



EQUINE ROUNDS

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PUNKIES, PIN WORMS, AND OTHER PARASITES: A Look at Parasite Induced Skin Diseases

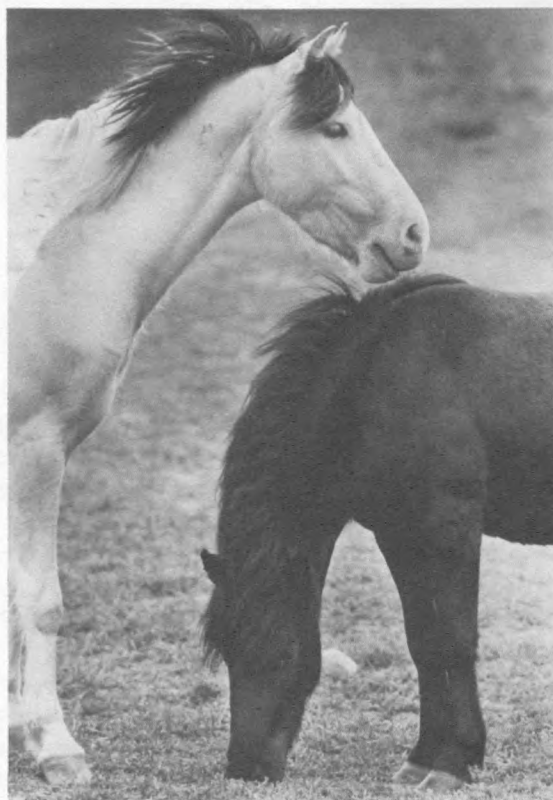
By Luba Drouin, '87

Equine skin diseases can interfere with the horse's appearance, comfort, and ability to perform to capacity. This can be very annoying to the horse, the owner and the veterinarian. Parasites such as the horse stomach worm, lice and pinworms can manifest themselves as skin disease. This article deals with several parasite-induced skin diseases (dermatoses), how they occur, and their diagnosis, treatment and prevention.

Cutaneous Habronemiasis

More commonly known as summer sores, cutaneous habronemiasis is a skin disease associated with the horse stomach worms, *Habronema muscae* and *Habronema majus*, and *Draschia magastoma*, that have a symbiotic relationship with the house- and stable-fly. The female stomach worm produces larvae that are passed in the equine host's feces and ingested by the larvae of house or stable flies which live in manure deposits. The worm larvae then take up residence within the fly larvae. The cycle is completed when the fly larvae hatch into adult flies and deposit the stomach worm larvae around a horse's mouth. The horse swallows the stomach worm larvae that pass to the stomach where they mature into adults.

Summer sores occur when these worm larvae are attached to areas of damaged skin on the legs, around the eyes, and the prepuce. The flies deposit the larvae of the stomach worm in the damaged skin and the larvae penetrate the dermis, but since they are far from their



normal destination they usually die. The horse's immune system mounts an inflammatory response to the larvae in the surrounding tissue leading to the formation of an itchy, yellowish ulcerated lesion and granulation tissue.

Treatment of these lesions can require surgical removal when there is excessive granulation. Early in the process, as well as in areas where surgical excision is difficult, corticosteroids (cortisone-like drugs) are used to quiet down the immune system and hence reduce the inflammatory response and itch. Recently, ivermectin has been reported to be beneficial in the treatment of habronemiasis. Due to the locations of these granulomatous lesions, cryosurgery has proven to be more effective than conventional surgical techniques.



Prevention requires strict fly control on the horse and in its environment. Wounds should receive immediate attention, be bandaged when possible and kept clean to discourage the flies from landing on the site. Paste worming with ivermectin will also decrease the adult parasite population in the stomach and decrease the number of larvae available to the fly population.

Onchocerciasis

Onchocerciasis is another parasite-induced equine dermatosis. Onchocerca cervicalis is a worm that lives in the ligamentum nuchae or thick, fibrous, supporting structure of the neck muscles in horses. The adult worms produce microfilariae that migrate through the connective tissue to the skin of the belly midline, face, and eyes. When these microfilariae die, the body's inflammatory response produces swelling and redness followed by ulceration. The horse may experience itching, oozing and crusting of lesions, resulting in loss of hair and skin pigment. If the microfilariae are migrating through the eye when they die this can result in multiple eye problems.

