

Evaluation and Treatment of Headshaking Syndrome

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Headshaking syndrome is most commonly manifested by sudden flipping of the nose downward, followed by head tossing, rubbing of the nose on objects, excessive snorting, and sometimes striking at the muzzle area. This behavior is suggested to be caused by trigeminal neuropathic pain sensations that produce a burning, tingling, itching, or electric type of sensation around the muzzle of the horse. The disorder is seasonal and recurring, apparently linked to photoperiod-induced neuropharmacologic changes. Therapy with cyproheptidine has produced improvement in 75% of 31 cases presented here. Authors' address: Dept. of Medicine and Epidemiology, School of Veterinary Medicine, University of California at Davis, Davis, CA 95616. © 1997 AAEP.

1. Introduction

Headshaking was first described in the veterinary literature nearly 100 years ago.¹ The disorder is characterized by flipping of the nose and jerking of the head as if evading an insect around the nostrils, often accompanied by sneezing, snorting, and rubbing of the muzzle. Unfortunately, despite significant efforts to determine etiology for this condition, the cause is rarely determined.²⁻⁵ Although several causes, such as middle ear disorders, ear mites, *Trochilicula autumnalis* larval infestation, cranial nerve disorder, guttural pouch mycosis, dental periapical osteitis, and vasomotor rhinitis, have been suggested, few, if any, cases responded to treatment appropriate for these diagnoses. This disorder is observed worldwide, and, in recurring cases, the most common pattern seen is that of onset in the spring and early summer and cessation in the fall. In some cases, symptoms begin in the fall and then resolve in the winter. The overwhelming majority of horses with this syndrome show marked improve-

ment in their symptoms when their eyes are protected from light; therefore, the disorder has been termed photic headshaking. Recently, we reported on photic headshaking in seven cases, attributing a pathophysiologic mechanism similar to the photic sneeze in humans as the mechanism for headshaking in those cases.⁶ Optic trigeminal summation was suggested as the means by which the horse develops facial neuropathic pain in response to light stimulation. The purpose of this report is to discuss further observations on 31 cases of headshaking syndrome and characterize the clinical signs, course of the disorder, and results of therapy.

2. Materials and Methods

Records from horses diagnosed with headshaking syndrome in the past 10 years at the Veterinary Medical Teaching Hospital ($N = 60$) were obtained and the owners were sent a questionnaire (14 were unreachable). Additionally, owners of horses that had contacted the authors regarding their horses'

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headshaking problem were also sent the questionnaire. At the time of this writing, 31 owners had completed the questionnaire. Information was requested on age, breed, sex, color, time of year of first onset, times of year when headshaking starts and stops, housing conditions, type of use, clinical signs observed with headshaking, presence of other vices, other clinical signs, and response to any treatments owners and attending veterinarians had provided.

3. Results

The mean age of onset was 9.2 years (range 3–18 years of age); the coat color was 12 chestnut or sorrel, 14 bay, three gray, one paint, and one red dun; the sex was 26 geldings and five mares. The breeds included six Warmbloods, 12 Thoroughbreds, seven Quarter Horses, one Welsh-Quarter Horse, one Arab-Welsh, one Morgan, one Paint, and two Connemara crosses. In terms of type of use, there were 12 dressage, nine pleasure trail, five eventing, one driving, and four jumping horses. Three horses had stopped headshaking; the longest duration was 8 years. For seasonality, 21/31 had spring and summer headshaking. Four of 31 horses had other vices; 31/31 horses were described as good, reliable horses except for their headshaking problem, in terms of general temperament; 10/31 shook their heads side to side; 26/31 shook their heads up and down (flips nose); 27/31 acted like an insect was up their nose; 20/31 snorted or sneezed with headshaking; 24/31 rubbed their noses on objects; and 14/31 rubbed their noses on the ground while moving.

Eight of 31 horses showed onset at rest; 15/31 showed onset both at rest and with exercise; and 12/31 showed onset only with exercise. Two of 31 showed headshaking only with riding and not with other exercise; 13/31 struck at their faces with their feet; 13/31 sought shade in the environment; 18/31 were worse on bright sunny days; and 20/31 had reduced symptoms at night.

Eighteen of 31 horses displayed an anxious expression with headshaking; 11/31 avoided the light; 6/31 stared into space; and 4/31 displayed panic following these staring episodes. Other neurologic symptoms included headtilt, 4/31; and stumbling and incoordination, 4/31.

4. Treatment

The cyproheptadine treatment was $n = 25$ horses. The length of treatment ranged from 7 days to 5 years. The results of the cyproheptadine treatment were as follows: greatly improved (no headshaking while being treated), 6/25; somewhat improved (headshaking controlled but not eliminated), 13/25; and no response to treatment, 6/25. Other treatments included melatonin, 6/31 (2/6 improved); infraorbital neurectomy, 1/31; chiropractic treatment, 10/31 (one improved in terms of panic syndrome); acupuncture, 13/31 (6/13 improved slightly, in conjunction with other medications); cloth material on muzzle; 10/31 (4/10 improved, 6/10 showed no change); and blind-

fold, 16/26 improved. Twenty-one of 31 horses were diagnosed as photic headshakers; 0/31 showed an improvement produced by insect control.

5. Discussion

The clinical signs of horses with headshaking syndrome could be explained by muzzle or facial pain that produces snorting, rubbing of the nose, and quick flips of the nose, often described as looking as if the horse has a bee going up its nose.

Pain is defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage. It is unquestionably a sensation in a part of the body but it is also always unpleasant and therefore an emotional experience" (see Ref. 7). Burning, tingling, electric-like, shooting up or down pain, which may be persistent or intermittent, is referred to as neuropathic pain. Neuropathic pain implies nerve damage and reparative processes with resultant sensations that are unfamiliar and different from usual pain experiences. In humans, it is thought that a central sensitization process following certain peripheral injuries can lead to central nervous system changes (plasticity) that permanently alter pain perception and thresholds. Previously described clinical signs seen in photic headshaking were demonstrated in many of the horses in this survey, including photoperiod (seasonal) related incidence, increased symptoms on bright sunny days, and cessation of clinical signs at night. The pathway of the photic sneeze and optic trigeminal summation producing infraorbital nerve mediated pain is hypothesized as a pathophysiological mechanism for headshaking in some horses. Eckardt et al., who performed early studies on photophobia in 1943, suggested that optic stimulation produces a referred sensation not only in parts innervated by the first division of the trigeminal nerves (ophthalmic), but in other parts of the nose innervated by other branches of the trigeminal nerve.⁸ Thus, in affected horses, photic stimulation may cause an inappropriate stimulation of the sensory branches of the trigeminal nerve in the muzzle area, leading to headshaking activity.

The triggering factor that produces long-term photoperiod dependent facial pain is not known. Treatment with cyproheptadine, a histamine and a serotonergic blocking agent, resulted in moderate to great improvement in 76% of cases in which it was tried. However, the mechanism for its apparent clinical efficacy is not known. Possible explanations for cyproheptadine's efficacy are effects on trigeminal nerve mediated facial sensation or anticholinergic activity.

6. Conclusion

The results of our survey and examination of horses with headshaking syndrome reveal that the majority of cases with a seasonal pattern of the disease demonstrate evidence of neuropathic facial pain as a basis for the behavior. Therapy with cyprohepta-

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dine with or without environmental protection from sunlight or light-blocking eye protection provided moderate to great improvement in the majority of cases.

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