

CASE REPORT

MANAGEMENT OF IDIOPATHIC STRINGHALT IN A 14-YEAR-OLD THOROUGHBRED GELDING IN NIGERIA: A CASE REPORT

Emmanuel Richard Edeh¹, Melford Esuabom², Olumide Odunayo Akinniyi^{3*}, David Oludare Omoniwa⁴, Kankani Sambo Wonder⁴, Sunday Idoko⁵, Wayuta Philip Mshelia⁶

¹Department of Veterinary Medicine, Surgery and Radiology, Faculty of Veterinary Medicine, University of Jos, Plateau State, Nigeria

²Nigerian Army Polo Association, Abuja, Nigeria

³Department of Veterinary Medicine, Faculty of Veterinary Medicine, University of Ibadan, Oyo State, Nigeria

⁴Equine Medicine and Wild Life, Veterinary Teaching Hospital, Ahmadu Bello University, Zaria, Kaduna State, Nigeria

⁵Department of Veterinary Pathology, Faculty of Veterinary Medicine, University of Abuja, Abuja, Nigeria

⁶Department of Veterinary Medicine, Faculty of Veterinary Medicine, Ahmadu Bello University, Zaria, Kaduna State, Nigeria

*Corresponding author: Dr. Olumide Odunayo Akinniyi

Address: University of Ibadan, Faculty of Veterinary Medicine, Department of Veterinary Medicine, Oyo State, Nigeria

Phone: +2348122405680

ORCID: 0000-0002-9960-3615

E-mail: olumide.akinniyi@gmail.com

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ABSTRACT

Stringhalt is characterised by delayed protraction and excessive flexion of the hock during progression and may affect one or both pelvic limbs. No instances of stringhalt in Nigeria have been reported. Stringhalt, a rare neuromuscular disorder in horses, underscores the importance of documenting cases to enhance collective understanding. The present case aimed to describe the successful management of idiopathic stringhalt in a 14-year-old Thoroughbred gelding. The 500-kg gelding in a stable of 20 horses exhibited sudden abnormal movements in the right hind leg, noticed three days prior. The horse displayed normal vital parameters, exhibiting a distinct gait with moderate hyperflexion in the affected hind limb during walking and trotting. Based on the history and clinical examination, the diagnosis was unilateral idiopathic stringhalt, grade III. The horse received intravenous phenytoin sodium (15 mg/kg) and intramuscular multivitamin and amino acids injection (15 ml/horse) for five days, leading to the complete resolution of clinical signs and the resumption of normal activity. Prompt diagnosis and treatment are crucial for managing idiopathic stringhalt in horses. The successful outcome with phenytoin sodium and multivitamin supplementation highlights their efficacy. Further studies on stringhalt's aetiology in Nigeria are warranted.

Keywords: Aberrant gait, hind limb, horse, hyperflexion, stable

INTRODUCTION

Stringhalt, also known as equine reflex hypertonia, is a condition in horses where one or both hind limbs exhibit excessive and prolonged flexion during movement (Furr et al., 2011). It is a long-standing horse disease that Kendall first described in Australia in 1884 (Araujo et al., 2008).

There are two primary classifications of stringhalt: Australian stringhalt, associated with plants, and classical stringhalt, as identified by Duque et al. (2014). According to Martens (2019), classical

stringhalt typically manifests in isolated instances and primarily affects one limb. The precise cause of this condition remains elusive, leading to its designation as idiopathic stringhalt. However, potential causes, such as trauma to the dorsal metatarsal region, thalamus abnormalities, and reduced nerve conduction in the hind limbs, have been documented (Crabill et al., 1994).

Australian stringhalt is a type of stringhalt linked to plants, specifically caused by consuming various related weeds like *Taraxacum officinale* (European dandelion), *Hypochaeris radicata* (Australian dandelion), or *Malva* (mallow). Australian stringhalt, as the name suggests, is predominantly found in Australia, but occurrences have been recorded in New Zealand, North America, Brazil, Chile, Japan, and Europe (Martens, 2019). The clinical signs of Australian stringhalt usually diminish with time, when the horse is no longer exposed to the weed (Brockman, 2017).

The most common signs of the condition are involuntary, exaggerated upward movement of the hind limb, kicking upwards towards the belly, hopping or jerking, incoordination, dragging hind hooves, muscle atrophy of the lower hind limb, and the inability to stand up without assistance (El-Hage et al., 2019; Valberg and Baird, 2022).