Most horses have some *Onchocerca* microfilariae in their connective tissue. Some horses however seem to form an allergic response against the outer coat of the microfilariae. These horses have an overwhelming allergic inflammatory reaction resulting in the cutaneous damage mentioned above.

Onchocerciasis can be treated systemically with ivermectin. Since the disease is believed to be due to the continuous death of the microfilariae, killing large numbers of microfilariae at once will give the horse a break from the disease. But horseowners should exercise caution in the use of ivermectin if the horse is having eye problems along with the skin problems. Ivermectin will kill the microfilariae migrating through the eye and this could result in serious eye problems. A veterinarian should examine the eyes prior to ivermectin



treatment. Since the actual damage in the eye as well as in the skin is caused by the body's inflammatory response to the foreign antigen, the microfilariae, the severity of the outcome can be decreased by treating with corticosteroids prior to treating with ivermectin. Corticosteroids will decrease the inflammatory response and itching and lessen skin damage.

Culicoides Hypersensitivity

Culicoides hypersensitivity has a seasonal occurrence associated with the culicoides gnats (also called punkies and no-see-ums) during summer months. The disease is caused by a hypersensitivity (allergic) reaction to the saliva of these gnats. They usually feed on the dorsum of the horse producing a pruritic dermatitis that leads to excoriation, crusting, scaling and alopecia and erythema on the forehead, neck, withers, shoulders, rump, and base of the tail. Many of these lesions are secondary to the self trauma inflicted by rubbing, especially in the tail and mane areas. Mosquito or black fly saliva may also affect some horses in the same way.



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There may be a hereditary predisposition in that some families of horses may be more sensitive to gnat, black fly and mosquito bites.

Treatment involves intensive insect control. These almost microscopic insects are found in areas of high humidity and around water. They like to feed in the evening hours, so pasturing horses in the evening will actually expose them to these pests. If this is a serious problem on the farm it would be helpful to stable horses from dusk to dawn. Diligent application of repellents may help lessen the sensitivity. Mosquito screens are not effective because gnats readily pass through them. Corticosteroids are often needed to control severe itching.

Oxyurias

Caused by Oxyuris equi or pin worms, oxyurias leads to an anal itching that results in constant tail rubbing. The adult worms live in the large bowel of the horse, but the female migrates out to the anus and deposits her eggs in the anal area. The itching caused by the presence of the pinworm eggs leads to tail rubbing producing erosions, redness and broken hairs around the base of the tail, symptoms much like that of culicoides hypersensitivity. However, finding eggs of the pin worm around the anus will help identify oxyuriasis. To find the eggs of Oxyuris equi place scotch tape on the anal region and examine it under a microscope.

Lice

Lice infestation usually occurs during the winter months. This is probably due to the horses' long hair coats, close animal contact, and even the stress of cold weather.

There are two types of lice: biting lice, Damalina equi, and sucking lice, Haematopinus asini. Biting lice usually cause itching and hair loss and excoriation secondary to the itching. Sucking lice may cause anemia due to the blood loss during feeding and hair damage



associated with itching. Lice are usually found on the neck around the mane, but can be present anywhere.

Because most infections occur through close contact, affected animals should be isolated to prevent spread of the parasites. Horse lice are very host specific and will not live on other species, however, they can live without a host for up to 2 weeks so it is possible to spread lice infection through contaminated brushes and tack. Application of water-based, organophosphate insecticides is the approved treatment, but administering a water bath during the cold winter months is not appealing to man or beast. Thus insecticidal powders are commonly used. This may be why it is difficult to rid the animal of lice in winter. In the summer, the problem will usually resolve.

Perhaps the most difficult aspect of skin diseases, especially those that are parasite-induced, is finding the cause. But with persistence it is possible to get to the root of the itch, treat it, and work to prevent it in the future.

Luba Drouin, student editor of this issue of Equine Rounds, is beginning her final year in the DVM program.



