Armadillo lambs

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Presentation of the condition

- Merino lambs pre tailing, October 2013 (start of lambing 10/9/13).
- Two mobs of MA hill merino ewes (800 total). Lambs only affected. Ewes normal. Other mobs (on paddocks) unaffected.
- Lambs born normal but soon develop a very severe dermatitis.
  - Noted from two weeks of age (before tailing).
  - Severe crusty skin condition (Armadillo appearance) with areas of purulence/suppurative exudation and strawberry foot rot.
  - Approx 10% of lambs affected (varying severity).
  - Very rapid onset. Initially ~ ears, eyes/face. Rapid spread to neck and back (entire dorsum to tail/lesions upto 1cm thick) flanks, feet +/- suppuration/abcessation,
  - Enlarged pre scapular lymph nodes.
  - Rapid weight loss.
  - Deaths (sepsis, reduced insulative effects of woolly cover/~30 deaths in total).

History and farm details

- Occurred late October 2013.
- Weather: wetter Spring than usual.
- Hills/long wet pastures (hemlock [a lot], sub clover, danthonia, cocksfoot, some rye grass.)
- Mob MA merino ewes (singles mob):
  - BCS prelambing at av 2.7/av BWT 49kg.
  - Bionic® capsule pre lambing.
  - LSD® pre lambing.
  - Ultravac SD 6in1® pre lambing.
- Mild cases only seen in other years.

Differentials (dermatitis with scab formation)

- Dermatophilosis (Mycotic dermatitis, Lumpy wool, “Dermo” Cutaneous streptothricosis)
- Photosensitivity (plant derived, ovine white liver disease)
- Hypersensitivity.
- Pseudomonas/staphylococcus infection.
- Contageous ecthyma.
• Mange.
• Ringworm.
• Inherited disorder.

Diagnosis

Two severely affected lambs autopsied
• Severe lesions of Dermatophilus infection. One lamb infection has extended into tissue and caused abscessation. Diagnosis of dermatophilosis depends largely on the appearance of lesions in clinically diseased animals and demonstration of D. congolensis in stained smears (gram +ve) and/or histologic sections from scabs. A definitive diagnosis is made by demonstrating the organism in cytologic preparations, isolation via culture, and/or via skin biopsy. Histopathologic examination reveals the characteristic branching hyphae, coccoidal cells, and zoospores in the epidermis. The organisms are usually abundant in active lesions but can be sparse or absent in chronic lesions.
• Lymph nodes reactive only.
• Atrophic adipose tissue in renal pelvis (correlates with weight loss seen).
• Mild elevation of CPK, Mild elevation GGT, GLDH normal. Liver B12 normal (569 and 408nmol/kg).

Blood test ewes
• 10 x serum B12 >1500pmol/L.

A previous case (different property) seen in crossbred lambs January 2013
• Mob of 490 weaned, stud ram lambs (composite) on rape.
• Shorn mid December.
• Five developed a hind leg ataxia/swayback early January.
• Autopsy (x2):
  • Lambs in good condition.
  • Marked thickening of skin neck to rump. Flanks normal.
  • Areas of subcutaneous abscessation.
  • No other abnormalities seen.
  • Liver B12 at 701 and 584nmol/kg.
  • Liver copper 1290 and 120umol/kg.
  • Histo and gram stain: Lesions consistant with dermatophilosis (and 2° infection).
  • No evience of photosensitivity(rape scald) or enzootic ataxia (copper deficiency).
• (similar outbreaks have been reported in lambs grazing brassicas and is likely associated with mild photosensitivity and wetting effects).

Dermatophilosis refresh

Characteristics
• Most species affected, Worldwide distribution.
• D. congolensis is a bacterium, (not a fungus).
• It has two characteristic morphologic forms, filamentous hyphae and motile zoospores.
  • The hyphae are characterized by branching filaments containing multiple rows of cocci. Gram +ve, Aerobic actinomycete. Bacterium, (1–5μm in diameter) that ultimately fragment by both transverse and longitudinal separation into packets of coccoid cells.
  • The coccoid cells mature into flagellated ovoid zoospores (0.6–1μm in diameter). The infective stage.
• Carrier animals as reservoir of infection (partic face and ears). The organism can exist in a quiescent form within the epidermis until infection is exacerbated by climatic conditions.

• Requirements to establish infection:
  • A source of infection (as viable zoospores).
  • Wetting to permit release of zoospores and a close contact wetting event to transfer to other sheep.
  • Penetration of three natural barriers (ie wool, wax film and upper layer of skin cells).

• Low concentrations of carbon dioxide from the skin attracts the motile zoospores to susceptible areas on the skin surface. Zoospores germinate to produce hyphae, which penetrate into the living epidermis,

• Hyphal invasion of the epidermis causes an initial hyperaemia/inflammatory exudate and scab formation (acute phase). Lateral extention if conditions allow and re infection of newly formed epidermal layer. Crust/scab in wool and binding of wool fibres. Can occur as isolated area to coalescing to form a sheet of scab (chronic phase).

• Moisture enhances the proliferation and release of zoospores from hyphae. The high carbon dioxide concentration produced by the dense population of zoospores accelerates their escape to the skin surface, thus completing the unique life cycle.

Zoonosis: Occasional affects humans

Dermatophilosis can be transmitted to people. Direct contact with an infected animal can lead to infections on the hands and arms. Affected animals should be handled with gloves, and thorough handwashing with an antibacterial soap is recommended after contact with an infected animal.

Animal susceptibility/immunity

• Disease often more severe in young lambs (wet skin at birth and up to five weeks of age to develop fully protective sebaceous skin film).

• A close contact wetting event.

• Injuries to skin. Shearing cuts.

• Post shearing. Disruption of the protective sebaceous film.

• Culling of limited value/low heritability of immunity (h²=0.1–0.15).

• Lambs and hoggets more suscceptable than adults. Severe outbreaks, involving the skin over the entire body, in new born lambs have been reported previously.

• Medium and strong wooled merinos more susceptible to “Derma” than fine wooled merino or coarser crossbreds (Sebaceous film/defence mechanism).

Treatment and control

• Antibiotics for severe acute lesions.

• Application of zinc sulphate, alum, broad spectrum disinfectants as preventative measures.

• Avoid yarding, handling etc wet animals or mixing affected and clean sheep.

• Regular check animals on brassica crops.

Outcome

• Severely affected lambs died.

• Lesser affected essentially self cured over next few weeks. Scabs remain in wool but skin healed.

• Affected animals much more prone to Fly Strike (in spite of prevetative dipping cf to animals not affected).

• At present some described as having Fatty – Lumpy Wool deposit. To cull mob.

• Effect of moving to a stonger wool type polled merino (not traditionally selected for wetter climate)
References


Merck Veterinary Manual, 10th Edition. 2010


West DM, Bruere AN, Ridler AN. The Sheep Health, Disease and Production, 2nd Edition. 2002