Diagnosis and treatment of pediculosis for healthy dairy cows

Pediculosis is an infestation predominantly caused by sucking or chewing lice. Left untreated, it can lead to rubbing, hair loss and disrupted feeding patterns in livestock.

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While heavy lice infestations are typically seen with the naked eye (usually on neck, head or inner thighs), microscopic examination is needed to confirm species.

This article will examine how to diagnose and treat pediculosis to ensure that livestock is kept healthy, and profits remain stable.

Causes

Pediculosis is caused by the presence of either sucking (Hematopinus eurysternus, Hematopinus quadripertusus, Linognathus vituli, Solenopotes capillatus), or chewing lice (Bovicola bovis).

Heavy louse infestation can often be associated with some other underlying condition such as malnutrition or chronic disease. High stocking densities, that enable close physical contact, increase transmission of lice between hosts. Populations of lice can build up within a few months in housed cattle during the winter when the coat is thickest.

Pathophysiology

- **Sucking lice:**

These lice feed on host blood using their piercing mouthparts. In severe infestations, the entire region from the base of the horns to the base of the tail can be infested leading to anaemia. Linognathus vituli is capable of transmitting bovine anaplasmosis, dermatomycosis (ringworm) and theileriosis.

- **Chewing lice:**

These lice feed on the outer layers of the hair shafts, and skin scales, by scraping scurf and skin debris from the base of the hairs, causing considerable irritation; this can lead to rubbing or scratching, resulting in patches of hair being pulled or rubbed off. Scratching may produce wounds or bruises leading to secondary skin infections and skin trauma.

Epidemiology

Lice have specific temperature and humidity requirements on the body of cattle. In temperate seasonal climates, heaviest louse populations are seen in late winter and early spring when the coat is thickest. Lice migrate to those areas that provide the optimal warm and humid environments, which for sucking lice include thinner skinned regions such as the head and neck.

Presenting problems and clinical signs

Many cattle have lice infestations during the winter months, but low burdens are generally well tolerated with few clinical signs. Heavy infestations cause irritation leading to rubbing, hair loss over the neck and shoulders, and disrupted feeding patterns. Visual observation of lice in the coat can be made.

Moderate louse infestations may be associated with a mild chronic dermatitis. In heavier infestations, there is pruritus, with rubbing, licking and hair loss.

Acute presentation is rare, however heavy louse infestation may often be associated with some other underlying condition, such as malnutrition or chronic disease, which can manifest as non-specific symptoms. Heavy louse infestation may also present as anaemia.

Diagnostic investigation

Louse infestations can be easily identified by parting the hair, especially along the back, the lice being next to the skin and the eggs scattered throughout the hair.

Removal and examination under a light microscope will allow confirmation and species identification.

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Summary

- **Causes:**
Sucking lice (Hematopinus eurysternus, Hematopinus quadripertusus, Linognathus vituli, Solenopotes capillatus) or chewing lice (Bovicola (Damalinia) bovis).

- **Signs:**
Light infestations are asymptomatic: heavy infestations cause irritation leading to rubbing, hair loss and disrupted feeding patterns.

- **Diagnosis:**
Heavy lice infestations are typically seen with the naked eye on the neck, head, inner thighs; in denser hair inspect any white areas for presence of lice; microscopic examination to confirm species.

- **Treatment:**
Pour-on or spot-on synthetic pyrethroids, such as cypermethrin, deltamethrin or permethrin; or pour-on macrocyclic lactones including ivermectin, doramectin, eprinomectin and moxidectin.

- **Prognosis:**
Light infestations are usually asymptomatic and so treatment is not required; heavy infestations generally respond well to treatment. Underlying debilitation or disease, if not corrected, may worsen the prognosis.

- **Geographic incidence:**
Worldwide; primarily in cooler climates.

- **Public health considerations:**
No public health issues.

- **Cost considerations:**
Louse infestations do not usually present an economic concern; heavy sucking lice infestations can cause anaemia and all species cause irritation leading to disrupted feeding patterns and so require treatment for welfare reasons; economic impact may occur due to underlying diseases or conditions, or poor management.

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Differential diagnoses include chorioptic mange, psoroptic mange, sarcoptic mange, forage mites, ticks and ringworm.

Treatment

- **Initial symptomatic treatment:**

Examine for underlying conditions; look for evidence of poor husbandry; poor feeding and malnutrition and treat or correct where necessary.

- **Standard treatment:**

Pour-on or spot-on synthetic pyrethroids (SP), such as cypermethrin, deltamethrin or permethrin. Pour-on or injectable macrocyclic lactones (ML) including ivermectin, doramectin, eprinomectin and moxidectin may also be used, although there is limited activity against chewing lice with injectable preparations.

Expected response to treatment

- Pour-on products usually have a good response to treatment and quickly eliminate louse burdens and associated clinical signs.
- Lice may be found 2-4 weeks later due to hatching of eggs.
- Treatments with injectable MLs may only aid in reducing burdens of chewing lice due to variable activity.

Reasons for treatment failure

Underdosing due to poor treatment technique, inaccurate bodyweight estimation, lack of activity against louse eggs, product choice and inherent lack of activity, incorrect diagnosis, re-infestation from untreated stock.

Monitoring

Licensed treatments are generally not active against louse eggs, which can still hatch and continue the infestation. However, most of the licensed compounds for cattle have sufficient persistent activity to kill off any nymphs that emerge from eggs that remain after treatment. Check treated cattle 2-4 weeks post-treatment for the presence of lice. A second treatment may occasionally be required to kill newly hatched lice.

Monitor regularly for further signs of lice, such as scratching or hair loss.

Prevention

- Good stock management and nutrition.
- Clipping the hair from the backs of young, housed cattle may greatly reduce the area of skin that can provide suitable habitats for lice.
- Control can be achieved by treating prophylactically with a pour-on ML or SP product at autumn housing, as part of the overall parasite control plan for both internal and external parasites.

Group eradication

Treatment of all stock on farm and quarantine and treatment of all newly introduced cattle will allow a good degree of louse control to be maintained.

Prognosis

Light infestations are usually asymptomatic, and treatment may not be required. Heavy infestations generally respond well to treatment.

Underlying debilitation or disease if not corrected may worsen the prognosis. ■

References are available from the author on request