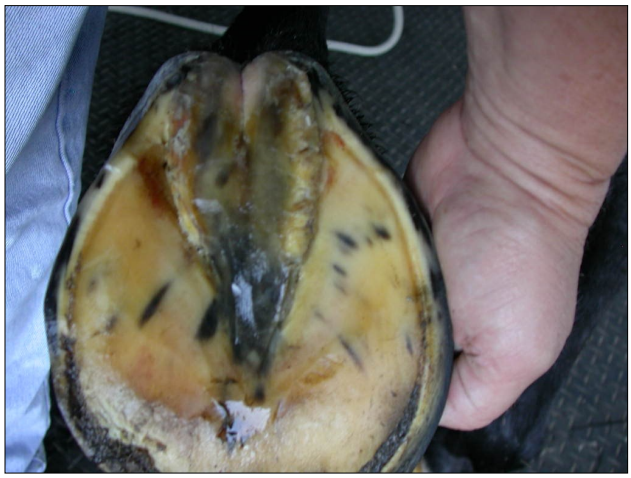
Hoof Canker

In natural hoof care hoof canker is thought of as a "proliferation of the corium". It usually starts in the sole corium and/or in the frog. The resulting tissue is very vascular, even the dull side of the knife makes it bleed. It also is very sensitive as nerves have grown with the new tissue.
Correcting the hoof form and getting it as de-contracted as possible is the first action of the hoof care professional. A holistic veterinarian will be of great help to this situation.

Above: Canker of the sole and frog in an extremely contracted hoof



Left: One year later comparatively little progress was made. The hoof did contract even further as there was no weight bearing. The horse did not survive. He eventually lost the hoof capsule on the other fore and had to be put down.

A German success story

Please observe how long this took.
Roxan is a draft horse mare. At the time her owner bought her she presumably already had undiagnosed thrush.
In March 2005 the farrier, while trimming the hooves, found heavy thrush which he treated by cauterization.
In May 2005 Roxan's hooves were treated by a hoof care professional. The hoof care professional discovered that Roxan suffered from canker (of the hooves) on both fore hooves. The next day this diagnosis was confirmed by a vet. The vet gave a carefully positive prognosis and stated that the horse had to be treated for at least half a year or, in the worst case, for a whole year. The hooves were to be treated by radical surgery of the affected parts. After surgery the open coria were to be covered with detachable plates.
In June 2005 the owner decided against this kind of therapy. The hooves were treated by the hoof care professional and the horse received a homeopathic therapy.

Left fore hoof after treatment by the hoof care professional.

July 2005 canker (of the hoof) is also found in both hind hooves.
August 2005 Roxan begins to refuse lifting her hooves and so the treatment of the hooves becomes more and more difficult.
Aug 19, 2005: Roxan is lame on her left fore hoof and has a strong pulsation in the leg. A vet is called at once and takes over the treatment.
Aug 22, 205: Roxan refuses to lift her hooves at all which makes further treatment impossible. The vet chemically burns the affected parts.
Aug 30, 2005: Roxan has to be taken to a horse clinic.
The affected parts of the hooves are cut out under general anesthesia. After surgery the hooves are covered with liquid acid compresses. The bandages are changed every second day and Roxan receives a pain killer. The hooves are not treated with antibiotics.
Sep 8, 2005: Roxan gets hoof shoes with detachable plates. The canker of the hoof has "grown" and the prognosis is bad.
Sep 13, 2005: the treatment is changed. Instead of the liquid acid, iodine, ether and a local antibiotic are applied.
Sep 20, 2005: Roxan undergoes surgery again.

Right fore shortly after the second surgery.

Oct 4, 2005: The canker has returned. The treatment is changed again and hoof canker paste is used.
Oct 8, 2005: The treatment by a specialized hoof care professional begins.
Condition of the hoof:
Roxan wears hoof shoes with detachable plates. One could smell, even before taking the shoes off that the hooves were affected by extreme sepsis and were purulent.
Roxan was suffering from canker on all four hooves.
The hind hooves were comparatively less affected. However, both fores were strongly affected with canker. On the left fore, the infection had spread laterally up into the crown.
The central groove of the frog is very deep and obviously infected. Both fore hooves are in a very bad stress condition, each with more stress laterally.
The left fore hoof – which is the most affected hoof – has already been bent

to a one-sided contracted hoof.