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LUMPS & BUMPS

By Corine Farewell '89

Horses are subject to a variety of conditions which result in the formation of neoplasms on the skin surface. Neoplasia can be defined as an uncontrolled multiplication of cells which form a mass or growth. Although some of these are of little consequence to the well-being of the animal, others may be life-threatening. Some of the more common neoplastic "lumps and bumps" on horses are:

Papilloma

Commonly referred to as "warts," these small growths are caused by a virus which has a predilection for the muzzle, lips and eyelids. In severe cases, the warts may extend back to the jaw and even on the chest and front legs.

At the onset of the disease, the warts are small, grey cauliflower-like growths with a short stem. As the warts reach the end of their normal 3-4 month lifespan, there is a minor change in color to pinkish grey. Once they change color, they are usually sloughed within 3 to 4 weeks.

The horses most commonly affected are between 9 and 12 months of age. The warts do not cause a real problem to the young horse, but extra care in handling these horses is necessary. Growths on the lips will restrict the use of a twitch.

Papillomas are spread through contact with other horses, or from paddocks and stalls where affected horses have been stabled.

Treatment involves keeping affected areas clean and free of flies to avoid secondary infection in the normal 3-4 month lifespan of the papilloma. If removal is desired for cosmetic reasons, it is recommended that the operation be performed when the wart is at

maximal size. Earlier removal may result in recurrence and stimulation of growth. Many chemical treatments and wart vaccines have been advocated, but their value is disputed.

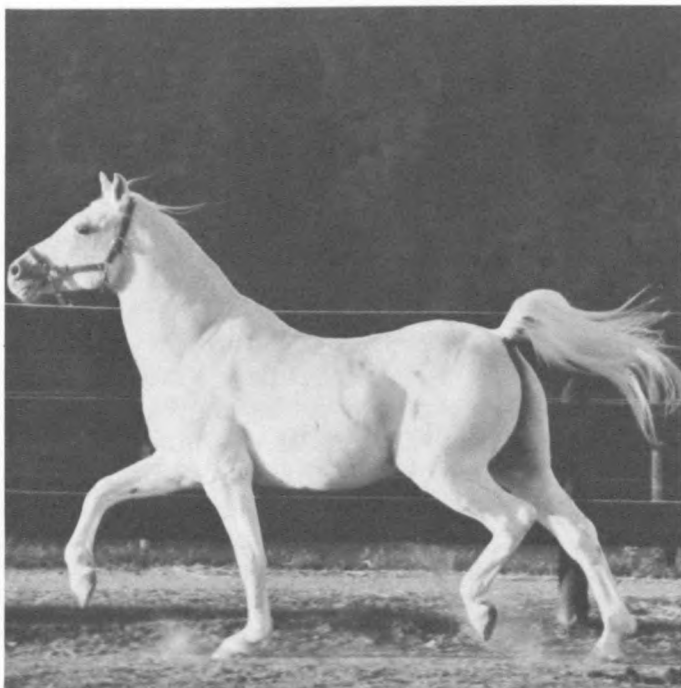
Sarcoids

Sarcoids are the most common neoplasm in horses. They are fibrous, locally aggressive tumors which have a predilection for the skin of the limbs, head, neck and chest, but may occur on any body surface. Similar to the papilloma, sarcoids are also induced by a virus and only occasionally regress spontaneously.

Sarcoids are classified into four types: verrucous, fibroblastic, mixed fibroblastic and verrucous and occult. Verrucous sarcoids resemble a wart and are recognized as a growth on or above the skin level. The verrucous type may be confused with a papilloma at the onset of growth. When the verrucous sarcoid is injured, it may grow quickly into a fibrous (fibroblastic) sarcoid or a mixed fibroblastic/verrucous sarcoid.

Fibroblastic type sarcoids are distinguished as hard nodules in the skin. Early on, the nodules rarely exceed 1-2 inches in diameter until trauma (accidental or surgical) or normal surface erosion of the skin leads to typical fibrous growth. There is considerable spread over the area, and the tumors may become quite large. Surface areas of over 10 inches have been reported for fibroblastic-type sarcoids. Sarcoids with both verrucous and fibroblastic characteristics are rare. They are usually seen when verrucous type sarcoids are evolving into fibroblastic type sarcoids after having been traumatized. Occult sarcoids are the most deceptive in clinical appearance. These lesions occur as a localized area of slight thickening of the skin and hair loss. They are frequently misdiagnosed as dermatophytosis (ringworm).

