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Sarcoptidae

Mites

Medical Importance:

Scabies mites are not vectors of any disease but cause the condition known in man as scabies, acariasis and itching.

General Characters of Mites

The scabies mites is visible with naked eyes, about 0.4 mm in size and white in color. The body shape is rounded like a tortoise. Dorsally the mite is covered with bristles. Adults have four pairs of short legs divided into five segments. The front legs end in long tubular processes, known as suckers and the hind legs end in long bristles. The male has suckers on all the legs except the 3rd pair.



Life Cycle of Scabies Mite

Metamorphosis is incomplete.

Eggs: The female scabies mites select place on the body where the skin is thin such as between the fingers and wrists, etc. The female burrows into the superficial layer of the skin and makes tunnels in which she lays about 30 eggs at the rate of 2-3 per day.

Larva: After 3-4 days the eggs hatch into larva. The larva are six legged. These larvae crawl out from the burrows. They come to the surface and bore into the hair follicles where vesicle form. After about 3 days the larvae mature into nymph.

Nymph: The nymph develop into adults in 6-8 days.

Adult: The life cycle from egg-egg takes about 14-31 days. The female mites may live about 1-2 months on man. Away from man they may survive for about 7-10 days under ideal conditions.

Mode of Spread

Close contact:

Scabies is usually transmitted by close contact with an infected person like sleeping in the same bed or children playing with each other.

Contaminated clothes:

The disease may also be transmitted by contaminated clothes.

Diagnosis of scabies

The patients complains of itching which is worse at night. Examination reveals follicular lesions at the affected sites. The diagnosis is probable if the other members of the house are also affected.

Confirmation of the diagnosis may be made by searching the parasites in the skin debris under microscope.

Sarcoptes sp.

- *Sarcoptes* is well known in both human and veterinary medicine as a cause of mange, the disease in man being generally known as scabies.
- Hosts: All domestic mammals and man.
- Species:
- *S. scabiei var hominis* (human), *S. scabiei var. canis* (dogs), it can also infest other mammals, including cats, pigs, foxes, rabbits and guinea pigs for varying periods of time. *S. scabiei var. suis* (pigs), *S. scabiei bovis* (cattle), *S. scabiei var. equi* (horses), *S. scabiei ovis* (sheep), *S. scabiei caprae* (goats).

Clinical Signs

- In sheep, *Sarcoptes scabiei* variety *ovis* affect the non-woolly skin, and the lesions typically start on the lips or nostrils. The lesion on the nostrils also extends around the eyes, the supraorbital fossae and in some cases over entire face and head.
- The clinical signs can be summarized in itch , intense pruritic erythematous dermatitis and papular rash as the alopecia spreads. The rash often becomes generalized leading to hair loss due to which animals loose much of the grazing time and hence loose

general body condition (weight loss), secondary bacterial infection where severe untreated cases can be fatal , death is usually the result of secondary bacterial infections.

Pathogenesis

Sarcoptes female Mites burrow into the epidermis and feed on tissue fluids. The burrowing and feeding of the mite cause irritation and consequential scratching, leading to inflammation and exudation to form crusts . If left untreated, the skin wrinkles and thickens with proliferation of the connective tissue followed by depilation. Death of the animals may occur in severe mite infestation.

Non burrowing mites

Including: *psoroptes*, *chorioptes*, *otodectes*

Family : Psoroptidae

Genus : *Psoroptes*.

Species : *P. communis var ovis*.(sheep)

P. communis var caprae (goat)

P. equi (equine)

P. natalensis (cattle and horses)

P. cuniculi (ear mite of rabbits, goats, horses and sheep)

- Mites of the genus *Psoroptes* are obligate, non-burrowing, astigmatid ectoparasites of mammals, of particular economic

importance in domestic animals where they cause clinical psoroptic mange.

Morphology

- Mature female *Psoroptes* up to 0.75 mm, with a striate cuticle. A noticeable anterodorsal cuticular plate is present behind the mouthparts, and the midventral ovipore is an inverted U-shape. Males are about one-fourth smaller, and they have a pair of posteroventral adanal suckers, and two terminal posterior lobes, each equipped with four setae of varying lengths and structures. Nymphs and larvae are somewhat similar to adults but progressively smaller, and all *Psoroptes* are pearly white in color. In all stages, the anterior two pairs of legs are thicker and more robust than the posterior pairs, which are thinner, and in the male, shortened in the fourth pair. Legs I and II terminate in pretarsal empodial suckers on long, segmented pedicels in both sexes, with similar structures on legs IV of the female and legs III of the males. The female's third tarsus ends in two long, whip-like setae, and the male has a single short seta on tarsus IV.

life cycle

The life cycle begins with the deposition of the eggs on the skin at the margin of the lesion. These hatch in 1 to 5 days producing 6-legged larvae. The larvae feed for 2 to 3 days and then molt and become 8-legged nymphs. The nymphal stage lasts 3 to 4 days when they molt and become mature males and females which mate immediately. The fertilized female molts and then lays eggs. The cycle from egg to adult

is completed in 12 days. Females may live as long as 42 days on sheep.



Clinical signs

Psoroptes mites usually affect the shoulders, back, sides, lower cervical and upper thoracic region. Sheep scab is characterised by intense itching and pruritus. The flock may be seen repeatedly rubbing their shoulders and flanks along the ground or against fences, foot stamping, clawing at their flanks, or biting their shoulders and sides. Early cases of sheep scab are characterised by red sores with serous exudation, yellow/orange staining wool fibres and displacement of small tufts of wool. As the disease progresses, the serous exudation increases in severity and extent, extending over the shoulders to the chest wall, back and flanks.

Clinical manifestations

They are summarized by hair loss, crusty or scaly skin lesions, dermatitis, thickened skin, blisters, scurf, and pruritus.



Control of scabies

Benzyl Banzoate: 25% banzyle benzoate is effective against sarcopidae. It should be applied with a brush from the neck downwards and after allowing some 5-10 minutes to dry. The application should be repeated after 12 hours.

Mitigal: It is yellowish sulfur ointment, which is painted undiluted over the body from the neck downward. A single treatment is 100% effective. In epidemic conditions, it is important to treat all members of a family living in close association.



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