

Ask A Vet: Baby It's Cold Stuff!

Sunday, November 30, 2014

Dear Dr. Weldy's,

My horse has had a sore swollen ankle for several weeks. The trainer at the stable suggested that I get it "freeze fired". What does that mean and what does it involve?

-Curious

Dear Reader,

The term freeze fire refers to using very cold temperatures produced by liquid nitrogen to stimulate healing in chronically injured soft tissue. The ankle injury your horse suffers from is likely due to a common problem called a pulled suspensory ligament. You should have your veterinarian examine the horse to get an accurate diagnosis. This is very important because sometimes the ankle area is swollen and sore due to a fractured sesamoid bone which is pulled apart by the ligament. This requires surgery to remove the fractured tip of the sesamoid in order for pain to subside and healing to occur. In the case of a pulled suspensory ligament the swollen ankle is very similar looking but usually the pain is usually less severe. Radiographs are often needed to tell the difference. Many weeks of rehabilitation are usually required. One of the treatments used to help the body heal tendon and ligament injuries involves the use of liquid nitrogen. Freeze firing brings in blood supply to the chronically injured tissues and rapidly reduces pain at the site.

Liquid nitrogen boils at -320 degrees F! That's 352 degrees colder than ice! It takes specialized equipment to enable the veterinarian to pinpoint the area of damaged tissue and utilize the vapors from the boiling nitrogen as they travel through attachments of different sizes used depending on the type of lesion. The horse is sedated to enable us to safely apply the device that the liquid nitrogen vapors travel through. Varying amounts of time and varying numbers of applications are required in the area of the injury depending on its severity. The animal is then rested in a box stall or small paddock to allow healing to occur.

We often ultrasound damaged tendons and ligaments to access the extent of the tear before treatment to get an idea of the length of time it will take to heal. These injuries take rest and rehabilitation along with treatment to get these equine athletes back on the job. Ultrasound is helpful to determine if the damage is repaired before the horse is returned to its intended use.

Cryosurgery is the term used to describe the use of liquid nitrogen to cause the destruction of tissue. The same instruments that we use for freeze firing are also used to destroy superficial tumors on animals and can be remarkably effective on squamous cell carcinomas and sarcoids that are in the non invasive stages. Cryosurgery is also used to remove warts and other unwanted masses. Cryotherapy using liquid nitrogen produces thermal shock in tissues without destroying it and is used to reduce pain, inflammation, and swelling just as an ice pack would do to a lesser degree. Cryotherapy constricts the blood vessels and relaxes the muscles while rapidly reducing most pain.

Freeze firing is often a combination of both cryosurgery and cryotherapy depending on where the lesion is and if it is tendon, ligament, or bone. The cryo instruments we use enable us to pinpoint and freeze damaged areas without causing destruction of surrounding healthy tissue.

I hope this helps you understand the term “freeze fired” and helps you seek a successful resolution of your horse’s sore ankle.

-Dr. Jerry Sellon