

Spontaneous erection and masturbation in equids

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Introduction

Spontaneous erection accompanied by 'masturbation' occurs in equids. Spontaneous erection involves extension of the penis from the prepuce with engorgement to its full length and rigidity, in a non-sexual context. Masturbation involves rhythmic bouncing, pressing or sliding of the erect penis against the abdomen achieved by rhythmic contraction of the ischiocavernosus muscles and/or pelvic thrusting. The significance and regulation of these behaviours are not well understood. Spontaneous erection and masturbation in equids have been viewed traditionally as aberrant behaviours resulting from regimentation or restricted activity of captive or domestic existence or, alternatively, a 'venting' of sexual frustration, either from inherent hypersexuality or from thwarted access to heterosexual activity. Often it is assumed that masturbation limits the potential fertility of a stallion by depleting sperm reserves and sexual energy. This report summarizes a series of studies of spontaneous erection and masturbation in equids in a number of different management and breeding environments.

Methods and results

Stabled domestic horses

To quantitatively characterize spontaneous erection and masturbation in stabled domestic horses, 25 domestic stallions aged 2- to 25-years-old, were studied. They were kept in individual stalls in a barn with other horses, exercised daily in a paddock and bred 2-3 times per week. For each animal, one 24-h sample of behaviour, obtained by continuous video surveillance of the stall, was evaluated. For each spontaneous erection and masturbation episode, the following were recorded: time of occurrence, duration, associated activities, type and number of penis movements, glans erection and flare and ejaculation. Based on one 24-h sample per stallion, 18 ± 5 (mean \pm s.d.) spontaneous erections per 24-h sample were observed. Erection duration was typically 1-3 min (120 ± 41 sec), for a total of 36.7 ± 24 min per day (24 h). Approximately 75% of spontaneous erections included masturbation, i.e. movements of the penis (range, 1-31; mean 10.3 ± 5.7). For 12 of the stallions, 2 additional 24-h samples were obtained over a period of 4 months. Replicates yielded similar 24-h frequencies and durations of both erection and masturbation (ANOVA, $P > 0.05$). Within individual stallions, both spontaneous erection and masturbation episodes occurred at regular intervals throughout the day, particularly during periods when animals were relatively undisturbed by barn activities. Time series analysis was done using data from the 12-h period of least disturbance in the barn (18:00-06:00 h). The mean of 35 1 observed intervals between spontaneous erections was 74.2 min (3.13, s.e.m.). The mean of 229 observed intervals between masturbation episodes was 94.3 min (4.85 s.e.m.). For both spontaneous erection and masturbation, pattern of occurrence fits a stationary renewal model with inter-episode intervals generated from a gamma distribution. Approximately 85% of spontaneous erection and masturbation episodes occurred while the animal was alert and/or simultaneously engaging in other activities, while 15% occurred during a drowsy state. Only 4 ejaculations were observed.

Based on twice-weekly semen collection sessions, these stallions were ranked as having high ($n = 10$), average ($n = 8$), or below average ($n = 7$) heterosexual arousal and response. There were no significant differences among groups in the 24-h frequencies or durations of spontaneous erection and masturbation (ANOVA, $P > 0.05$). In addition, a group of 8 stallions with extremely inadequate or abnormal heterosexual behaviour and 5 stallions with aberrant stall behaviour such as weaving and pacing were studied. Their 24-h frequencies and durations of spontaneous erection and masturbation were similar to those of the normal stallions ($P < 0.05$).

Six pony stallions were exposed to 6 different housing and breeding management conditions in a Latin square design. These conditions (lasting 7-60 days each) varied from confinement in a tie-stall with no contact with other horses, to continuous contact and daily breeding. No effects of type of housing, level of exposure to mares, access to breeding, or general level of activity on spontaneous erection and masturbation were detected.

Pastured horses and donkeys

Pasture breeding Belgian horses ($n = 2$) and donkeys ($n = 2$) were studied by continuous direct observation during daylight hours for periods of 9–18 days. These males had been kept in relatively free-ranging or pasture conditions for most of their lives. One jack had never been stabled. In spite of unlimited access to females and intense breeding, these stallions and jacks exhibited frequent masturbation. One horse, observed for 102 h over a 10-day period, bred 58 times and masturbated 44 times; the other horse, observed for 100 h over a 9-day period, bred 26 times and masturbated 15 times. One jack, observed for 107 h over a 16-day period, bred 107 times and masturbated 24 times; the other jack, observed for 216 h over an 18-day period, bred 133 times and masturbated 58 times. No ejaculation during masturbation was observed.

Two all-male groups at pasture were observed. One consisted of 10 pony stallions, the other of 6 donkey jacks. The mean interval between episodes of spontaneous erection and masturbation for each animal ranged from approximately 1–3 h for both stallions and jacks. No ejaculations were seen. The pastured jacks were exposed to jennies for collection of semen once weekly, during which time masturbation was frequently observed during the usually prolonged pre-copulatory interval. Similar pre-copulatory masturbation was not seen in the pony stallions during twice-weekly semen collection procedures.

Age

Among suckling foals observed at pasture, (aged 1 day to 6 months; $n = 21$, 155 foal hours of observation) spontaneous erection and masturbation occurred as early as 1 day of age. Spontaneous erection occurred at a rate of approximately once every 2 h, a rate similar to that of mature stallions. For intact males, aged 2–25 years ($n = 25$), correlations between age and 24-h frequencies, and durations of spontaneous erection and masturbation were low ($r = 0.20$) and not significant.

Geldings

The frequency, duration and intensity (number of penis movements) of spontaneous erection and masturbation of geldings ($n = 15$) were all significantly lower for geldings ($n = 15$; $P < 0.05$), with values typically half those of stallions. Differences in frequencies and durations of spontaneous erection and masturbation among geldings ranked as high ($n = 6$), average ($n = 3$) or low ($n = 6$) residual stallion-like sexual behaviour were not different (ANOVA, $P > 0.05$). In 2 animals studied before and after castration, spontaneous erection and masturbation gradually declined to reach gelding levels by about 1 month. In long-term geldings ($n=16$), testosterone treatment (2.5, 20 or 200 $\mu\text{g}/\text{kg}$ subcutaneously every 48 h) restored spontaneous erection and masturbation of geldings to stallion levels in a dose-dependent fashion within 2 weeks after the start of treatment.

Summary and Conclusions

Spontaneous erection and masturbation appear to be normal equid behaviours, which occur with greater frequency and regularity than previously reported. As reported elsewhere (Tischner, 1982; Tischner *et al.*, 1986), ejaculation is rare. Spontaneous erection and masturbation do not appear to be related to type of housing or management, level of access to heterosexual behaviour, level of heterosexual performance (libido) or age. Testosterone appears to play a role in regulating these behaviours. Further work is underway to understand the significance and regulation of these behaviours.

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