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AEROPHAGIA (WINDSUCKING) AND AVERSION THERAPY IN THE HORSE

GORDON J. BAKER and JOHN KEAR-COLWELL

Crib biting and wind sucking are readily recognized vices of the horse. Cribbing results in abnormal wear of the incisor teeth and the swallowing of air can lead to unthriftiness, poor coat quality, recurrent alimentary tympany, flatulence and colic.

It is generally assumed that these vices arise out of boredom and it is sometimes claimed that horses may "learn" to crib or suck by watching others. As a result of this opinion it may be difficult to obtain livery for such a horse and its market value is reduced.

The actions of cribbing and sucking are pathognomic and the gulping noise the animal makes is diagnostic of aerophagia.

Aversion Therapy

Aversion therapy is one of a number of therapeutic techniques available for the treatment of behavioral abnormalities. These techniques are known as the behavior therapies and are based on learning theory and view abnormal behavior as a function of maladaptive learning, consequently the "patient" has to "learn" to "un-learn" the maladaptive habits and this is where behavior therapy comes into the picture.

Aversion therapy is used in two major ways.

(1) Conditioned relief or relaxation response. An aversive stimulus is applied, usually an electric shock, and the relief "felt" when the shock stops, is used as a reinforcer for some useful or adaptive response.

(2) An aversion response proper. The object in this case is to produce an unpleasant (often an anxiety) response in a situation where previously there had been no such negative response. It is this latter type of response which will be employed in this study of the treatment of aerophagia in the horse.

This method of treatment is used usually to suppress behavioral patterns. In man, it has been used in a wide range of behavior and it seems quite possible to "cure" half the patients suffering from alcoholism.[3,4,6]

Apart from alcoholism, the other main area of investigation has been the treatment of sexual deviations. It appears that sexual responses are among the easiest to modify by conditioning methods.[2] Good results have followed the deconditioning of deviant homosexual behavior.[1,2,5,9,16]

Other maladaptive behaviors that have been treated by aversion therapy with some success are smoking,[5,22] over-eating,[10] self-mutilation[18,21] and a great variety of sexual deviations such as fetishism[7] or transvestism.[17] Even gambling behavior has been successfully treated by means of aversive conditioning.[12,20]

During any aversion therapy procedure, careful monitoring of behavior must be carried out, particularly if very aversive stimuli are being employed in a punishment schedule. Such a punishment schedule should be effective very quickly and should be discontinued if not effective so that undue pain or discomfort is not inflicted. The aversive therapies raise a number of ethical issues that have to be faced by every therapist using them and this must also apply equally to any veterinary applications. In man, drugs such as succinylcholine chloride have been used as aversive stimuli[19] so ethical considerations can be very important in this type of therapy.

Treatment of Aerophagia

Operations to prevent cribbing have been devised and modified[18] and involve the surgical excision of the ventral throat muscles (sterno-cephalicus, sterno-thyro-hyoideus, omo-hyoideus) which retract the hyoid and larynx and depress the tongue. It was suggested by Karlander[14] that horses that were able to swallow air without grasping with the incisor teeth could be stopped by creating buccal fistulae.

In the long term, the results of myotomy and buccostomy procedures have been unreliable. In some horses there has been complete success whereas in others the vice has not been altered.

Behavioral techniques have been used by, for example, "wiring up" all the surfaces in the stable that a horse might grip with its' teeth so that a shock is given when the horse grips. From the psychologist's point of view, this is tackling the wrong end of the problem as all one does is to produce a negative response to the gripping surfaces in the box, which in no way necessarily modifies the "gripping" or the "gulping" behavior. What behavior therapy in this context should be doing is to tackle the behavior itself, and that is the object of the treatment to be described.

The first and most important step is careful observation of the horse to see the exact patterns of behavior involved so that an electric shock can be applied on the occurrence of the abnormal behavior. This negative conditioning should be started on a continuous reinforcement schedule and then transferred to an intermittent reinforcement schedule. In this way, a response is built up quickly and then the response is made more difficut to extinguish, hopefully producing a long-lasting negative response to "gripping" and "gulping". It is concluded after careful observation that the best time to introduce the shock is after "gripping has occurred and the horse is beginning to arch its neck, preparing to "gulp".

It is best to start with quite long treatment sessions, with every occurrence of the behavior being shocked, followed by a change to short randomly-spaced sessions when the behavior is shocked on an intermittent schedule. The treatment paradigm is one that can be described as an operant conditioning schedule. The treatment should last no more than four weeks but this remains to be thoroughly investigated.

Ideally, the electrodes should be placed on the neck since there is evidence that treatment is more efficient if the noxious stimulus bears a relationship to the behavior being suppressed. For example, in the treatment of smoking, hot air has been used as an aversive stimulus with some success.[13]

Equipment

The main equipment consists of two packs both of which are placed on the horse. One is a battery pack, consisting of a 6-volt battery to drive the switch and a 135-volt battery to provide the noxious stimulus. The second pack contains a receiver unit for the signal that will operate the switch to turn on and off the stimulation which will provide the 135-volt shock. These two packs can easily be mounted on a roller, with long leads for electrodes placed on the neck, using electrode jelly to improve the contact. The transmitter unit is carried by the therapist.

The first model was operated by a 40 kilohertz ultrasonic signal but was difficult to operate in practice as the signal was extremely directional. One way of solving this would be to have multiple fixed transmitter units and thus remove the directional problem of the signal.

This system has now been superseded by a radio transmitter and receiver. The transmitter is commercially available from model aircraft manufacturers.

Discussion

The first horse that was averted was owned by one of the authors (J. K-C) and is the only case we have in which an accurate history as to the onset of the vice is known. This mare was being rested because of sesamoid strain and was seen to start sucking during this time. The habit was firmly established in one month and responded dramatically to treatment. To date—18 months later— no reinforcing therapy has been needed.

It is possible to speculate that the enforced rest and joint pain were the trigger factors in the onset of aerophagia in this case. It has been observed that it is not uncommon for horses undergoing hospital treatment to appear to seek out diversion, *e.g.* nodding the head, chewing door tops and catches etc. We have not observed any horses learning the habit by copying others.

The other horses presented for treatment have had histories of indeterminate length. Usually the vice has been present for years and the animal may have had previous surgical treatment.

In this preliminary report we are able to suggest that the method of electric shock aversion therapy as described has a key role in the treatment of the vice of aerophagia.

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