

Behavior Problem: Ovaries or Not?

Sue M. McDonnell, PhD, CAAB

Our reproduction and behavior clinic's experience has been that for cases of behavior problems suspected to be related to ovarian function or dysfunction, systematic physical and behavioral evaluation in most cases reveals the root cause to be physical discomfort unrelated to normal ovarian function. Accurate diagnosis is important to successful resolution of the problem, with significant implications for horse welfare and client satisfaction. Author's address: Havemeyer Equine Behavior Lab, New Bolton Center, University of Pennsylvania School of Veterinary Medicine, 382 West Street Road, Kennett Square, PA 19104; e-mail: suemcd@vet.upenn.edu. © 2017 AAEP.

1. Introduction

Our veterinary school reproduction and behavior group regularly evaluates mares presented for behavior changes attributed to or suspected to be related to normal ovarian activity or pathology. In addition, our surgery group, when asked to perform ovariectomy for behavior or performance problems, routinely recommends evaluation by our reproduction and behavior team in advance of surgery. In the majority of such cases, results of systematic evaluation suggests that the root cause of the behavior or performance problem is discomfort unrelated to ovarian activity or pathology. In a subset of these, the severity of the problem behavior resulting from the root cause of physical discomfort is found to vary with normal ovarian function, such that the behavior problem is understandably misattributed to the ovaries. Using case examples, this presentation will describe our evaluation process and example diagnoses and resolution. The following comments and tables summarize what we feel are key aspects to systematic evaluation of such cases.

2. Obtaining a Detailed Behavior History

Summary terms often used to describe these mares, such as "bad," "marish," "difficult," "in heat," "aggressive," "studish," "hormonal," "horsing," or "resistant" typically suggest different clusters of behavior to different people. The most informative behavior history includes detailed description of the specific elements of the problem behavior and how the behavior varies over time and in various situations. This is most efficiently obtained directly from people working with the animal. Questions such as "What exactly does she do? What all is involved, her body, ears, tail, limbs, mouth? Can you predict when she is going to do it? Can you provoke the behavior? Can you interrupt the behavior? How is she with other mares, with geldings, or when exposed to a stallion? Is there any time she doesn't exhibit the behavior?" These are often helpful toward honing in on an unambiguous understanding of the problem behavior. In addition, questions concerning the mare's behavior in each season, particularly during winter when the ovaries are likely to be inactive, along with any available examination results on ovarian status and/or endocrine assays all are help-

NOTES

Table 1. Behavior of Estrus and Diestrus Compared to Behaviors Often Misattributed to Ovarian Function/Dysfunction

	Tail	Urination/Defecation	General Behavior	Posture	Leaning	Vocalization
Estrus	Off perineum, exposing vulva	Frequent urination with full estrus stance, prolonged bouts of clitoral eversion	Increased social interest and activity; approach males	Sawhorse mating stance	Toward stallion	Call to stallion
Diestrus	Down relaxed; clamped, agitated swishing if pressed	Ordinary urination frequency, volume & posture	Move away from/resist stallion; Squeal/kick/strike if pressed	Nothing unusual when not challenged; threatening if pressed	Away from stallion	Squeal or grunt if pressed
Androgen exposure	High when socially stimulated (male or female)	Stallion-typical elimination-marking behavior (investigation and covering of excrement, Flehmen, defecating in one area or along boundaries)	Socially animated, often described as "in charge," "headstrong," quick to bite, strike, kick; stallion-typical defecation pattern; sexual interest in mares; offensive aggression toward males	Arched neck, prancing gait when socially stimulated	If exposed to a mare in estrus, may lean into mare, arch neck while performing stallion-typical olfactory investigation	Stallion-typical calls to approaching mares or stallions; squeal and grunt vocalizations in close contact to males
Urogenital discomfort	Frequent lifting off perineum, swishing, without social pressure	Frequent urination or straining to urinate, prolonged bouts of clitoral eversion	Restless, gaze back toward caudal abdomen or udder area, "sour" or "crabby" with handlers or herd mates; sensitive to touch of caudal abdomen, flank	Frequent hind weight shifting, limb lifting and/or stamping/kicking out	Away from challenge; may press hindquarters and/or rub tail against walls or fences	May squeal during animated outbursts
Musculoskeletal discomfort	Agitated swishing, perineal slapping	Usually normal	Variable from continuously ill at ease to relatively normal; frequent limb lifting and weight shifting	Frequent weight shifting on limbs; frequent neck stretches; frustration head shaking	Usually none	Usually none
Abdominal discomfort	Swishing, slapping perineum	Usually normal	Restless, may gaze back toward and nuzzle abdomen	Frequent bouts of tongue extensions, lip licking	May press abdomen into walls	Squeal or grunt with sharp pain or animated outbursts
Submissive guarding (fear, pain)	Clamped, swishing, ringing	Squirting urine while clamping or swishing tail	Worried glassy-eyed facial expression and ear movements, hyper-reactive	Covering, tail tucked	Away from challenge	Squeal or grunt if extremely pressed

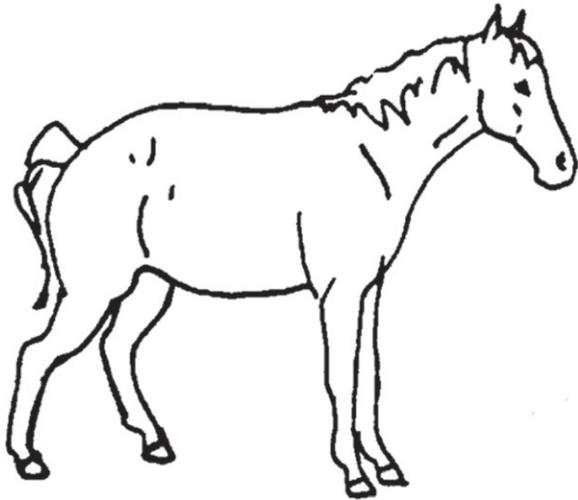


Fig. 1. Estrus posture.

ful. For example, if the problem behavior truly is behavior resulting from estrus, and it has continued during winter anestrus, then ovariectomy is not likely to improve the behavior, and may actually make matters worse.