Progress of Treatment progression (Oct 2005 – Jun 2006)

Because Roxy refuses treatment by this time, only the shoes are removed. The owner of the horse is instructed to wash the hooves daily for the following week, thereafter to bathe the hooves in a gentle antibiotic solution and then to treat the frog with a liquid antibiotic. Hoof bandages are applied over night. During the day, Roxy can graze without bandages with the other horses.

Oct 18, 2005: The first hoof treatment begins. The morbid parts of the horn have been washed away by the horse owner, the clean dermis is exposed. The infection has receded enough that the horse allows treatment. Further, a tampon is put into the central frog groove.

The measures taken by the hoof care professional are intended to give access to the parts that are affected by hoof canker, as well as the recovery of the physical hoof situation. Both during this as well as during the following appointments, no kind of "bloody excretion", as is common in canker treatment, occurs. Due to the owner's carefully carried out treatment, healthy frog horn has already built up on the hind hooves.

First treatment of the left fore hoof

First treatment of the right fore hoof

Now the horse owner follows the advice of the hoof care professional: extensive washing, mildly antibiotic baths, antibiotics and tampons into the niches and pockets, all on a daily basis. At night the horse has to be in the stable with bandages on her hooves and has to be walked on the paddock once a day. Also, the hoof care professional trims the hooves in two week intervals. The condition improves gradually.

Left fore on Jan 9, 2006 Right fore on Jan 9, 2006

Jan 9, 2006: The right fore hoof is cured. Only some orange coloring of the horn shows which parts of dermis had been infected.
On the left fore hoof, which had been more infected from the beginning, there is only one spot about the size of a small coin where soft horn grows. The neighboring horn sections show some strong red to violet coloring indicating that this horn had been developed by an infected corium. The condition of the hooves have much improved.

Left fore on Jun 5, 2006 Right fore on Jun 5, 2006

During the following winter months, the condition of the left fore stagnates. At first, it was thought that this was due to the winter climate which made a hygienic procedure more difficult. However, this turned out to be false.
The condition of the hoof didn't improve because of the lack of physical pressure on the dermis of the frog.
Jun 5, 2006: As it became possible to improve the proportion of pressure to

the hoof, the condition of the frog horn improved accordingly. In June the left fore is healed completely.
The owner decides to keep the hoof care professional for further treatment, even after the successful therapy of the hoof canker.
The example of Roxan shows that canker can be treated successfully if sensible hoof work is combined with sensible wound treatment.
Apart from the improvement of the hoof situation through the hoof treatment, it is also necessary for the horse owner to apply exacting care and hygiene measures.
It is essential to avoid any medication that could irritate the dermis of hoof as well as anything that dries out the horn.
The altered "canker horn" has to be taken off regularly. This can be done without surgery that causes bleeding, simply by softening the horn with a mild water-jet and washing it off.

More hoof canker pictures

While the following is far away from natural treatment, we believe that there comes a time where natural treatment does not work. Instead of making the animal suffer, in some cases conventional veterinary treatment may be indicated. Please consult a veterinarian of your trust if you do encounter hoof canker that does not resolve within a short amount of time.

How to Treat Equine Canker

Stephen E. O'Grady, BVSc, MRCVS, John B. Madison, VMD, Diplomate ACVS

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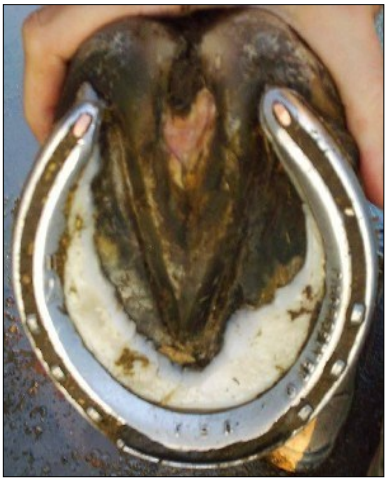
Take-Home Message: The incidence of equine canker appears to be more prevalent than once thought. The treatments outlined in the literature for this disease are sparse, varied and generally ineffective.

The authors outline a treatment protocol for canker, that when coupled with owner compliance, will resolve the disease.

