

A Prolonged Battle with a Necrotizing Bacterium (Necrobacillosis)

By Susan Buser
Photos by Zac Buser

Most of us, at one time or another, have encountered a minor case of what is generally termed “foot rot”. Often, when animals are exposed to prolonged periods of rain and the resulting wet paddocks, a susceptible individual in the herd may develop this condition. A number of different treatments may be recommended by your vet, from various soaks and wraps to applications of ointments such as Coppertox and Furazone. One of these is usually effective and the animal recovers in a short period of time. Follow your vet’s advice on treating these conditions.

Be aware however, of a possible serious secondary problem that may occur - the invasion of the compromised tissue by necrotizing bacteria. *Fusobacterium necrophorum* is a very aggressive, flesh-destroying anaerobic bacterium that enters the body through a break in the skin or through compromised and damaged tissue. (*Medicine and Surgery of South American Camelids*, p.177 for more information). It is deadly and must be diagnosed quickly and treated very aggressively. Keep this in the back of your mind anytime you have a case of foot rot or an injury and open wound. If you are aware of the possibility of this complication, you can recognize it if it does develop and treat it quickly.

I am going to tell you the story of a long battle we fought on behalf of a female alpaca named Chloe, who is owned by a farm in our region. As of the date of this article we believe we have achieved recovery and she is going to

survive. We want to share what we have learned in the course of treating her as well as encourage you that sometimes, these “hopeless” cases do not have to be so. Chloe’s condition was severe by the time she came into our care, so treatment and recovery took nearly six months.

We were called on the 8th of May by a regional farm for advice. They said Chloe had been sheared a week or so before and, while she had seemed a little stiff after the shearing, nothing had been found to be wrong with her. She had limped a little and then seemed fine. At the time of the call to us, she had been limping again for a couple of days and they were concerned. They had called a vet, but had not been able to get a visit yet. I offered to drive to their farm and take a look at her.

Examination of Chloe showed problems with both of her front feet. The foot pad on one foot was beginning to slightly separate from the skin at the back edge, but both feet were in serious trouble. The skin above the foot pad was soft, moist and sagging and upon close examination I discovered that there were thousands of maggot eggs throughout her fiber on both of her lower legs. Her feet did not feel normal; they felt overly soft to pressure and a little swollen. I also noticed a strong smell.

I cleaned the feet first with water and then cleaned the feet and lower legs with iodine, trying to remove all visible maggot eggs. Where the pad on one foot was beginning to separate at the back edge, I cleaned that area thoroughly, then wrapped the foot with vet wrap, with a gauze pad under the base of the foot.

The owners had called two different vets and expected that one of them would be able to visit the next day, so I left Chloe in their care with instructions for care of the feet until the vet arrived.

I received a call a couple of days later telling me that they still had not been able to get a vet to visit and that they were very concerned about Chloe. I drove up to their farm again to examine her.

The feet were in much worse shape, with the pads hanging partly loose on both feet now, and the “rot” spreading up on to the lower legs. The stench was strong and there were hundreds of active maggots working around the pads and on the legs which had to be scraped out one by one. They were up under the edges of rotten skin on some places, so the skin had to be peeled back so that they could be removed. I had never seen anything like this! Not being a vet, it was frankly quite difficult for me to stomach,



Above: Zac and Susan administering penicillin to Chloe.

Below: Chloe’s foot pads after several soaks.



but it had to be done since we did not have vet help available. The feet were once again thoroughly cleaned with iodine and both were wrapped. Chloe was transported down to our farm that night for ongoing care. We put her (and kept her) in an isolated area as a precaution against any problems, although an anaerobic bacteria does not spread easily due to its inability to exist in an aerobic environment.

It was now the weekend, so we received phone advice from the on-call vet. He recommended the following: Soak the feet and lower legs in a Chlorhexidine solution (96cc. to 2 gallon water) for 20 minutes each day. Dry the feet, then apply Furazone ointment to the foot pads and legs, wrap with gauze, then saran wrap, then vet wrap. Administer penicillin at 5cc. IM twice daily. We did this. We were informed that it would be best to pursue this treatment for several days before a vet visit. After several days of this treatment, it would be easier for the vet to see which tissue was viable and which was necrotic and needed to be removed. This treatment was helpful in eliminating the maggot infestation as well.