The diagnosis of stringhalt relies on observing clinical signs and ruling out other neurological and orthopedic abnormalities. This process may involve techniques such as electromyography (EMG), nerve conduction velocity (NCV), and diagnostic imaging (El-Hage et al., 2019). When intoxication is suspected, relocating the horse to a different paddock, providing an alternative source of feed and water, and identifying and collecting samples of the suspected toxic plants from the horse's environment for analysis may be sufficient, and many cases seem to recover spontaneously. In cases of classical stringhalt, the most successful results have been achieved through tenectomy of the lateral extensor of the digit, involving the removal of a portion of the muscle. Improvement may not be noticeable until 2–3 weeks after surgery, and not all cases show a positive response, which

is expected due to the distal axonopathy nature of the condition. Alternative treatment approaches include administering high doses of thiamine and phenytoin (Valberg and Baird, 2022).

To the best of the authors' knowledge, there is no documented case of stringhalt in Nigeria. Stringhalt is a relatively rare neuromuscular disorder in horses, making it essential to document and share individual cases to contribute to the collective understanding of the condition. The present case aimed to describe the successful management of idiopathic stringhalt in a 14-year-old Thoroughbred gelding.

Case report

History

In a stable of 20 horses, a 14-year-old Thoroughbred gelding weighing 500 kg was presented to the Veterinary Teaching Hospital, University of Jos, Nigeria, with a complaint of sudden aberrant movement in the right hind leg. The condition was noticed three days before the presentation. There was no history of recent trauma or previous medical problems. The patient, as well as the remaining 19 horses in the stable, were fed concentrates and hay of the same source two times a day in their stalls.

Clinical examination and diagnosis

All vital parameters were within the normal range. On lameness examination, the horse showed a typical goose-stepping gait and moderate hyperflexion of the afflicted hind limb, which was more evident when the horse first walked off and continued as the horse trotted. The affected pelvic limb was held in an adducted position and ascended rapidly and steeply towards the abdomen (Figure 1). There was no pain upon applying a hoof tester to the sole of the hoof.

Based on the absence of a history of ingestion of any toxic weed, recognisable clinical indications present at both walk and trot, and the moderate hyperflexion of the right hindlimb noted when walking and trotting, the clinical diagnosis of



Figure 1
Hyperflexion of the right hind limb while being walked

unilateral idiopathic stringhalt grade III was made. The grading was done according to the grading scheme for the categorization of stringhalt-affected horses adapted from Huntington et al. (1989) and Domange et al. (2010).

Treatment and outcome

Phenytoin sodium injection (Dilantan®, Sterimax Inc., Ontario, Canada) was administered intravenously at 15 mg/kg for 5 days. Multivitamin and amino acids injection (Introvit®, InterchemieWerken ‘De Adelaar’ B.V., Netherlands) was administered intramuscularly at 15 ml/horse for five days. Upon completion of treatment, all clinical signs subsided, and the gelding returned to normal activity.

DISCUSSION AND CONCLUSION

Stringhalt can impact horses of any breed, and it may manifest in either one or both hind legs. The present case highlights the clinical diagnosis and successful management of unilateral idiopathic stringhalt, a condition characterised by hyperflexion of the hind limb during movement, particularly when walking or trotting, in a 14-year-old Thoroughbred gelding.

Stringhalt can be diagnosed through clinical signs (El-Hage et al., 2019). The clinical signs observed

in the present case are consistent with other cases of stringhalt in different countries (Araujo et al., 2008; Kachwaha et al., 2012; Duque et al., 2014). Stringhalt is the condition most often confused with shivers (Baird et al., 2006). The affected right hind limb in the present case was held in an adducted position and ascended rapidly and steeply towards the abdomen, which differentiates it from a shiver. Shiver is rather held in an abducted position, away from the body (Draper et al., 2015).

Since stringhalt in a horse has two major categories (Duque et al., 2014), the stringhalt in the present case was categorised as idiopathic stringhalt because there was no indication of plant toxication, as the patient and the other horses in the stable were fed hay from reliable sources. In line with Martens (2019), idiopathic stringhalt, typically manifesting as an isolated and unilateral condition, was also observed in the present case.

