Recent Research in Equine Stereotypies

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Introduction

Stereotypies are defined as stylised, repetitive, apparently functionless motor responses or sequences (Houpt, 1993). In horses, stereotypies can be classified as oral stereotypies (eg crib-biting) or locomotor stereotypies (eg weaving). The prevalence of equine stereotypies is estimated to be 5 -10% in a variety of equine populations (McGreevy, 2002). While the exact causes of stereotypies are unknown, a number of management factors may predispose horses to stereotypic behaviour. These include the amount of forage in the diet, type of bedding and opportunities for social contact (McGreevy et al 1995). Genetic factors may also be involved. The clinical sequelae of stereotypic behaviours are minor and it is unlikely the behaviours are learned or copied by other horses (McBride and Cuddeford, 2001). Despite this, however, many owners attempt to prevent the behaviour.

Discussion

McBride and Long (2001) report the views and management decisions of owners with horses showing stereotypic behaviour. Their study involved a telephone survey of 100 racing stables, 100 riding schools and 100 competition establishments selected randomly from the British Equine Directory. This essay will report on these findings in addition to articles by McGreevy et al (2001) and McBride and Cuddeford (2001).

McBride and Long (2001) reported that most horse owners are concerned about stereotypic behaviour. Nearly one-third of all horse owners surveyed believed that stereotypic behaviour reduced the performance of the horse, while thirty- nine percent believed it reduced the monetary value of the horse. In addition, nearly half of owners believed that stereotypic behaviour resulted in adverse clinical effects on the animal. For example, crib-biting may be associated with a failure to maintain body weight (Houpt and McDonnell, 1993).

McGreevy et al (2001) investigated if crib-biting horses are less able to maintain body weight than normal horses and the possible causes of weight loss. This article also examined whether crib-biting horses have different digestive physiology compared to normal horses. To achieve these aims, 4 crib-biting horses and 4 normal horses were involved in the study. The total gut transit time (TGTT), and orocaecal transit time (OCTT) of the horses was determined using radio-opaque polyethylene pellets. The feed digestibility and behaviour (such as cribbing and eating) of the horses was also studied.

The results showed that digestibility and OCTTs were not significantly different. However, TGTTs were longer in the crib-biting horses than in the normal horses. The difference in TGTT reflects prolonged hindgut activity, and this may indicate that orocaecal digestion in crib-biters is less efficient. The retention of ingesta could be due to an imbalance in the gut flora and possibly hindgut acidosis (McGreevy et al 2001). With respect to body weight, the results showed no significant differences in weight changes during the study. However, the stereotypic animals showed a trend of lower weight gains (McGreevy et al 2001). Crib-biters have been observed to less time resting than normal horses and also have a tendency to spend less time eating, which may result in a relative energy deficit (McGreevy et al 2001).

It was suggested that crib-biting might function to reduce gut transit times; or alternatively crib-biting horses have a tendency for slow transit times which is overcome by cribbing (McGreevy et al 2001). This is interesting as a recent study by McBride and Cuddeford (2001) showed that

during stereotypic prevention with a crib-strap, horses that continued to crib-bite performed the majority of this behaviour within the first 30 minutes after their meals. This might indicate the horse is the most motivated to crib-bite immediately after a meal (McBride and Cuddeford, 2001).

The function of stereotypic behaviour is unclear; however it has been suggested that stereotypic behaviour may be a coping mechanism to allow the horse to deal with a stressful environment (Houpt and McDonnell, 1993). McBride and Long (2001) found that 74% of establishments actively tried to prevent stereotypic behaviour using crib-collars, anti-weave bars and other devices. Alternatively, stereotypic horses were kept separate by 39% of owners, and this may have been related to the widespread belief that stereotypic behaviours can be learned (46% of owners). However, social isolation may cause the horse distress. Thus, if stereotypic behaviour is a coping mechanism, management factors to prevent the behaviour may have serious animal welfare implications.

A study by McBride and Cuddeford (2001) assessed the putative function of stereotypic behaviours by measuring physiological parameters (specifically plasma cortisol and beta-endorphin levels and heart rate). These parameters were measured (i) before and after stereotypy prevention, (ii) before and after stereotypic performance and (iii) in response to an opiate antagonist (naloxone) administration. Four crib-biting, three weaving and four normal horses were used in the study. The results obtained for the weaving horses were somewhat limited by the low number of horses involved.

The results for stereotypy prevention showed that crib-biting and weaving horses had elevated plasma cortisol levels regardless whether or not the crib-strap or anti-weave bar prevented stereotypic behaviour. The control horses also had elevated plasma cortisol levels during both the crib- strap add anti-weave bar treatments. The results therefore could not determine that the prevention of stereotypic behaviour alone was stressful to the horse. The results indicated, however, that at least in the short term, use of crib- straps and anti-weave bars can be stressful to the horse.

In addition to the above results, measurement of behavioural and physiological parameters before and after stereotypy performance showed elevated plasma cortisol levels prior to stereotypic performance, in both crib-biting and weaving horses, and transiently lower levels afterwards. These results supported the view that these stereotypies have a coping function (McBride and Cuddeford, 2001).

Reduction in crib-biting behaviour has been reported following administration of an opiate antagonist (McBride and Cuddeford, 2001). This suggests that the neurochemical mechanism of crib-biting behaviour is opioid mediated. The naloxone administration also had a sedative effect the crib-biting horses, which was not observed in the control or weaving horses. This may indicate that the horses have had a greater exposure to endogenous opioids, which would further support the view that crib-biting is associated with opioid release (McBride and Cuddeford, 2001).

Conclusion

In summary, research indicates the use of the crib-strap and anti-weave bar can cause distress in horses. In addition, there is more support for that view that stereotypic behaviour may have a coping function (McBride and Long, 2001). Recent research also shows that gut function differs in crib-biters (McGreevy et al 2001). Therefore, welfare issues related to the management of stereotypic horses should be addressed, especially the use of crib-straps and anti-weave bars. This is especially significant given the lack of serious clinical sequelae associated with stereotypies.

References

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