Our vet, Dr. Kelley Phillips, came Tuesday afternoon May 15th, to treat Chloe. She said it was a pretty bad case and that she suspected that an injury to the foot might have precipitated the problem, but said we couldn't know for sure. Since the pasture where Chloe resided at her farm was very dry it, it seemed unlikely Chloe had developed the initial problem from extended exposure to wet conditions, although Chloe's owners had observed her sitting on a wet spot where a dung pile had been, so that could have contributed to her condition.

Dr. Phillips partially sedated Chloe with a mixture called Llama Lullaby. Then she trimmed a good bit of the pad off the left foot, and some off the right. There were abscesses forming under the skin here and there on both legs (near the ankle/foot area), so she cut those areas down to good tissue, squeezed out and removed all the infected tissue- quite a mess! She cleaned the open wounds out thoroughly with iodine, then poured tetracycline into the wounds and stuffed them with tetracycline soaked gauze. She put a new type of ointment (Ichthammol) on the pad areas to help them re-grow,

then wrapped everything thoroughly with gauze pads, then gauze bandage, then vet wrap. (No saran wrap).



We were instructed to daily disinfect the wounds with Chlorhexidine poured into the wounds. We were also to follow the same procedure as above with tetracycline, ointment and wrapping until the vet visited again. Also for a total of seven days, we were to inject penicillin twice a day (5cc. each time). We were provided with Torbugesic (a pain reliever with a mild sedative side effect) for Chloe, to provide her more comfort while we worked on her. Ichthammol was used on the pads of the feet to promote regrowth and healing.

Treatment of Chloe took about an hour a day. New areas of abscess popped up every day and had to be opened, cleaned out of the white cottage-cheese like infected material, then any dead tissue around the area trimmed away. The stench was horrible (one of the signs of a necrotizing bacterium) and the areas of infection continued to move up the lower legs.

The pads of the feet began to heal and re-grow with the application of Ichthammol, but the legs were in bad shape even with the daily aggressive cleanings and injections of Penicillin. Dr. Phillips switched us to Naxcel for our antibiotic in the hope it would be more effective than the Penicillin had been. Since the topical Tetracycline had not seemed to be very effective, we abandoned that treatment and went back to scrubbing the wounds with a Chlorhexidine solution then forcing Betadine into the wounds and bandaging them.



she was pregnant we wanted, at the very least, to keep her alive until she could successfully deliver her cria.

We continued to treat Chloe daily, but the infection continued to spread. It now extended about six inches up the legs. We would clean out abscesses as they appeared, but now sometimes large chunks of flesh would come off in our hands when we treated her. Some areas would start to seem to heal over, and then a "tunnel" would develop under the skin and the infection would pop up in a new area. We had open wounds more than an inch wide by four inches long, and half an inch deep. It was getting to the point where there were more open wound areas on her legs than skin.

Dr. Phillips continued to consult with a number of camelid vets as to the best course of action. Additional suggestions at this point were to introduce a zinc sulfate additive to the diet and reduce Chloe's calcium and phosphorus intake by eliminating any grains or alfalfa in her diet to promote healing.

At this point Chloe was given a very poor prognosis. We were told that once this type of bacteria began migrating and tunneling through the tissue plains it was very hard to treat. In addition, since the blood supply is so limited to the foot, systemic antibiotics were not very effective in treating an infection in this location. We were told that Chloe probably would not survive.

We, along with Dr. Phillips and Chloe's owners, were very saddened to hear this prognosis. We were all determined to fight as hard as possible for Chloe. Since



On May 24th we received a new treatment recommendation from our vet, who had been in consult with Dr. Karine Nunez at Bonnie Brae Animal Hospital in Tryon, NC. Dr. Nunez said she has had



Large portions of tissue sometimes just peeled off



Note the knob of cartilage in the center of the photo and the cavity hollowed out around it by the action of the bacteria

much more success with dry treatments in this situation than with wet treatments and soaks. She suggested applying a drying powder, McKillips Powder, to the wounds for three to four days and wrapping as we had been doing. We could not immediately source the McKillips Powder, so we substituted Wonder Dust (although I am sure the McKillips would be better if you could get it).

