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CLINICAL COMMENTARY

Physiological and behavioural considerations for managing horses with tail disorders

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INTRODUCTION

Rijkenhuizen and van der Harst (2024) report the diagnosis and effective treatment of a unique case of an angular deviation of the tail to the left in a 1-week-old Warmblood female foal. The foal had a growth deformity of coccygeal vertebrae 6 and 7. The angular deviation was surgically corrected using transphyseal screws with hemicircumferential periosteal transection and elevation on the left side of both vertebrae and the insertion of a temporary external fixator with a distracted end. The deviation was decreased to around 10 degrees deviance, and the owner was pleased with the outcome. There has been no loss of sensory or motor function. Keeping the horse's tail function is highly crucial following management of the tail disorders because it serves as an essential communication hub, transmitting signals regarding mood, health, energy, and mobility. This clinical commentary will explore the physiological and behavioural considerations for managing horses with tail disorders.

ANATOMY OF THE HORSE'S TAIL

The horse's tail is flexible and strong extension of the spine. It consists of around 20 coccygeal vertebrae; some horses have more, whereas others have less. The bones become smaller from the base of the tail to the tip, with the last one being pointed (Budras et al., 2009a). Adults' sacral vertebrae are fused, and in certain circumstances, there may be fusion between the fifth sacral and first coccygeal vertebrae (Budras et al., 2009b).

The tail of equines is made up of two parts: the dock and the skirt. The dock is made up of muscles and skin that cover the coccygeal vertebrae. Skirt refers to the long hairs that fall below the dock. The muscles let the tail move, and its hairs are linked to the skin. The long, dense hairs on horses develop near the beginning of the tail dock. Donkeys, zebras and other equines have long hairs that develop mostly at the end (tip) of the dock, while the top is covered with shorter hair. The dock's underside is free of hair on both sides (Budras et al., 2009a). There are several elements that influence the horse's hair development. Breed, genetics, diet, care and health all affect how quickly it develops (Lefebvre et al., 2007).

Two arteries supply blood to the tail; however, circulation is inefficient in this narrow appendage. As a result, injuries heal more slowly and infections last longer (Budras et al., 2009b).

PHYSIOLOGICAL CONSIDERATIONS FOR THE HORSE'S TAIL

The tail serves crucial purposes for the horse. It is an excellent hairy fly swatter (Christensen et al., 2022; Matherne et al., 2018), but the tail performs so much more. Because it has so many joints, the tip of the tail may swing in various directions and speeds than the rest of it (Budras et al., 2009b). This implies that the horse is easily able to strike irritating flies and biting insects.

Tail motions can be characterised as dorso-ventral (vertical motion), lateral (horizontal motion) or in circles (Kiley-Worthington, 1997). When horses try to hunt flies, they move their tails horizontally. They do this not just for themselves but also to protect other horses by driving away insects.

The horse's tail also protects the anus and delicate reproductive structures from environmental assault (Riddell et al., 2019). In addition, tail carriage may also be a breed feature (Marei, 2014). As a balance mechanism, the tail subtly influences the alignment of the horse's hind end (Lefebvre et al., 2007).

As a communication device, the tail speaks simply and eloquently to both horses and humans. It transmits vital messages about an animal's well-being (Lefebvre et al., 2007). For example, when the horse begins to move, it will lift its tail slightly. If a horse is paying attention or is concerned, it may begin to flag its tail (Lefebvre et al., 2007).

In addition, the tail aids in temperature regulation (Lefebvre et al., 2007). In a neutral posture, the tail hangs freely. In some breeds, such as Arabians, the tail can be kept somewhat farther away from the body (Marei, 2014). Carrying the tail away from the body allows

the body's heat to be released more efficiently. Furthermore, when the horse is cold, instead of maintaining the tail away from the body to produce heat, they hold it firmly against the body to save heat.

BEHAVIOURAL CONSIDERATIONS FOR THE HORSE'S TAIL

Horse communication relies heavily on the tail because the tail is an important part of body language. The different postures and movements of a horse's tail may disclose information about its present state of mind. Thus, the tail may be used to assess the horse's mood (Lefebvre et al., 2007). It is vital to examine the entire horse, including the ears, mouth and nostrils, rather than just its tail (Keiper & Berger, 1982). Moreover, the horse uses its tail to signal when others should keep away and when they should approach (Lefebvre et al., 2007).

