

Ontogeny of sexual behavior in stallions

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Summary

All elements of male and female sexual behavior occur both in male and female foals from the first week of age. Older juveniles engage in fully organized precopulatory and copulatory sequences with appropriate target females as early as 6 months of age. Although this early sexual behavior is typically interpreted as „play“ young males may sire foals before the age of one year. Under free-running conditions stallions obtain a harem either as a young male associating with a young female, or after some years as a member of all-male groups known as the bachelor bands. Bachelor stallions engage in on-going inter-male sexual interaction and occasional heterosexual encounters with young females. In rare instances, colts as young as two years old have been observed to establish and maintain a long-lasting harem band. Domestic stallions typically retain the ability to establish and maintain a harem, even if after many years of domestic stabling and managed hand-breeding.

Keywords: Sexual behaviour, stallion

Entwicklung des Sexualverhaltens beim Hengst

Alle Elemente des männlichen und weiblichen Sexualverhaltens treten beim Hengst- und Stutfohlen von der ersten Lebenswoche an auf. Frühestens ab dem 6. Lebensmonat sind bei heranwachsenden männlichen Fohlen die kompletten Abläufe des Vorspiels und der Kopulation mit zu ihnen passenden Stuten zu beobachten. Obwohl dieses Sexualverhalten normalerweise als „Spiel“ interpretiert wird, ist es möglich, daß Junghengste vor Erreichen ihres ersten Lebensjahres eine Stute befruchten. In der freien Wildbahn beschaffen sich Hengste einen Harem, entweder indem sie sich mit einer Jungstute zusammenschließen oder nach ein paar Jahren Mitglied in einer Junggesellengruppe – bachelor band werden. Junggesellen-Hengste gehen dauerhafte homosexuelle Beziehungen ein, gelegentlich kommen heterosexuelle Begegnungen mit Jungstuten vor. Nur sehr selten kann beobachtet werden, daß zweijährige Hengste einen beständigen Harem etablieren und aufrechterhalten. Domestizierte Hengste behalten normalerweise die Fähigkeit zum Aufbau und Verteidigung eines Harems bei, auch nach langen Jahren der Stallhaltung und des Zuchtmanagements durch den Menschen.

Schlüsselwörter: Sexualverhalten, Hengst

Introduction

Limited work has addressed description of sexual behavior of stallions as it develops from birth through maturity. This review summarizes what is currently known about stallion sexual behavior development, both in equids living under free-running or under pasture breeding conditions as well as domestic stallions kept under various management systems. This review is based on several key studies of domestic, wild, and feral equid populations listed in the references, on the author's published and unpublished observations of pasture-breeding domestic horses, and particularly on longitudinal study of a semi-feral herd of Shetland type ponies kept at our facility specifically for the long-term study of their sociosexual behavior and physiology of horses (McDonnell, 1994-present).

Foal sexual behavior

Foals, both in natural and domestic herd social environments exhibit sexual behavior from as early as the first week. This sexual behavior takes a form commonly interpreted as „play behavior“. Sexual behavior within the first week or two occurs mostly in interactions with the dam,

and then later occurs in interactions among foals and among foals and juveniles, as well as with maturing and adult females other than the dam. Specific precopulatory and copulatory responses commonly exhibited by foals include olfactory investigation of urine and feces, flehmen response, and urine and fecal marking of these substances; olfactory investigation, nuzzling and licking of estrous females and their voided urine and feces, with flehmen response; mounting with and without erection, and pelvic thrusting. Vaginal insertion, fully organized thrusting, or signs of ejaculation are rare in neonatal foals. Male foals in play among juveniles also show elements of female sexual behavior, either as the target „female“ in interactions with male foals or as the target of female foals playing the „male“ role.

