Stereotypic Behavior and Compulsive Disorder

Sharon L. Crowell-Davis, DVM, PhD, DACVB*
The University of Georgia

Column Editor

Sharon L. Crowell-Davis, DVM, PhD, DACVB
Department of Anatomy and Radiology
College of Veterinary Medicine
The University of Georgia

Submissions can be sent to Beth Thompson, VMD, via email bthompson@vetlearn.com, mail Veterinary Learning Systems 780 Township Line Road Yardley, PA 19067, or fax 800-556-3288.

About This Column

Behavior problems in horses are often not given proper attention. While most veterinary practices are necessarily geared toward the medical aspect of care, there are many opportunities in which behavior awareness can benefit the horse, the owner, and ourselves. This column acknowledges the importance of behavior as part of veterinary medicine and speaks practically about using it effectively in daily practice.

Send comments/questions via email **editor@CompendiumEquine.com**, fax **800-556-3288**, or web **CompendiumEquine.com.**

When an animal persistently and repetitively engages in a behavior that serves no apparent function, the behavior is called a *stereotypy*. When the stereotypic behavior becomes emancipated from the environment, a diagnosis of compulsive disorder (CD) should be made. CD occurs in many species and is a common diagnosis in behavior services.

In human medicine, the more complete term, *obsessive-compulsive disorder* (OCD), is used. According to the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, obsessions are "persistent ideas, thoughts, impulses, or images that are experienced as intrusive and inappropriate and that cause marked anxiety or distress."[1] Thus obsessions, by definition, occur within the psyche and cannot be directly measured by an external observer. Compulsions are "repetitive behaviors or mental acts, the goal of which is to prevent or reduce anxiety or distress, not to provide pleasure or gratification." While repetitive mental acts cannot be observed in animals, repetitive behaviors can. Thus the more limited term *CD* is typically used in animals.

Not all repetitive behaviors are CD. For example, a horse confined to a stall might start pawing if someone stands outside the stall with grain for an extended time without giving the grain to the horse. In this case, the horse likely paws because of the intense arousal that is induced by the palatable grain being held just out of reach. If the horse experiences repeated stressful and arousing situations, its pawing may become increasingly persistent. However, if the horse is turned loose in a large pasture (where it can graze, socialize with other horses, trot, and gallop) and stops pawing, the horse would be said to exhibit stereotypic pawing in a specific stressful environment, but not CD. However, if the horse is turned loose in a large pasture and, instead of grazing, trotting, galloping, and socializing with other horses, spends most of its time standing in one area pawing at the ground, a diagnosis of CD should be made. The repetitive behavior would be occurring because of a pathologic condition in the central nervous system that is emancipated from environmental conditions.

CAUSES

The various common stereotypic and CD-related equine behavior problems are not observed in feral horses or in horses that spend their entire lives living in social groups on large pastures—this species' natural living condition. Stereotypic and CD-related behavior problems occur exclusively in horses and ponies kept in conditions of intense domestic management, including stalls and social isolation for part or most of their lives. The best way to prevent stereotypic behavior in horses is to maintain them, as much as possible, in stable social groups on pastures of adequate size and complexity in which they can move freely and forage in a manner that closely mimics the behavior of their wild ancestors.

*Dr. Crowell-Davis discloses that she has received financial support from CEVA Animal Health and from Merial.

Box 1. Types of Behavior That May Evolve into Stereotypies and Compulsive Disorder

- **Redirected behavior:** The horse is motivated to perform an activity toward an appropriate target but is prevented from reaching the target, causing the horse to direct its behavior toward another target.
- **Displacement behavior:** The horse is motivated to perform two behaviors that are in conflict with each other. Instead of engaging in either behavior, the horse engages in a third behavior that is unrelated to the context of the dilemma.
- **Vacuum activity:** The horse is motivated to engage in a behavior in the absence of the stimulus to which it would normally be directed. Therefore, the horse engages in the physical movements of the behavior without an external stimulus.