The case was successfully treated with phenytoin and multivitamin injections. Phenytoin has been used to successfully treat stringhalt in some cases (Huntington et al., 1991; Takahashi et al., 2002; Furr et al., 2011). According to anecdotal evidence, phenytoin appears to be the consistently most effective medication when given to horses with stringhalt, (El-Hage et al., 2019). Phenytoin acts as a sodium channel blocker and is thought to regulate tetanic muscle contractions and

abnormal nerve activity (El-Hage et al., 2019). It has been said that vitamin B1 (thiamine) and vitamin E (tocopherol), which are both in the multivitamin injection used in this study, can help treat stringhalt, though these reports are only anecdotal (Huntington et al., 1989; Armengou et al., 2010; Domange et al., 2010). Vitamin B1 plays a crucial role as a cofactor in neuronal cell metabolism, neurotransmitter production, and myelin synthesis. On the other hand, vitamin E functions as an antioxidant, presumably employed to decrease oxidative damage to the distal axons of the long nerves (Armengou et al., 2010).

The absence of additional sophisticated diagnostic procedures, including electromyography, nerve conduction velocity study, and diagnostic imaging, poses a limitation in this case report. These methods could have provided valuable insights into the underlying cause or pathophysiology of the stringhalt condition in this specific horse. Unfortunately, our facilities were constrained by the limited availability and accessibility of these advanced diagnostic tools.

This case report emphasises the importance of prompt diagnosis and appropriate treatment in managing idiopathic stringhalt in horses. The successful outcome observed in this case supports the use of phenytoin sodium and multivitamin supplementation as a viable treatment option for similar cases. As this is the first documented case of stringhalt in Nigeria, further studies are necessary to clarify stringhalt aetiology in Nigeria.

CONFLICT OF INTEREST

The authors declared that there is no conflict of interest.

CONTRIBUTIONS

Concept – ERE; Design – OOA; Supervision – WPM, DOO; Resources – ME, WPM; Materials – DOO; Data Collection and Processing – OOA, KSW; Analysis and Interpretation – SI; Literature Search – OOA, ERE; Writing Manuscript – OOA, WPM; Critical Review – WPM, ME, ERE

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TRETMAN IDIOPATSKOG “PIJETLOVOG HODA” KOD ČETRNAESTOGODIŠNJEG PUNOKRVNOG KASTRATA U NIGERIJU: PRIKAZ SLUČAJA

SAŽETAK

“Pijetlov hod” (engl. Stringhalt) je karakteriziran zakašnjelom protrakcijom i pojačanom fleksijom skočnog zgloba pri hodu, s tim da može zahvatiti jedan ili oba pelvična ekstremiteta. Dosad u Nigeriji nije bilo prikaza slučaja “pijetlovog hoda”. “Pijetlov hod” kao rijetko neuromišićno oboljenje kod konja naglašava važnost dokumentiranja slučajeva sa ciljem produbljivanja kolektivnog znanja. Cilj prikaza slučaja jeste opisati uspješan tretman idiopatskog “pijetlovog hoda” kod četrnaestogodišnjeg punokrvnog kastrata. Kod kastrata teškog 500 kg koji potječe iz štale sa 20 konja je prije tri dana došlo do iznenadne pojave abnormalnih pokreta stražnje desne noge. Konj je imao normalne vitalne parametre, a hod mu je bio karakteriziran umjerenom hiperfleksijom stražnje noge u hodu i kasu. Na temelju istorije bolesti i kliničkog pregleda je postavljena dijagnoza unilateralnog idiopatskog “pijetlovog hoda”, III stupanj. Konj je tretiran intravenskim fenitoin-natrijem (15 mg/kg) i intramuskularnim injekcijama multivitamina i aminokiselina (15 ml/konj) u trajanju od pet dana, što je dovelo do potpunog povlačenja kliničkih znakova i nastavka normalne aktivnosti. Brzo dijagnosticiranje i terapija su od presudnog značaja za liječenje idiopatskog “pijetlovog hoda” kod konja. Povoljan ishod postignut sa fenitoin-natrijem i multivitaminskim preparatima naglašava njihovu učinkovitost. Potrebna su daljnja istraživanja etiologije “pijetlovog hoda” u Nigeriji.

Ključne riječi: Aberantni hod, hiperfleksija, konj, stražnje noge, štala