like many chronic skin problems, thickening may also be a feature of idiopathic hyperkeratosis syndromes and chronic Chorioptic mange. Ideally all animals in the group should be sampled because like horses with Chorioptic mange there may be mild or absent clinical signs but mites could still be present – consistent with asymptomatic carriage. This may reflect that some animals like horses may harbour low-level infestations with no ill effect, while some other animals with severe skin problems may be suffering from a hypersensitivity response.

Good sites for collecting scrapings are the dorsal interdigital and axilla areas. Skin scale and debris can be collected with a blunted size 10 scalpel blade and mounted with a cover slip in liquid paraffin. The mites are quite large and can be seen with the naked eye when present in large numbers, although low power microscopic examination will be required to identify the mites.

Psoroptic mange

The typical lesion of infestation is crusting associated with papules and serum exudate from the site of where the mites have been feeding on superficial exudate and skin debris by abrading the stratum corneum of the epidermis with their mouthparts. Pruritus and fibre loss is particularly associated with the pinna and ear canal, although the pruritus and mite distribution has also been reported to be generalised and not to include the ear canal. Other locations may include the shoulders, back, sides, tail head, perineum, nares, axillae, groin, neck and legs.

There is currently some debate about the identification of *Psoroptes* mites and so it is prudent to call SAC isolates *Psoroptes* sp. until further analysis has been carried out. There is an obvious concern about SACs being a potential reservoir for the infestation of sheep with sheep scab mites. Microscopic examination of superficial skin scrapes and ear swabs rubbed into the vertical ear canal and then rolled into liquid paraffin on a slide should enable identification of the mites with their characteristic morphology. *Chorioptes* mites may also be found in the ear canal and on the pinnae.

The University of Bristol have a PhD study looking at goats, llamas and alpacas as potential reservoir hosts of Psoroptes ovis in the UK; for more information please contact Dr Eric Morgan or Prof Richard Wall (School of Biological Sciences).

Sarcoptic mange

Clinical signs of infestation with *Sarcoptes scabiei* var *auchinae* include pruritus (which can be severe) with hyperaemia, papules, pustules with crusting present on limbs including between the toes, medial thighs, ventral abdomen, chest, axilla, perineum and prepuce. There is a significant zoonotic risk of spread to human handlers with this disease. Again microscopic examination of superficial skin scrapings should allow identification of mites. Infestation may arise from other species.

Lice

Infestation with biting lice (*Bovicola breviceps*) has been reported in Australia, New Zealand and the UK (Duff *et al.* 1999) while sucking lice (*Microthoracius* sp) have not been reported in the UK. Clinical signs may include pruritus with matted hair and alopecia in heavy infestations. Lesions are most likely to be observed at the base of the tail and along the neck and trunk in biting lice, and around the head, neck and withers in sucking lice. While sucking lice may respond to injectable ivermectin-based products, the topical therapies available for biting lice are limited. In the UK, alpacas could be treated with topical permethrin-based products such as deltamethrin as a spot-on/pour on product. The prevalence of lice in SACs in the UK is unknown.

Treatment for mites

- All three species of mites (*Sarcoptes*, *Chorioptes* and *Psoroptes*) have been observed in alpacas in the UK. Some SACs may have concurrent infestation with *Chorioptes* and either *Psoroptes* or *Sarcoptes* mites; or even with all three types of mite.
- Llama and alpaca fibre does not contain lanolin; consequently topical applications of insecticidal/acaricidal products used on other ruminants may not be as effective in SACs. Consequently there may be reliance upon the use of systemic therapies particularly macrocyclic lactones.
- In order to achieve a high rate of successful treatment with any form of suspected or confirmed mite infestation owners should weigh and treat **all** animals within a herd with an accurately measured dose.
- In the case of the surface-dwelling *Chorioptes* mites - that feed on epidermal debris - repeated administration of injectable or topical macrocyclic lactone products may substantially reduce but not always totally eradicate infestation in a herd. Consequently eliminating such infestations may also require application of acaricidal sprays such as fipronil-based products.
- In one study there was a good response (but not complete eradication of mites) to weekly topical application of an eprinomectin-based product at a dose of 500 micrograms/kg, for four treatments (D'Alterio *et al.* 2005a).
- Some SACs are treated with sprays or even dips used for the control of flies or mites in sheep. Dipping can be stressful for SACs and there is no information about safety of dip products (particularly organophosphates) in SACs, so it is not recommended.
- Topical application of fly repellents including pyrethroid-based products should be used with care, especially in crias, because of the potential risk of neurological side effects.
- *Chorioptes* mites appear to be very common in herds unlike other ectoparasites (D'Alterio *et al.* 2005b).
- In one recent report (Lau *et al.* 2007) alpacas severely and chronically infested with sarcoptes mites were treated with amitraz because there had been a poor response to application of eprinomectin and administration of doramectin. Similar studies from Belgium suggest that scabies may not be easy to treat and deaths from severe skin disease may be observed. In South America large scale epidemics with deaths in llamas may be attributable to scabies.
- Pharmacokinetic studies of macrocyclic lactones in SACs are limited in number but suggest that compared with other ruminants that absorption is somewhat lower whatever route of administration. The clinical impact of the potential differences between SACs and other ruminants in the metabolism of macrocyclic lactones is unclear.
- There have also been suggestions of using higher than label doses of ivermectin-based products for ectoparasites in alpacas and llamas such as 400 micrograms / kg subcutaneously on a weekly basis because of perceived ineffectiveness of standard dosages used in other ruminants.

Despite the apparent poor absorption of topical and subcutaneous injections of ivermectin a number of authors have used ivermectin at 200 micrograms / kg by subcutaneous injection with variable, but usually good, effect for the treatment of various parasite species including psoroptic and sarcoptic mange, and sucking lice in SACs. Similarly good responses may be observed with the topical use of products containing eprinomectin, doramectin and moxidectin.

There is clearly a need for controlled clinical trial work to clarify the dosing regimen for macrocyclic lactones and other products for alpacas and llamas with various types of mite (or lice) infestation.

References

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