

LECTURE #10: Mites

I. Mites

A. Suborder Mesostigmata - Symptoms caused by this group are dermatitis, hyperkeratization, scratching and itching.

1. Family Dermanyssidae

Dermanyssus gallinae - red mite or roost mite. Common on wild birds, especially pigeons and does present problems for domestic livestock and pets frequently.

LifeCycle

- (a) The mites are hidden in the crevices during the day and attack the birds at night. Eggs are deposited in the cracks and hatch in 2-6 days.
- (b) The six-legged larvae do not feed and molt in 24 hours.
- (c) After two or more blood meals, the nymphs molt and become adults. The nymph takes about 10 days to reach the adult stage. Full growth is reached in 9 days.
- (d) Adult mites may survive without a blood meal for 4-5 months.
- (e) Spread from farm to farm by sparrows, pigeons egg flats, people, egg cases, etc.

Pathology

- (a) Damage may be very extensive. Feather loss and inflammation on chest and legs. Local epidermal hyperplasia. Necrosis of feather follicle due to vascular disruption. Anemia due to mite feeding.
- (b) Egg production is greatly reduced, feed conversion reduced.
- (c) There may be deaths in newly hatched chicks.
- (d) The fowl lose flesh and become unthrifty.

Control

- (a) Multi-treatments required.
- (b) Roost - nests (harborage)
- (c) On birds
- (d) Systemic drug in water.

Orithonyssus sylviarum - Northern fowl mite, *O. bursa* - tropical fowl mite. Can be found on all birds, wild and in production or pets.

LifeCycle

- (a) Eggs deposited on feathers on fowl.
- (b) Hatch into non feeding larvae which molt in about 12 hours and become nymphs which feed.
- (c) Protonymphs molt in 1-3 days into nonfeeding deutonymphs which in turn molt to adults in 3-4 days.
- (d) Adults spend most of life on host but some may be found on roost and in cracks. In the absence of fowl, it will attack man causing itching by its bite and by crawling. It may survive for 3-7 weeks in absence of avian host.

Pathology

- (a) Mites are a serious pest of fowl causing loss of weight, decreased egg production, decreased feed conversion and death.
- (b) The feathers become matted and blackened and severe scabbing develops, particularly in the region of the vent. Most common around vent area.
- (c) Year round pest in current poultry production.
- (d) Transmitted via birds, rodents, man, egg cases, and flats.
- (e) Can cause large economic losses: egg production, feed conversion, hatchability.
- (f) Birds coming into production are most commonly affected with the largest impact on their production and feed conversion.

Control

- (a) Monitor and treat early (treatment requires multiple applications)
- (b) Stop transmission route
- (c) Treat thoroughly: 1. Dust 2. Sprays 3. Systemic drug

B. Suborder Astigmata

1. Family Sarcoptidae - Sarcoptes itch or scabies mites

Sarcoptes scabiei - various varieties cause scabies in man, sheep, goats, cattle, pigs, dogs, and horses.

Tends to be host specific but will transmit between host species.

Notoedres cati - mange of cats.

Morphology --- Round, globular, numerous seta

Life cycle and epidemiology (*Sarcoptes scabiei* var. *suis*)

- (a) Form burrows in the skin in which female deposits eggs.
- (b) Eggs hatch in 3 to 8 days and larvae migrate to the skin surface and molt twice forming 2 nymph stages.
- (c) The adult stage is reached 4-6 days after eggs hatch and entire life cycle takes 10-14 days.
- (d) Can live off of the host for up to 6 weeks, especially during winter when temperature is lower.

Pathology

- (a) Mange of swine concentrated about top of the neck, shoulders, and ears and along the back, although it may be found over the entire body. The skin is cracked and thickly encrusted with scabs. Causes weight loss and irritation, feed conversion is decreased. Spread via contact.
- (b) Cattle itch mites occur where hair is short, namely, on the brisket and around the base of the tail. REPORTABLE in cattle
- (c) Dog mange usually appears first on the muzzle, around the eyes and spreads to the back and abdomen.
- (d) Sheep mange occurs principally around the face and causes "black muzzle".
- (e) Notoedric mange of cats begins at the tips of ears and gradually spreads over the face and head.

Treatment

- (a) No products are ovicidal; therefore, multiple treatments will be required for all species.
- (b) Systemics are best if available. Eg. Avermectins and Fluralaner

2. Family Knemidokoptidae

Knemidocoptes mutans - scalyleg mites

K. gallinae - depluming mite

Life cycle and epidemiology

- (a) Mites burrow and live in skin and deposit eggs in channels
- (b) *K. mutans* easily transmitted

Pathology

- (a) *K. mutans* causes a lifting of the scales and a swollen condition of the shank with deformity and encrustation
- (b) *K. gallinae* causes intense itching, which impels host to pluck its feathers

3. Family Psoroptidae

Otodectes sp. - ear mite of dogs, cats, rabbits -- causing tenderness to the ears

Psoroptes ovis – mange (Scab) of Sheep, cattle, horses. REPORTABLE. Prevalent in Southwestern US, rare elsewhere in North America.

C. Suborder Prostigmata

1. Family Demodicidae

Demodex canis - red mange of dogs

Morphology -- Elongate mites in hair follicles

Life cycle and epidemiology

- (a) Mites found in hair follicles and sebaceous glands
- (b) Eggs are laid in hair follicles
- (c) Larvae are 6-legged and there are several generations of nymphs before change to adults

Pathology

- (a) There are 2 forms of demodectic mange in dogs
 - 1) Squamous or crusty form where the skin is thickened, darkened and wrinkled
 - 2) Pustular where there are pustules and severe dermatitis - possible bacterial involvement

Predisposing factors

- (a) age, (b) condition (immune suppression), (c) other illness or infection, (d) genetics