Box 2. Common Types of Stereotypic Behaviors That May Become Compulsive Disorder

Locomotory (Movement)

- **Headshaking:** Persistently shaking or jerking the head up and down or side to side in the absence of an apparent physical stimulus
- **Weaving:** Persistently shifting weight from side to side while standing in place
- **Stall circling:** Continuous walking that often wears a circular trench in the stall floor
- **Striking or kicking:** Repeatedly and persistently striking or kicking at the stall wall
- **Pawing:** Persistently using a forelimb to scrape at the ground or a fixed object

Oral

- **Wood chewing:** Persistently chewing on wooden structures (e.g., fence rails, tops of stall doors)
- **Cribbing:** Grasping a horizontal object with the incisor teeth, flexing the neck, and pulling back, often while making a grunting sound
- **Windsucking:** Appearing to suck or swallow air; however, imaging techniques have shown that the air only enters the cranial esophagus[a]; may occur during, or independent of, cribbing
- **Lip licking:** Persistently licking the lips
- **Environment licking:** Persistently licking anything in the environment

Grooming

- **Self-mutilation:** Persistently biting or kicking at own body

[a]McGreevy P. *Equine Behavior: A Guide for Veterinarians and Equine Scientists.* Edinburgh: WB Saunders; 2004.

In human psychiatry, OCD is considered to be an anxiety disorder. Likewise, in animals, CD is ultimately based in anxiety. Therefore, punishment of the behavior is always contraindicated. Environment and genetics can contribute to the development of CD in an animal. Stressful environments, either overstimulating or understimulating, are common causes. Other reasons for horses to develop stereotypic behaviors that evolve into CD are listed in Box 1.

Genetic influences are the basis for the different frequencies of specific manifestations of CD in various species and breeds. In Thoroughbreds, the incidences of cribbing, weaving, and stall circling have been shown to vary within families.[2] However, while particular stereotypies are most common in particular species and breeds, any behavior that an animal is capable of engaging in can become a compulsive behavior, and any animal may develop a compulsive behavior that is atypical for its breed. The criteria for a diagnosis of CD are that the behavior occurs persistently and frequently, consumes significant amounts of time, serves no apparent function, and occurs regardless of the horse's environment.

Behaviors associated with CD are commonly classified according to the general type of behavior: locomotory, oral or ingestive, grooming, aggressive, hallucinatory, and vocal.[3] In horses, the most common are the locomotory, oral, and grooming forms (Box 2).

Repetitive behaviors can occur for a variety of reasons other than CD; therefore, a complete medical and behavioral evaluation is essential when CD is suspected. A repetitive behavior that occurs only in the presence of the owner or trainer may be an operantly reinforced behavior problem, which is sometimes called *attention-seeking behavior*. A repetitive behavior that occurs only in the absence of the owner or another horse or animal to which the horse is socially bonded is likely to be a manifestation of separation anxiety. Repetitive behavior that manifests with an acute onset and is intense in form and high in frequency may be a response to an acute stressor but has not evolved into CD. Psychomotor seizures, dermatologic disorders, vision disorders, and many other illnesses and injuries can manifest symptomatically with some of the behaviors characteristic of common forms of CD.

TREATMENT

Treatment consists of a combination of environmental modification, behavior modification, and medication. Education of the owner is critical. Instructions to reprimand or punish behaviors associated with CD are common in the popular literature. However, punishment is, at best, not helpful and, at worst, may exacerbate the situation by increasing the patient's anxiety. While physically preventing horses from engaging in oral stereotypies is common (e.g., use of a cribbing collar, which mechanically prevents cribbing and windsucking), use of devices to do so has been shown to be stressful for horses,[4] and the ethics of this type of treatment are a matter of debate.[5] Various surgeries, including buccostomy, severing the ventral branch of the accessory nerve, and myectomy, have been developed to interfere with a horse's ability to engage in stereotypies but fail to address the underlying cause of the stereotypic behavior.