Introduction



Equine canker is described as an infectious process that results in the development of a chronic hypertrophy of the horn-producing tissues.[1] It generally originates in the frog; may remain focal, but has the capacity to become diffuse and invade the adjacent sole, bars and hoof wall. Canker can occur in one foot or multiple feet may be involved. The disease is commonly seen in draft breeds but can affect any breed or sex. Recently, one author (SEO) has seen severe canker in two imported Warmblood horses. The etiology of canker remains elusive but wet environmental or moist unhygienic conditions have traditionally been thought to act as a stimulus, however, canker is commonly seen in horses that are well cared for and horses who receive regular hoof care. One author (JBM) observed a seasonal incidence of canker in Florida as the majority of cases presented to his hospital were during the months of July through December. The treatments described in the literature have consisted of debridement and the application of topical medications including antibiotics, astringents, antiseptics, and caustic powders. No treatment to date has been consistently effective in treating this disease and the prognosis has always been guarded…

Clinical Signs

Canker generally originates in the frog and can be mistaken for thrush in the early stages. Thrush is limited to the lateral and medial sulci or the base of the frog if a fissure is present whereas canker invades the horn of the frog anywhere throughout its structure. There is a proliferation of tissue with canker versus a loss of tissue as with thrush. In the early stages canker may present as a focal area of granulation tissue in the frog that bleeds easily

when abraded. Upon closer inspection a light brown or grey tissue will surround this focal area (Fig 1).

If left untreated, the disease will become diffuse and involve the frog, bars, sole and the stratum medium of the hoof wall in the palmar/plantar aspect of the foot. The infection results in abnormal keratin production or dyskeratosis, which is seen as filamentous fronds of hypertrophic horn.

Canker is characterized by numerous small finger-like papillae of soft off-white material that resembles a cauliflower-like appearance (Fig 2).

The condition is frequently, but not always, accompanied by a foul odor and is covered with a caseous white exudate that resembles cottage cheese (Fig 3). The frog is often undermined with the horny frog covering the bulk of the disease. The affected tissue will bleed easily when abraded and may be extremely painful when touched. Varying degrees of lameness will be present depending on the extent and depth of the infection. Most horses are not lame when the disease is recognized and treated early. The presence of lameness frequently indicates that the disease involves more than the superficial horny frog and warrants an aggressive approach to resolving the problem.

A presumptive diagnosis of canker is based on the gross appearance of the affected horny tissue along with a fetid odor; however a definitive diagnosis may be confirmed with a biopsy. Biopsy is most useful in recurrent cases or when the lesions do not have the characteristic appearance or they appear in unusual locations of the foot. Care must be taken to remove the superficial necrotic tissue before the biopsy is taken from the margin of the lesion. The biopsy should include both normal and abnormal tissue. A 6 mm biopsy punch works well. Histologically, the lesion is read as a chronic, hypertrophic, moist pododermatitis of the frog. It is characterized by a proliferative papillary hyperplasia of the epidermis with dyskeratosis, keratolysis and ballooning degeneration of the outer layers of the epidermis. A mixed population of bacterial organisms are observed in the stratum germinativum layer of the epidermis of the frog. [2] Cultures per se are unrewarding as they typically produce an assortment of environmental organisms, Bacteroides sp.and Fusobacterium necrophorum.

Treatment

Canker always carries a guarded prognosis but recently these authors have been successful with the following approach. Treatment consists of thorough careful debridement of the affected tissue followed by a regimen of topical therapy applied daily and continued until the disease is resolved. To debride the affected tissue, the horse can be placed under general anesthesia or regional anesthesia can be used with the horse standing. The horse's foot is trimmed appropriately removing all loose exfoliating sole as well as any excess toe or heel. The use of a tourniquet is essential. Firm pressure is placed across the vascular bundles over the abaxial surface of the sesamoids using either an Esmarch a bandage or simply a few tight turns of a cohesive bandage. Debridement can be performed in two ways. One author (JBM) uses electric cautery with the horse under general anesthesia while the other author (SEO) uses a sharp hoof knife and a number 12 scalpel blade followed by cryotherapy with the horse standing. All abnormal tissue is removed down to normal corium. A clear demarcation will be seen between normal and abnormal tissue. It is important not to remove excessive corium as this will retard cornification following surgery and may decrease the quality and depth of new sole being produced. It may be helpful to remove 1-2cm of normal tissue around the wound margins to ensure all abnormal tissue is removed.