This early sexual behavior appears to develop from initially disjointed and awkward responses and sequences to eventually well-organized mature style responses and sequences. This phenomenon suggests that this early sexual behavior may serve a „practice“ function. The frequency and duration of sexual behavior increases with estrus of the dam or other females within the band, suggesting that the foal recognizes or is appropriately stimulated by estrus. The

juvenile sexual behavior appears to be fully tolerated by the adults, both the harem mares and the harem stallion. Typically, the adult females do not actively solicit or respond sexually to a foal as they would to an adult stallion, simply tolerate the „play“. To the extent allowed, similar behavior is seen in foals that are managed under various domestic systems. Interestingly, this early sexual behavior sometimes raises concerns that it represents abnormal precocious or „deviant“ sexual behavior.

Juvenile and peri-pubertal sexual behavior

Sexual behavior continues in colts as they develop. While adult females may still be the stimulus and target, under natural social herd conditions most of the sexual type responses and sequences occur within juvenile „play groups“. Beginning as early as a few months of age, juvenile males participate in group heterosexual breeding encounters with young (approximately one year old) estrous females. In these juvenile „parties“, colts serially breed one or more young females. It seems that the older colts become more organized in their precopulatory and copulatory sequences. Insertion, organized thrusting, and ejaculation may or may not occur. In our semi-feral pony band, juvenile breedings are fertile for colts as young as 8 months breeding fillies as young as 9 months. Sexual interactions among juvenile pairs or in these „parties“ often occur within or at the edge of the harem group, and are almost always tolerated by harem stallions.

Evidence indicates that stallions under domestic management can be sexually competent and fertile before one year of age, when given the opportunity to interact with females. *Skinner and Bowen (1968)* reported that Welsh pony stallions reached puberty (as defined by semen collected by artificial vagina) between 11.5 and 14.5 months of age. *Naden et al. (1990)* evaluated semen, endocrinology, and sexual behavior of fifteen domestic Quarter Horse colts every two months from 8 to 24 months of age. They reported that these animals reached puberty (defined as the ability to ejaculate 50 million sperm with at least 10% total motility under semen collection conditions) by 13 to 24 months of age. In these studies sexual behavior competence occurred at approximately one year of age for the Welsh ponies and between 1 and 2 years of age for the Quarter Horse type colts. In unpublished work from our lab, four domestic pony foals (born in May through July) that were given twice weekly access to an estrous mare from birth through 3 years of age experienced their first ejaculation at 7 to 9 months of age. Interestingly, all four first ejaculated on the same first warm spring day of that year, February 14th (St. Valentines Day).

Adult sexual behavior

Under natural social conditions, young stallions typically leave the natal band to immediately or eventually join ba-

chelor bands sometime between approximately one and four years of age. Bachelor males may breed with young females in temporary associations as they wander in transition from their natal band or on the edge of harem bands. The form of bachelor heterosexual precopulatory and copulatory behavior is similar to that of a harem stallion.

Bachelor males also engage in considerable (many encounters per day per stallion) inter-male sexual behavior interspersed with ongoing sparring aggressive interactions and peaceful close interactions similar to that of harem adult mares and females *McDonnell and Haviland, 1995*). In these inter-male interactions among bachelors in our semi-feral pony herd, all bachelor males play both male and female roles (*Plebani and McDonnell, 1997*).

Under natural social conditions, stallions obtain a harem in one of two typical ways. Young males in transition from the natal band sometimes form an association with one or more young females in transition from the natal band, and then go on to become a stable harem. For these young colts and fillies, the association often begins as a loose and playful type affiliation. Harem type herding and vigilance develops gradually over the first year of the association. These young colts may simultaneously affiliate with other young males from former play groups. Another way in which stallions become a harem stallion involves obtaining one or more mares after some time as a bachelor. Again, the mares are often young females leaving their natal band. At the time a mature stallion obtains a harem, he immediately exhibits a variety of herding and harem protective behaviors, as well as the precopulatory and copulatory sequences. Inter-male behavior of a new harem stallion immediately shifts from the sparring and cooperative behavior typical of bachelors to extremely aggressive behavior toward other harem stallions and toward adult bachelor stallions.

Under domestic conditions, most stallions given free access to mares exhibit normal harem formation and maintenance behaviors, even after many years of managed in-hand breeding in which sexual behavior is limited to immediate precopulatory and copulatory sequences.

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