Mange and Lice of Horses and Mules

Sick animals should be isolated in screened quarters and sprayed at intervals to limit opportunities for bloodsucking insects to get to them.

Transmission by insects from animals dead of the disease is unlikely, but it is wise nevertheless to bury such cadavers and disinfect quarters the sick animals used before they died.

A specific antiencephalomyelitis serum is commercially available. If such serum is administered in time to animals in affected stables, some may be protected. Effectiveness of the serum is limited, however, both as to degree and to duration. The preventive effect of the serum diminishes to practically nothing within 2 or 3 weeks.

Injections of fluids intravenously, rectally, or by stomach tube are considered advantageous in combating extreme dehydration.

Good nursing practices, such as repeated grooming, turning prostrate animals from side to side every hour or so, and protection from the elements and self-injury are helpful.

Antiencephalitis vaccines have been developed for protection of man. They have been used in laboratories to prevent accidental infections. Under proper conditions—which should be determined only by public health or laboratory officials—they may be applicable in epidemics.

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Mange and Lice of Horses and Mules

F. D. Enzie

MANGE, barn itch, scab, scabies, and itch are general terms applied to a group of contagious skin diseases caused by minute, insectlike parasites called mites. Horses and mules may be affected with three different types of these pests, Sarcoptes, Psoroptes, and Chorioptes. The diseases they produce are known as sarcoptic, psoroptic, and chorioptic mange, respectively.

The mites spend their entire life cycles in or on the skin of the host animal. Each type of mite, as it carries on the various processes of life, produces lesions—injuries—that are more or less characteristic.

The three kinds of mange usually are transmitted by direct contact between healthy and infected animals, although the mites may be transferred on currycombs, brushes, blankets, and other equipment.

Ordinarily the disease spreads fastest in winter when the animals may be closely confined or crowded together.

In the warmer seasons, when the animals are on pasture or are otherwise exposed to sunlight, the disease tends to disappear or lie dormant. It becomes active again under conditions of winter management.

Sarcoptic mange is the type most commonly found among horses and mules in the United States. The mite Sarcoptes scabiei equi causes it. The mature female is about one-fiftieth of an inch long. The male is a little smaller. They are just visible to the unaided eye.

These white or yellowish parasites
are round or slightly oval, like a horse-shoe. They have four pairs of short, thick legs. Only the first two pairs of legs, on either side of the bluntly rounded head, extend beyond the margin of the body.

The sarcoptic mites burrow in the upper layer of the skin and form tunnels, in which they mate and lay eggs. Each female may deposit 25 eggs in about 2 weeks. The young mites that develop from the eggs mature in 14 or 15 days. A new generation of mites therefore is produced about every 2 weeks, a factor of importance in determining the intervals between treatments with medicinal agents.

The mites cannot complete their life cycle off the host, but the adults may survive for a month or more if temperature and moisture are suitable.

The burrows extend to the deep, sensitive layers of the skin. There the activities of the mites cause intense irritation and itching. The horse seeks relief by rubbing the affected places against any available object and other animals. Blisters and small lumps or ridges develop. The skin becomes swollen and inflamed. The constant rubbing causes the vesicles, or blisters, to rupture and discharge serum. The serum, mixed with scurf and other foreign matter, becomes dry and forms scabs. Bacterial infections occasionally become established under the scabs and make the condition worse.

The mites constantly move from the edges of the lesions to the surrounding healthy skin, and so the condition spreads over the body. The lesions may progress rapidly or slowly, depending on the animal's general physical condition and the amount of care and attention it receives.

As the disease advances, the areas first affected become dry, rough, and bare. The skin in the final stages is greatly thickened, wrinkled, and leathery. The mites are inactive then and hard to find, but the skin remains leathery. The skin may continue to be unpliable for some time after the mites are destroyed.

The first lesions generally occur on the head, neck, and shoulders, but they may start on any part of the body. From the primary injuries, the disease spreads to other parts of the skin surface. Furthered by the animal's scratching and rubbing, the lesions may extend over much of the body within a few weeks, particularly if the animal's general resistance is low on account of a heavy burden of internal parasites or a poor nutritional state.

Sarcoptic mange is contagious to horses of all ages and classes. It also is transmissible from one class of livestock to another and from animals to people. It is tremendously important therefore to have an accurate, early diagnosis, to isolate affected animals from all other livestock, and to undertake treatment and other control measures promptly.

To diagnose sarcoptic mange positively, one has to find the mite. That is done by microscopic examination of skin scrapings from the edge of fresh, active lesions. Because the mites live in burrows in the skin, deep scrapings must be made in order to find them, often to the point of drawing blood. In the advanced stages of the disease, when the skin has become dry and leathery, the mites are hard to find.

Psoroptic mange mites, *Psoroptes equi equi*, are oval and somewhat larger than those that produce common scab in horses and mules. The male and female are one-fiftieth and one-fortieth of an inch long, respectively. Against a black background they are visible without magnification. The elongate, tapering head and the four pairs of legs extend well beyond the margin of the body.

The psoroptic mites do not form burrows in the skin but live in colonies on the surface. They pass their entire life cycle on the host. A female may lay 15 to 25 eggs. The young mites, which hatch in about 4 days, reach the egg-laying stage 10 to 12 days later. Psoroptic mites may live a year or more in barns or sheds, but probably they
cannot survive more than a few weeks when exposed to the sun.

The first lesions of psoroptic mange generally appear on the poll, under the mane, or at the base of the tail, but they may start on any part of the body that is thickly covered with hair. Itching is intense.