Tail elevation is typically linked to head and neck elevation, with the head and ears orientated towards the subject of interest to the animal. Elevated posture implies heightened vigilance in response to broad excitement, such as sexual desire, aggression, or fear, rather than a specific scenario (Kiley-Worthington, 1997). Tail elevation often signals readiness for action and an increase in tempo, except at full gallop (Lefebvre et al., 2007).

A horse cantering through the field with a high-lifted tail indicates that it is pleased or attentive. In rage and confusion, a horse would swish its tail violently several times, generating vertical movement. If the horse is afraid or feels inferior, it may put the tail between its legs (Christensen et al., 2005; Waring, 2003).

When wild horses consume tail hair, it is typically because they are infected with stomach parasites. The hairs draw the worms into the intestines, where they are finally expelled among the faeces (Kiley-Worthington, 1997; Waring, 2003).

HORSE'S TAIL DISORDERS

Several horse tail disorders have been recorded such as fractures (Taylor et al., 2002), brittle tail syndrome (Wong et al., 2012), crooked tail carriage (Hibbs et al., 2020), tail paralysis (Aleman et al., 2018), sacrococcygeal luxation (Riddell et al., 2019), traumatic coccygeal luxation (McMaster et al., 2015) and absence of tail tone (Kearney & Trostle, 2023; Melvin et al., 2023).

Diagnosis of these disorders is based on clinical signs, radiography, nuclear scintigraphy and ultrasonography (Riddell et al., 2019; Taylor et al., 2002). Aside from the unpleasant look of infected horse tails, this infection may develop as another equine infection if it affects the skin and hoof of horses (Wong et al., 2012). Therefore, the hazards and advantages of each treatment option should be thoroughly evaluated on a case-by-case basis.

There are both conservative and surgical treatment options for tail injuries. Treatment depends on the exact injury (Riddell et al., 2019; Rijkenhuizen & van der Harst, 2024). A lack of deep pain at the tail base, along with a lack of blood flow, results in a devitalised tail. These two clinical symptoms are the main indications of tail amputation (Furst, 2019).

Partial (McMaster et al., 2015) or complete (Riddell et al., 2019) amputation of the horse's tail has already been accomplished. Nevertheless, complete amputation of the horse's tail has many complications. These complications include lack of insect control therefore, during fly season, horses may require blanketing, along with extra pest control treatments such as offering smudges and insect repellents (Riddell et al., 2019). Another potential hazard to consider is an ascending infection after tail amputation (Furr & Sampieri, 2008). Therefore, performing surgical operations aseptically and delivering adequate antimicrobial medication is necessary (Riddell et al., 2019).

In the accompanying case, there was no loss of sensation and motor function in the tail after surgery. The loss of sensation and motor function in the tail is most likely due to peripheral injury to the coccygeal nerve (Furr & Sampieri, 2008). However, the trauma may have potential rupture of the musculature and vasculature of the tail (Riddell et al., 2019; Tutko et al., 2002). Depending on the level of nerve damage, afflicted mares' future reproductive use may need to be considered (Riddell et al., 2019).

In the past, amputation of the tail (docking) was routinely done mostly with draught horses because it was more practical for their task. Also, it was done as a defensive strategy for males against a potential injury of the penis by the mare's tail (Christie et al., 2004). Cosmetic aspects and the impossibility of performing gynaecological examinations under aseptic conditions were also mentioned as potential benefits after docking draught horses (Cregier, 1990). However, these benefits are not documented in the veterinary literature. Moreover, the absence of a tail decreases the welfare of horses (Lefebvre et al., 2007).

Nowadays, numerous countries forbade docking in various vertebrates, including horses (Lefebvre et al., 2007). There is no benefit for horses in tail docking, and possible advantages of docking are largely in favour of humans, and these advantages might be rigorously re-evaluated.

In conclusion, the tail is one of the most expressive talking parts of horses. It is utilised to convey information about the horses' physical and emotional status both among the herd and between horses and humans. Moreover, the tail has several important physiological functions. Therefore, the tail must be preserved when dealing with its injuries in the horse.

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CONFLICT OF INTEREST STATEMENT

The author declares no conflicts of interest.

ETHICS STATEMENT

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