Causes of conflict and stress in an affected horse's environment need to be identified and, as much as possible, eliminated. Sometimes, this is easy; however, if the owners cannot readily identify stressors in the horse's life, a comprehensive, detailed behavioral and environmental history can help identify problems. In reviewing the patient's history, it is important to note the amount, frequency, and type of exercise and play the horse engages in and consider whether its activity level is appropriate for its age and breed. A predictable environment is important as well. This does not mean that the owner or trainer must develop a rigid schedule, but there should be a fairly predictable sequence of events throughout the day and week.

Key Points

- The criteria for a diagnosis of compulsive disorder are that the behavior occurs persistently and frequently, consumes significant amounts of time, serves no apparent function, occurs regardless of the horse's environment, and is not caused by medical problems or injuries.
- Punishment of the repetitive behavior is always contraindicated.
- Prevention includes providing horses with adequate opportunities for self-exercise and normal social behavior as well as an appropriate diet with adequate fiber.
- Treatment includes providing an appropriate environment that is neither overstimulating nor understimulating, an appropriate diet, and medication.

While cases of CD that are identified early may be treatable without medication, most patients require medication for successful resolution. To date, all use of medication for treating CD in animals is extralabel. This should be discussed with the client, as should potential adverse effects. A signed "permission to treat" form should be obtained. In horses, one of the least expensive medications that may help is fluoxetine, which is available in 10-, 20-, and 40-mg capsules. It should be given at 0.25 to 0.5 mg/kg/day PO and requires several weeks to take effect. The powder in the capsules can be mixed into the horse's grain and is generally readily eaten. While no cases of fluoxetine-induced colic have been reported in horses being treated for behavior problems, because there are many serotonin receptors in the gut, it is advisable to begin administering the drug at the lowest dose and increase it gradually in horses that do not improve and have not exhibited adverse effects. In cases in which anxiety or stressful environments are ongoing problems, benzodiazepines may also be beneficial.[6] Narcotic antagonists can be useful, especially if the problem is identified early; however, the high cost and the lack of availability of oral forms (e.g., naltrexone) of

these drugs often make their use impractical.[7,8]

When used together, environmental and behavioral modification and appropriate medication can often bring about significant improvement. However, owners should be cautioned not to expect complete resolution, although this can occur. Patients with a history of significant CD are likely to relapse when subjected to new stressors in their environment. Therefore, relapse prevention should focus on providing the horse with an appropriate environment.

Watch for future topics on the prevention, etiology, and treatment of specific equine stereotypic behaviors.

REFERENCES

1. *Diagnostic and Statistical Manual of Mental Disorders.* 4th ed. Arlington, VA: American Psychiatric Association; 1994.
2. Vecchiotti GG, Galanti R. Evidence of heredity of cribbing, weaving and stall-walking in Thoroughbred horses. *Livest Prod Sci* 1986;14:91-95.
3. Crowell-Davis SL. Understanding behavior: stereotypic behavior and compulsive disorder. *Compend Contin Educ Vet* 2007;29(10):625-628.
4. McBride SD, Cuddeford D. The putative welfare-reducing effects of preventing equine stereotypic animal behavior. *Anim Welfare* 2001;10:173-189.
5. Ödberg FO. Is it ethical to physically prevent horses performing oral stereotypies? In: Mason G, Rushen J, eds. *Stereotypic Animal Behaviour: Fundamentals and Applications to Welfare.* 2nd ed. Cambridge, MA: CABI; 2006:41.
6. Crowell-Davis SL, Murray T. *Veterinary Psychopharmacology*. London: Blackwell Publishing; 2006.
7. Dodman NH, Shuster L, Court MH, Dixon R. Investigation into the use of narcotic antagonists in the treatment of a stereotypic behavior pattern (cribbiting) in the horse. *Am J Vet Res* 1987;48(2):311-319.
8. Dodman NH, Shuster L, Court MH. Use of a narcotic antagonist (nalmefene) to suppress self-mutilative behavior in a stallion. *JAVMA* 1988; 192(11):1585-1586.

RECOMMENDED READING

Mason G, Rushen J, eds. *Stereotypic Animal Behaviour: Fundamentals and Applications to Welfare*. 2nd ed. Cambridge, MA: CABI; 2006.