Once the wounds were dried for a few days, Dr. Nunez recommended using a dry mixture on the wounds, 50/50, of MSM granules (an anti-inflammatory substance which can be purchased at a feed store) and crushed Metronidazole tablets (an antibiotic you can get from your vet). We carefully packed this dry mixture into the wounds, covered the wounds with several

layers of woven cotton gauze pads (to absorb moisture), wrapped with gauze bandaging and then with vet wrap. Dr. Kelley continued to visit and trim away dead tissue as needed and we continued daily treatments. We were still administering Naxcel twice daily.



*At right: Maggie, Chloe's cria.
Below: Chloe in labor.*



*At right:
Rose, Brio
and
newborn
Maggie.*



At 1pm. On May 31st, lying down, Chloe successfully delivered (although a little early) a healthy little female cria. We took the cria immediately and began bonding it with one of our females, Rose, who already had a young cria by her side. Being the wonderful alpaca she is, after a little initial confusion, Rose generously took little Maggie in and began raising her alongside her own cria. Since Chloe was still sitting most of the day, we knew she could not properly nurse this cria plus we hoped that reducing the stress put on her body by the cria would increase her chances of survival. Since we took the cria quickly from Chloe, she never even seemed aware of it, and so suffered no sense of loss.

We continued treatment and felt that we were finally on the right track since the infection had stopped progressing up the legs. However we were still dealing with rotten tissue and abscessed areas that were still producing infected material. We still had large wounds all over the legs and sometimes we could see tendons. Twice we were all the way down to bare bone. It was very scary, but we just continued to treat and seek guidance and help from our vet.

A week or so into June we began to see the tissue filling back in over the exposed area of bone despite continued loss in other areas. For the first time we saw some re-growth of skin tissue, which was very encouraging.



The pink and black area at the bottom of the photo is the first regrowth of skin we saw





there (toe nail type tissue) that we have to keep trimmed back. But, she is alive, and she is able to walk, and is getting around better day by day. It appears at his point that she is going to be fine.

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We continued daily treatments and sometime over the next month or so, I think we finally won the battle against the necrotizing bacteria and began the equally long battle to heal and re-grow the tissues of the feet and legs. In September we were finally able to drop the daily treatments to every 2-3 days (and actually found that timing to be more conducive to the type of tissue regrowth that was happening at that stage).

Our next battle was against “proud flesh”. This is excess granulated tissue that grows up in the center of an open wound in a mushroom shape. The skin cannot grow over it, so it must be trimmed down to skin level in order for complete healing to occur. We had to do several trimmings of several areas before the proud flesh receded and the wounds could begin to close in.

The month of this writing, October, we have dropped to treating and wrapping about every 4-5 days, and have been wrapping only those areas that have not regrown skin. Now at the end of the month we are down now to just a couple of small areas that are still closing in, but are elated that it seems that Chloe has won the battle and can go on to live a happy life. We are also thrilled that little Maggie (who is an exceptionally sweet and pretty little female) has had the opportunity to experience life and hopefully will grow into a beautiful producing female for her owners.

Chloe’s feet are a bit distorted at this point from all the damage and regrowth of tissues. In fact, the genetic “instructions” seem to have gotten a little confused along one side of her foot and she has grown a layer of keratinous tissue

Special Thanks to our wonderful vets, Drs. Kelley and Bryant Phillips for all their help and compassionate care, and to Dr. Karine Nunez for her help and suggestions for treatment.

About the Author

Susan is an alpaca farm owner who is strongly committed to the education and success of new breeders in the industry. She was the founding President of the AOBA affiliate, the Alpaca Small Farm Network, where she dedicated three years toward the establishment of educational programs and networks of support for the farmers in the region. She and her husband Zac, are personally committed to helping farms in their area in any way they can - from education to hands-on help in an emergency. Susan and Zac enjoy raising their own huacaya herd plus a number of boarders on their farm, *Abbondanza Alpacas*, in Greenville, SC. Susan may be contacted at susanbuser@earthlink.net