Treatments of chronic laminitis from a multidisciplinary approach integrating traditional and complementary therapies

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1. INTRODUCTION

Laminitis is a very painful dermal disease with an acute inflammatory response, caused by systemic disorders than can target lamellar tissue with severe consequences resulting in separation and disorganization of the lamellae. The disease can proceed to a chronic phase where displacement of the third phalanx takes place. Laminitis, in US, affects 13% of horse population, 2% of all horses annually, of which 87% must be euthanized (Hunt and Warton 2010, Heymering 2010). There are lots of cases reported in Spain, but no prevalences studies have been published.

OBJECTIVE: To describe the integration of a broad range of therapies to fight pain and help general well being which may be combined so as to increase the chances and speed of recovery of chronic laminitis patients.

2. ANATOMY AND PATHOLOGY

In normal conditions the basal membranes (BM) placed between dermal and epidermal lamellae requires lysis and reconstruction. Metalloproteinase (MMP), MM-2 and MMP-9 are the enzymes that are in charge of the lysis. This lysis is controlled by metalloproteinase inhibitors, making the process balanced. In a laminitis tissue, the mediators of inflammation increases MMP transcription producing their active forms and causing an imbalance in favor of lysis (Pollitt 2007).

In the lamellae, the protein laminin facilitates the connection of the dermal and epidermal lamellae. In this connection, a matrix of actin and collagen is formed, making the connection of the laminae strong. In cases of laminitis, the connection of the laminae is lost, leading to a separation of the layers of the foot (Parks 2016).

3. DIAGNOSIS AND MONITORING

The use of radiographs and venographs will help the clinician to monitor the effectiveness of the treatment (Parks 2016) and to guide the hoof trimming (O’Grady 2016).

4. ANALGESIC THERAPIES

The combination of drug therapy is the most widely used for the laminitis pain treatment. However, sometimes its properties are not enough to fight pain (Driessen and Zaracco 2016), and it is necessary to know other therapies that could be combined with drug therapy.

Some studies have showed that acupuncture therapy has been very useful in the treatment of the clinical signs of chronic laminitis. The Faramarz et al. study showed that integrating acupuncture in two separate treatments of chronic laminitis horses for one week, decreased lameness scores 1 degree (Faramarz et al. 2017).

The Petermann study proved that in the chronic laminitis horses treated with laser acupuncture the degree of pain decreased from 3,71 to 1,14 in 4-5 weeks of treatment, depending on the horse (Petermann 2011).

5. SUPPORTING HOOF THERAPY

It is the most important therapy that can really unload the hoof and physically relieve pain. The farrier try to return the hoof to its normal anatomy and biomechanics (Parks 2016), following some steps:

After trimming
Figure 10. Biomechanics of the normal hoof (Merritt et al. 2016).

Gallop through the COP
Figure 11. Biomechanics of a chronic laminitic hoof (Merritt et al. 2016).

Shoes

Figure 12. Line of the widest part of the hoof.

Figure 13. Use of the widest part of the hoof, it is used as a reference for hoof trimming (O’Grady 2016).

Figure 14. Breakover point in rounded shoes with different thickness (Parks 2016a).

Figure 15. Aluminum shoe (Grady 2016).

Figure 16. Egg bar shoe (Grady 2016).

Figure 17. Heart bar shoe (Grady 2016).

Figure 18. Reverse egg bar shoe with silicon pad beneath.

Figure 19. Wooden shoe (Grady 2016).

Figure 20. Hoof boots (Sciartemi).

6. NUTRITION

Feeding 3-4 times a day is preferable. It would be more comfortable for the horse if the food is placed in an elevated area (Mennis 2005, Boiger 2010).

Figure 21. Recommended diet for a chronic laminitic horse (own source based on Mennis 2009 and Boiger 2010).

7. CONCLUSIONS

Chronic laminitis is a very painful and multifactorial disease, where not one treatment protocol exists because of the complexity and individual variability. The integration of different types of therapies such as acupuncture to address amplified pain disorders can help decrease costs of therapy, analgesic drug dosage and decrease side effects.

Even if supporting hoof therapy is probably the most important to help stabilize the hoof we must keep in mind that, every horse is different and the clinician has to observe carefully which type of shoe is best in every moment of the healing process.