When taking the history, observing examples of the problem behavior can be informative. Clients often can provide video-recorded examples of the problem behavior, and in some cases can reliably predict or provoke the problem behavior for direct observation.

Table 1 summarizes specific behavioral elements of estrus and diestrus compared with behaviors often misattributed to ovarian function or dysfunction. This rubric can be quite helpful for structuring discussion of the problem behavior history with clients and caretakers. In many instances, there is considerable misunderstanding of the specific elements of normal estrus, diestrus, and stallion-like behavior. Fig. 1, depicting the key postural elements of estrus, along with similar line drawings and photographs illustrating specific stallion-typical postures and behaviors as well as specific elements of stallion-mare interactive sequences can also be useful in this regard.¹

3. Making a Diagnostic Plan

In most of the cases we evaluate, the history suggests that physical discomfort may be either the root cause or a principal factor contributing to the problem behavior that should be ruled out before recommending interventions aimed at the ovaries. Table 2 summarizes the evaluations we consider. We find it most time- and cost effective to begin with a reproductive tract exam so that we know ovarian status at the time and can rule out any abnormalities or potential sources of urogenital discomfort. This is coordinated with a 24-hour videotaped sample of the mare for evaluation of behavioral

Table 2. Diagnostic Evaluations

24-hour video behavior evaluation
Scan for patterns of behavior suggesting discomfort; observe urination frequency, posture, stream; observe defecation pattern (male or female) and elimination marking behavior
Directly observe behavior in response to social challenges
Present feces from mare, stallion; observe response to estrus detection with stallion; observe response to estrus and diestrus mares
Reproductive tract examination
Palpation and ultrasound per rectum: ovarian activity, uterus, cervix
Speculum exam of vagina
Endocrine assays
Ovarian steroids, inhibin, anti-Müllerian hormone, testosterone as indicated to address stallion-type behavior
Abdominal ultrasound
As indicated by behavior findings (observed signs of discomfort)
Nuclear scintigraphy
As indicated by behavior and/or physical exam findings
Diagnostic analgesia trial with video behavior evaluation
As indicated by behavior and/or physical exam findings
Neurologic examination
As indicated by behavior and/or physical exam findings

signs of discomfort.^{2,3} For mares alone in a stall, animated bucking, kicking out, kicking walls, slapping the abdomen against walls or backing into or rubbing the hindquarters into walls or objects, self biting, pawing (other than in anticipation of feeding), and frequent frustration head shaking all are commonly misinterpreted as especially demonstrative estrus or diestrus, but more often are indications of physical discomfort. Squeal or grunt vocalizations, frequent urination or defecation, although normal responses to social provocation during various stages of estrus or diestrus, in the absence of social stimulation or pressure, also more often are the result of physical discomfort. In painful mares, these behaviors can also occur in response to any handling or social pressure, which can understandably complicate interpretation.

Depending on the finding of video behavior evaluation, various challenges can be arranged to confirm suspected conditions. For example, should the mare's behavior in her stall suggest male-type behavior, the mare's behavior in response to exposure to excrement of stallions or exposure to mares in estrus and diestrus or their excrement can be useful in confirming male-type behavior. Exposure to other mares or to stallions while observing the behavioral response of both the subject mare and the stimulus animal can also provide insight.

4. Example Diagnoses

Table 3 lists various abnormalities that were diagnosed as the root causes of objectionable behavior in mares where the problem behaviors had initially been misattributed to ovarian function or dysfunction.

Table 3. Example Diagnoses of Root Causes of Problem Behaviors Initially Misattributed to Ovarian Function/Dysfunction

Gastric ulcers
Gastric impaction
Enterolith
Intermittent impaction colic
Foreign body jejunal abscess
Uterine adhesions
Tense round ligament of uterus
Urethritis
Vaginitis
Pneumovagina
Vaginal lipoma
Vaginal-cervical developmental anomaly
Excessive vulvoplasty
Mastitis
Bladder adhesion
Strangulating abdominal lipoma
Abdominal adhesions
Uroliths
Musculoskeletal discomfort (neck, back, pelvic, limb)
Static-electricity sensitivity
Intersex-pseudohermaphrodite
Sleep deprivation
Head-shaker syndrome

tion. In some cases, two or more sources of discomfort were identified. For example, it is not uncommon for horses with musculoskeletal or caudal abdominal visceral discomfort to also have gastric ulcers, either as an independent condition or understandably secondary to the stress of the other discomfort.

Acknowledgments

Declaration of Ethics

The Author has adhered to the Principles of Veterinary Medical Ethics of the AVMA.

Conflict of Interest

The Author has no conflicts of interest.

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