ISSN: 2456-2912
VET 2024; 9(2): 477-480

www.veterinarypaper.com
Received: 25-12-2023
Accepted: 28-02-2024

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A role of therapeutic shoe in management of chronic laminitis & navicular disease: A review of 37 cases

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DOI: https://doi.org/10.22271/veterinary.2024.v9.i2g.1248

Abstract
Total thirty seven (n=37) horses with history of lameness presented at department of surgery and radiology. A total of 21 horses were diagnosed as chronic laminitis with help of radiographic evidence of mild to severe rotation of pedal bone (P3), while navicular disease was diagnosed in 16 horses. Bilateral P_3 rotation was observed in nine horses whereas twelve horses showed unilateral P_3 rotation in forelimb. Ten equines with history of lameness for thirty to ninety days were treated with therapeutic shoeing, antibiotic, NSAIDs, antihistaminic, nervine tonic, vasodilator and nutritional hoof supplements and eleven equines with history of lameness for more than one year treated with therapeutic shoeing and nutritional hoof supplements. Corrective hoof trimming was applied in all cases to restore P_3 rotation wherein therapeutic heart bar shoe (n=15), reverse shoe (n=2) and wooden block (n=4) were applied based on defective hoof walls and insufficient space to apply nails. Periodic corrective hoof trimming along with therapeutic shoe application was done till P_3 restored normally. Average time required for restoration is 1-1.5 years, however 4 horses had reoccurrence, due to early removal of therapeutic shoe after 4-6 months of recovered from clinical signs. Recovery was recorded 70% in early presented cases (30-90 days), while only 45.45% recovery was recorded in more than year of chronic laminitis. Horses presented with navicular disease (n=16) in forelimb showed tip toe gait in 4 cases, whereas abnormal deviated foot placement in affected limb with complete weight bearing in 12 cases. X-ray examination showed degenerative changes of navicular bone and flexor tendon. Medicinal management with antibiotic, NSAID and nutritional supplements along with high heel shoe (therapeutic shoe) applied in affected limb to provide rest to the affected part of flexor tendon for 1-2 months. Recovery from navicular disease was observed in 81.25% cases.

Keywords: Therapeutic shoe, laminitis, navicular disease

Introduction
The mainstay of hoof care is therapeutic trimming/shoeing. In considering hoof care in horses with chronic laminitis, there are three goals for therapy: to stabilize the distal phalanx within the hoof capsule, to control pain, and to encourage new hoof growth to assume the most normal relationship to the distal phalanx possible (O'Grady and Parks, 2008) [2].
There are many farriery methods to implement the therapeutic principles of protecting and unloading a compromised section of the foot and then redistributing the load to a better section of the foot. Any discussion of therapeutic farriery and its ultimate success has to start with and rely on a good basic trim (O'Grady, 2006; Castelijns, 2012) [1, 4]. Disadvantages of this shoe are that its application demands skill, it is difficult to apply heel elevation, and again, the shoe does not address mediolateral break over (O'Grady and Parks, 2008) [2].
Therapeutic farriery forms the mainstay of treatment for club feet. Farriery should be based on principles rather than a particular method, and the principles remain the same regardless of the severity of the flexural deformity (O'Grady and Dryden, 2012) [3].
Therapeutic heart-bar shoeing provides instant improvement in weight bearing capacity of chronic laminitis horses where the third phalanx has rotated. Gradual corrective hoof trimming is necessary to restore the physiological anatomic relationship between the pedal bone and hoof capsule, till third phalynx restored normally.

Reccurrence was recorded in 20% equines, where therapeutic shoeing and corrective trimming stopped after 6 months of recovery (Mahla *et al.*, 2019) [5].

Cases history

Total thirty seven (n=37) horses with history of lameness presented at department of surgery and radiology. All horses were presented with limping with painful stimuli expressed with head movement nodding while affected limb come in contact with ground, where severity was varied based on degree of affection.

Diagnosis: Lateral view hoof x-ray provides confirmatory diagnosis of chronic laminitis and navicular disease. Laminitis was diagnosed by mild to severe rotation of pedal bone (P_3); where bilateral P_3 rotation was observed in 9 horses whereas 12 horses showed unilateral P_3 rotation in forelimb.

A 16 horses had abnormal radio-opaque changes below navicular bone was observed in lateral view hoof x-ray in the navicular disease.

Fig 1: Therapeutic shoe as treatment

For chronic laminitis: Corrective hoof trimming was applied in all equines presented for the treatment and management of laminitis, which helped to restore normal hoof angle and break to shift weight bearing from affected to normal side of affected hoof. A self made fabricated heart bar shoe was applied in the 10 chronic laminitic horses; whereas wooden blocks were applied with adhesive and prime cast plaster in 5 horses; where application of nail was not possible due to defective and inappropriate hoof wall. Reverse shoe was applied in one (1) horse with fabricated frog support as toe of affected equine was defective.