There are many treatments for sarcoids ranging from topical medication to elaborate surgical techniques. Currently, the most



Melanomas are most commonly seen in gray and white horses, but may occur in colored horses as well.

successful methods for treating sarcoids are cryosurgery, which uses extremely cold temperatures to freeze and kill the diseased tissue, and intralesional injections of killed bacterial products, which are thought to stimulate local immunity and inflammation.

Squamous Cell Carcinoma

These tumors occur mostly in horses over three years old with unpigmented or poorly pigmented skin and excessive exposure to ultraviolet light (sunshine) is believed to be an important causative factor. At the onset this tumor is a small, granulating, non-healing sore in the skin. Eventually the tumor enlarges and may protrude above the level of the skin, particularly when in the area of the eye, penis or vulva. The appearance of small white slightly raised plaques has been noted as a pre-cancerous change on the penis, vulva and in the

region of the eye. Squamous cell carcinoma will appear differently in different regions of the body, but in all cases ulceration, failure to heal, necrosis, and a foul odor is associated with the growth.

Squamous cell carcinomas are usually slow-growing and slow to metastasize or spread to other body organs. These characteristics make surgical removal a reasonable treatment. However, tumors often recur. Squamous cell carcinomas have also been successfully treated with radiotherapy (which uses radioactive implants to kill cancer cells), cryosurgery, and hyperthermia or the use of radio frequency current to induce a rise in temperature that kills the cancer cells.

Fibroma and Fibrosarcoma

Fibromas are benign tumors made up of fibrous connective tissue while fibrosarcomas are the malignant form of the fibroma. These growths can be found on horses of any age. Generally they are located on the lower limbs, lateral limbs and chest, prepuce, penis and occasionally on the sole surface or in the frog of the foot. They appear as hard growths under the skin or as wart-like or cauliflower-like growths on the skin. In the frog or foot they appear as granular growths. Surgical removal is recommended.

Mastocytoma

Mastocytomas are tumors composed of dermal mast cells. The cause of these tumors is unknown. They occur in horses of any breed or age, and most commonly in males. Lesions are usually solitary, and have a predilection for the head, neck, and legs. These tumors may be hard swellings with the overlying skin being normal, or they may be hairless and ulcerated.

Equine mastocytomas appear to be benign and metastasis has never been reported. Treatment may include (1) surgical excision, (2) radiotherapy, and (3) intralesional injections of corticosteroids.



Summertime Blues

By Annemarie Bimbo '87

Melanoma

Melanomas are most commonly seen in gray and white horses, but may occur in colored horses as well. These tumors that may be benign or malignant, originate from melanin- or pigment-forming cells found in the skin. The first signs are small, hard, black swellings around the anus, vulva, hairless region of the tail, the parotid gland area, and occasionally an isolated tumor anywhere on the body. Benign tumors do not infiltrate other body tissues and usually do not recur once removed. Benign tumors may become malignant over time. Malignant tumors invade body tissues, spread to other body organs, recur if removed and often lead to death. Melanomas usually grow very slowly taking up to 6 years to reach 1-1½ inches in diameter. They are painless, but at later stages may interfere with defecation, breeding and parturition. Some benign and malignant tumors may eventually erode through the skin surface appearing as ulcerating lesions exuding a mixture of melanin and blood.

Melanomas may be successfully removed surgically if local infiltrative growth is not excessive, and if metastasis (spread to other organs) has not occurred.

Conclusions

Some cases of "lumps and bumps" may resolve, but all tumors should be examined by your veterinarian as soon as possible. It is often impossible to determine the cause of a "lump" without a biopsy. In addition, without a precise biopsy diagnosis, the best method of treatment will remain an unknown. In general, the larger the tumor and the longer it has been there, the harder it will be to treat.

Summertime is a very common time of year to notice lumps and bumps on your horse's body. There are numerous causes of these bumps, and they are not easily distinguished by their appearance alone. It is most helpful to provide to your veterinarian as complete a history as possible. The following are some of the questions you may be asked: When did the bumps first appear? What was their appearance when they first erupted? How fast have they progressed? Is the horse itchy? Have there been any changes in the horse's feed or environment? Are there any other animals affected? Are there any other signs of disease? After completing a physical examination, your veterinarian may elect to perform some preliminary diagnostic procedures, such as smears, scrapes, cultures or biopsies. Only a few of the many causes of lumps and bumps will be discussed.