Serum accumulates in the hair from ruptured vesicles and papules, becomes mixed with foreign matter, and dries to form crusts and scabs. Irritation of the lesions is increased by the bacterial infections that often become established under the scabs. The mites constantly move toward the healthy skin near the edges of the wound.

Some mites migrate to other areas where they may start new lesions. The itching continues, and the skin becomes mutilated from the constant rubbing and biting. The skin over large areas of the body finally becomes thickened, wrinkled, bare of all hair, and covered with thick and adherent scabs.

Psoroptic mites are more host specific than those that produce common mange. The variety that affects horses and mules is not transmissible to man or to other livestock. Among horses, however, psoroptic mange is more highly contagious and spreads faster than sarcoptic mange. Infections usually are acquired by contact with infected animals, but indirect transfer of mites may occur from equipment or contaminated stalls and sheds.

The diagnosis of psoroptic mange is established by identifying the characteristic mite obtained from skin scrapings. As these mites live on the surface of the skin, comparatively superficial scrapings usually are enough. In the early stages of the disease, the mites generally are most plentiful around the edges of fresh wounds. After the condition is well established, the mites may be found also near the edges of scabs or in the furrows between folds of skin.

The chorioptic mites, Choriotes equi, resemble the psoroptic mites in many respects. They have the same general conformation, live on the surface of the skin, and produce similar (though generally less extensive) lesions.

These mites usually attack the lower part of the legs and generally remain below the hocks and knees. The condition therefore is commonly called foot mange.

The lesions occur oftenest on the hind legs and are like those of the psoroptic mange in most ways. Infected animals exhibit the same general restlessness and irritation as in other types of mange and attempt to allay the itching by pawing, rubbing, licking, or biting the affected parts.

Prevention of infestation with mange mites and other external parasites is largely a matter of employing good husbandry practices.

Clean quarters, regular grooming, and a balanced diet are important in maintaining and promoting general health and preventing the development and spread of all parasitic skin diseases. Blankets, saddles, and harnesses should be cleaned and disinfected regularly. Currycombs and brushes should be cleaned thoroughly immediately after use.

Mange in horses and mules can be eradicated by dipping or spraying with suitable chemical agents.

Dipping is preferable because it assures thorough coverage of the animal—to be effective, the medicament must be brought into direct contact with the parasites. All horses on the premises should be treated whether or not a specific diagnosis is established in each animal.

Two dippings 10 to 12 days apart ordinarily will be enough to cure psoroptic and chorioptic mange.

Three or more treatments may be necessary for sarcoptic mange because of the location of the mites in burrows in the skin.

Animals that have chorioptic mange may be driven through a shallow wading tank if the lesions are confined to the lower parts of the legs.
Dipping is not feasible during severe winter weather. It is impractical when only a few animals are involved. Spraying is a useful alternative method. It is effective if the entire body surface is completely wetted.

With either method, advanced lesions that are covered with hard scabs or crusts should be thoroughly soaked and softened by hand with warm dip or spray before treatment.

Besides rotenone and the standard lime-sulfur and nicotine dips, several newer treatments are used against the three kinds of mange affecting horses and mules. They include lindane, benzene hexachloride, benzyl benzoate, and tetraethylthiuram monosulfide.

Two kinds of lice, a bloodsucking species called *Haematopinus asini* and a biting louse known as *Bovicola equi*, infest our horses and mules.

The sucking lice are the more injurious, because heavy infestations mean a heavy loss of blood that seriously weakens the animal.

Lice occur in largest numbers in winter, when the hair is long and the animals generally are closely confined.

The sucking lice are easily told from biting lice by their larger size, pointed heads, and bluish bodies. Mature adults are about a third as broad as long, and the overall length is about one-eighth inch.

The much smaller biting lice have a white or yellowish body and a red or brown head, which is short and blunt.

Sucking and biting lice pass their entire lives on the host animal. They are generally transmitted by direct contact between animals.

The eggs, or nits, of the sucking louse usually are close to the skin and attached firmly to the hairs. Most of the eggs hatch in about 2 weeks. The young lice reach maturity about 12 days later.

The eggs of the biting louse are deposited in the same general manner, but have a shorter incubation period.

When they are removed from the host, most of the biting lice die in less than a week, although some may survive as long as 10 days if kept on tufts of hair. The sucking lice cannot survive more than 2 or 3 days away from the host animal.

Sucking lice mostly prefer the head, neck, back, and inner surface of the thighs, but they move about on the skin and hair when they are not feeding. They get nourishment by piercing the skin and sucking blood and fluids.

Biting lice may be found anywhere on the body, although they seem to occur in largest numbers around the withers and base of the tail. They do not suck blood but feed on hair, scales, and exudations from the skin.

The commonest method of transmission is by direct contact between clean and infested animals.

Hair and scurf from grooming equipment and hair clipped from infested horses should be collected promptly and burned. The ground or floor on which the clippings accumulated should be thoroughly sprayed with an effective insecticide, such as DDT, lindane, or methoxychlor. Infested stables and yards should be cleaned thoroughly by removing accumulations of litter and manure. The stables should be sprayed also with insecticide.

Treatment of infested animals may be by dipping, spraying, washing, or dusting with insecticidal preparations. The best method in any particular case depends on the number of horses to be treated, prevailing weather conditions, and the available facilities.

Dipping is most effective, because it assures thorough coverage of the animal. It is preferred where winters are mild and a large number of animals is involved.

Methoxychlor, DDT, lindane, benzene hexachloride, chlordane, and toxaphene are effective against both sucking and biting lice.

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