All clinically recovered equines were reevaluated radiologically on every 1.5- 2 months, for next corrective hoof trimming and therapeutic shoe appication; where corrective trimming was advocated till solar surface become parallel to ventral surface of P_3 bone.

For Navicular disease: Therapeutic high heel shoe was applied in the affected limb to provide relief from compression pressure of flexor tendon for minimum 1 month/ till recovery.

Supportive medicinal Treatment

Medicinal management of chronic laminitis was carried out with Ceftriaxone Tazobactam 10 mg/kg, Flunixine meglumine 1.1 mg/kg, Pheniramine meleate 5 ml, Frusemide 2.5 mg/kg, Neurobion forte 5 ml, Ranitidine 1 mg/kg, NS 6 liters/day, RL 2 liters/day, DNS 5% 2 liters/day by intravenous route of administration. Oral medication includes Pow. Hoof gain 30 g/day P.O. till recovery, Tab. Isoxsuprine hydrochloride 1 mg/kg, B.I.D. and Tab. Aspirin 5 mg/kg S.I.D. P.O., for all acute cases for average 21 days in chronic cases. All affected equines were kept on less carbohydrate rich diet till recovery. Extremely chronic cases of laminitis had slight different strategy, which was applied to laminitis case history more than 12-18 months, such cases were treated with Benzathine penicillin 48 lack I.U. i/m once, while Flunixine meglumine 1.1 mg/kg, Pheniramine meleate 5 ml, Isoxsprine hydrochloride 0.2 mg/kg i/v administered daily for 5 days with Pow. Hoof gain 30 g/day P.O. and less carbohydrate diet till recovery.

Navicular affections were treated with Dicrysticin-S 2.5 gm i/m, Flunixine meglumine 1.1 mg/kg and Pheniramine meleate 5 ml administered intravenously for 3 to 5 days, while Infrared lamp and therapeutic ultrasound physiotherapy techniques were applied in docile horses; whereas furious horses offered hot water hydrotherapy for 5 to 7 days as and when feasible.

Results

Table 1: Therapeutic management along with supportive medicine for chronic laminitis and navicular disease, their etiology, treatment history, treatment days, obel grade of lameness during and after treatment as well as recovery described

Types of laminitis	Predisposing factor	Case history (days)	P_3 rotation in X-ray	Treatment days	Obel Lameness Grade		Recovery
					Before	After	
Chronic laminitis (n=10)	Grain over load (n=4)	30-90	Moderate to severe	21-28	3 to 4	2	7 (70.00%)
	Systemic disease (n=4)	50-80	Moderate to severe	21-28	3 to 4	2	
	Faulty farriery (n=2)	60-90	Moderate to severe	21-28	3 to 4	2	
Extremely chronic laminitis (n=11)	Faulty farriery (n=5)	360-720	Severe	45-60	3 to 4	2 to 3	5 (45.45%)
	Supportive leg lameness (n=6)	365-540	Severe	45-60	3 to 4	2 to 3	

Recovery was recorded 70% in early presented cases (30-90 days), while only 45.45% recovery was recorded in more than year of chronic laminitis. Average time required for restoration is 1-1.5 years, however 4 horses had reoccurrence, due to early removal of therapeutic shoe after 4-6 months of recovered from clinical signs.

Horses presented with navicular disease (n=16) Medicinal management with antibiotic, NSAID and nutritional supplements along with high heel shoe (therapeutic shoe) applied in affected limb to provide rest to the affected part of flexor tendon for 1-2 months resulted in to 81.25% recovery rate, whereas remaining 18.75% cases didn't respond to present treatment, as they presented for treatment at extremely chronic stage with complete weigh bearing on affected limb along with pain reflex.

Conclusion

Therapeutic farriery work; heart bar shoe/ wooden block for chronic laminits and high heel shoe for navicular disease provides pain relief by weight shifting from affected part. Average time required for restoration is 1-1.5 years, however 4 horses had reoccurrence, due to early removal of therapeutic shoe after 4-6 months of recovered from clinical signs.

Navicular disease responded well with high heel shoe, because it directly relived pressure from affected deep digital flexor tendon; however it responded very less in the chronic stage of navicular disease cases.

References

1. O'Grady SE. Realignment of P3 - the basis for treating chronic laminitis. Equine Veterinary Education. 2006;18(4):214-218.
2. O'Grady SE, Parks AH. Farriery options for acute and chronic laminitis. Proceedings Am Assoc of Equine Pract. 2008;54:355-363.
3. O'Grady SE, Dryden VC. Farriery for the hoof with a high heel or club foot. Veterinary Clinics: Equine Practice. 2012;28(2):365-379.
4. Castelijns HH. The basics of farriery as a prelude to therapeutic farriery. Veterinary Clinics: Equine Practice. 2012;28(2):313-331.
5. Mahla JK, Parikh PV, Dabhi PB. Closed Method of Patellar Desmotomy for Management of Upward Patella Fixation in a Foal. Intas Polivet, 2019, 20(2).