If the decision has been made to place the horse under general anesthesia, use of a typical cautery handle in the cut mode allows accurate excision of hoof tissue including frog and normal horny sole. The handle used in this way will rapidly cut through sole and frog leaving only a dry eschar behind. The cautery tip may be bent as needed to undermine the base of the mass. Debridement can be carried out in the same manner using a sharp hoof knife and is followed by cryotherapy to freeze the area that has been debrided. Liquid nitrogen has always been used for this purpose but another practical method is to freeze the debrided area with a coolant spray b that is available for electrical circuits. The area of the foot that has been debrided will be soft and pliable.

Freeze this affected area until the tissue becomes hard (known as hard freeze), allow the area to thaw and then repeat the freeze once more. Gauze 4 x 4 sponges soaked in a solution of 10% benzoyl peroxide in acetone c and sprinkled with a fine powder made by crushing metronidazole tablets with a mortar and pestle or a pill grinder are then packed in the defect. In large defects, to help insure contact of the medication in the depths of the wound and to minimize the production of exuberant granulation tissue, a putty elastomer material is used to form an insert to fit in the bottom of the foot (Fig 4).

The impression material should not extend below the bearing surface of the hoof wall as this will create excessive pressure and make the horse sore. The foot is then bandaged with a dry bandage. The affected area is cleaned daily with surgical scrub, rinsed with saline, dried with a paper towel and the topical medication reapplied. It is crucial to keep the animal in a dry environment. A shoe with a treatment plate can also be used but it is sometimes hard to keep the foot as dry as necessary with this method. The authors prefer the use of bandages. Small reoccurrences may be managed with the horse standing and local anesthesia using either laser photoablation or cryotherapy. The use of systemic antibiotics such as chloramphenicol or oxytetracycline have been advocated but these authors question the use as the cases treated have resolved with local treatment only.4 A commitment is necessary from the owners, as aftercare will take several weeks to months depending on the stage of the disease until the affected tissue is cornified (Fig 5).

Results

The records of 56 cases of canker that were treated with the above protocol from 1998 - 2004 were reviewed. The affected limb(s) were recorded in 54 cases. There were 21 with forelimb involvement, 29 with hindlimb involvement and one horse with one forelimb and one hindlimb limb affected. Five horses were affected bilaterally. Three horses were affected in all four limbs. Only one reoccurrence was recorded and that horse was treated with laser photoablation. Two horses are still undergoing treatment.

Discussion

The treatment of equine canker has always presented a dilemma for veterinarians and farriers due to the poor prognosis. The etiology of canker remains obscure; however, the disease as seen by the authors differs in some respects from the disease that was described in the old surgical texts. It does not appear to be a disease of poorly cared for horses. In fact most of the horses in the study were well cared for and received routine hoof care. While the hind limbs seemed to be affected more frequently, forelimb involvement is common. In the majority of cases, the condition starts on the frog near the heel lateral or medial to the sulcus. From that point, it can extend anywhere in the foot and even break through the hoof capsule.
A variety of systemic and topical therapies have been tried for canker. While a given treatment protocol would seem to work in some instances, results were inconsistent.[3] In 1997, one author (JBM) began using a topical thera-

py reported by a Texas farrier consisting of benzoyl peroxide in acetone and metronidazole.6 Since that time all horses have been managed with surgical debridement followed by this combination of topical therapy with excellent success. The combination of thorough surgical debridement coupled with topical benzoyl peroxide in acetone and metronidazole have yielded consistent predictable results in 56 cases. While the cause of canker remains obscure, there are several principles of therapy for this condition for which the authors consider to be important. Thorough debridement of the lesion is essential. The method used to achieve this is probably of less importance. Electrocautery or cold steel excision followed by cryotherapy both cause tissue necrosis away from the surgical margins ensuring complete resection of the mass. It is important that the entire mass be followed to its extent wherever it takes you and removed. Lastly, methodical topical treatment is important. Cleaning the affected area with an antiseptic solution daily removes surface bacteria and provides an environment conducive to wound healing, 10% benzoyl peroxide in acetone is a excellent astringent and keeps the tissue dry with no caustic effect and finally the bacteria cultured from canker cases are usually anaerobic making metronidazole a good choice as a topical antibiotic. Emphasis must be placed on keeping the surgical wound clean and dry until the defect begins to cornify.
Owner compliance to perform the daily foot care is another essential element in the treatment of equine canker.

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