Flies

The common stable fly, Stomoxys calcitrans, can be a source of lumps on your horse in the summer. Bites may appear over the back, belly, legs or ears and may be itchy to the horse. Since fly eggs are laid in rotting manure and hay, one method of control is proper manure disposal. Some horse owners turn their animals out in the evening during the summer months to control stable fly bites. Fly spray provides additional protection for your horse.

Dermatophilosis

This is a skin disease caused by a bacteria, Dermatophilus congolensis. The lesions consist of raised tufts of hair which are often referred to as "paint brush lesions" due to their resemblance to small paint brushes when removed from the horse. These raised areas often begin on the muzzle and spread over the back toward the tail. The lower legs are also commonly affected. The disease is commonly seen in horses that are kept outdoors in wet, rainy weather. Consequently, this condition is seen during the spring and summer months, and has attracted descriptive names such as "rain

Corine Farewell '89 is interested in equine medicine.



rot" and "rain scald." The animal will not be itchy but often feels pain when touched. The best therapy for this disease is to remove the animal from wet conditions.

Nodular Collagenolytic Granuloma (Nodular Necrobiosis)

This is a common equine skin problem that is usually seen in spring and summer. The nodules may be found on the neck, withers and back. They are typically non-itchy and firm, and the overlying skin is normal. The cause of this disease is unknown, however the nodules may regress spontaneously during the winter. If relief is desired during the summer for cosmetic or work-related reasons, your veterinarian should be consulted. The condition responds well to corticosteroids.

Allergic Reactions

Feed, environmental conditions, and drugs of any type have been reported to cause allergic-type responses in the horse. These eruptions do not have a characteristic appearance, but can resemble any kind of itchy skin disease. Determining the precise cause of these allergic reactions can be a real challenge to the owner-veterinarian team.

Bacterial Folliculitis (acne, heat rash)

The cause of this disease is most commonly a bacteria, Staphylococcus aureus. Lesions occur in the saddle and harness areas and may be associated with poor grooming. Again, spring and summer are the seasons when you'll be most likely to see this disease, simply because animals are used more at this time. The lesions appear as firm, often painful bumps which ooze, lose hair, and scab over. They are not itchy. With proper grooming care, the occurrence of this disease can be decreased.

Equine Pastern Dermatitis ("scratches," "grease heel," "cracked heel")

This is an acute, chronic dermatitis of the heel and pastern seen particularly in breeds with prominent "feathers" in the fetlock region. This condition has many potential causes. Inadequate grooming and muddy, unsanitary environments may predispose an animal to "scratches" in which the skin first becomes irritated or chapped. With continued exercise or irritation, the skin becomes inflamed and a foul-smelling discharge may be produced. In addition, the condition can be due to dermatophilosis, dermatophytosis (ringworm), bacterial folliculitis, chorioptic mange, contact dermatitis (topical medicines and sprays, pasture plants), and photosensitization. Because there are so many possible causes for equine pastern dermatitis, and they all look the same, it is very important to have diagnostic testing done early in the condition. Treatment may consist of clipping the hair and washing with a mild soap and water. It is important to keep the horse out of wet, muddy conditions while healing takes place. Again, because there are so many possible causes, the most effective treatment includes specific treatment directed against the cause as determined by laboratory tests.

Skin diseases can be very frustrating for both the horseowner and the veterinarian and it is vital that a diagnosis be made in order to provide the proper treatment. With information provided by the owner, the veterinarian's task may be made easier.

Annemarie Bimbo is a senior student interested in large animal practice in New England following graduation.



EQUINE ROUNDS

A Newsletter for Horsepeople

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OUR SPECIAL THANKS to DR. DANNY W. SCOTT for his assistance in producing this issue of Equine Rounds. Associate Professor Scott, an authority in the field of veterinary dermatology, is a diplomate of the American College of Veterinary Dermatology. He has produced more than 180 publications, including



numerous case studies and review articles for textbooks and journals. His teaching has centered on lecture-laboratory courses in dermatology, immunology, endocrinology and clinical service teaching in the college's teaching hospital. He received the Norden Distinguished Teacher Award in 1976.

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