Iran Agricultural Research 18:63-70 (1999)

NOTE

A PRELIMINARY STUDY ON THE ESTROUS CYCLE OF CASPIAN AND DARASHURI MARES IN IRAN

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(Received: December 26, 1998)

ABSTRACT

Nine Caspian pony and 5 Darashuri (Shirazi) mares were investigated for 3 yr. The onset and end of the breeding season and ovarian changes at different time in the breeding and non-breeding seasons of both breeds were recorded. Duration of estrus was 5.5±3.0 and 5.5±4.4 d, respectively, in Caspian and Darashuri mares. Ovulation occurred during second half of the estrus (last 3 d) in both breeds. Generally, the incidence of estrus was higher in Darashuri mares. The interestrous interval was long in Caspian mares.

KEY WORDS: Breeding season, Caspian mares, Estrous cycle, Mares.

تحقیقات کشاورزی ایران

۱۸: ۶۳- ۷۰ (۱۳۷۸)

بررسی مقدماتی چرخه فحلی در اسبچه های خزر و مادیان های دره شوری

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چکیده

تعداد۹ رأس مادیان بالغ از نژاد اسبچه خزر و ۵ رأس مادیان نژاد دره شوری (شیرازی) طی چند سال متوالی مورد مطالعه و بررسی قرار گرفتند، بطوری که آغاز فصل فعالیت تناسلی و پایان آن در هر دو نژاد بعلاوه تغییرات تخمدان ها، طول و فواصل فحلی ها مشخص گردید. دوره فحلی در اسبچه های خزر ۳/۰± ۵/۵ روز و در مادیان های دره شوری ۴/۴± ۵/۵ روز با تغییرات بیشتر در نژاد دره شوری بود. تخمکریزی در هر دو نژاد در نیمه دوم یا سه روز آخر فحلی اتفاق افتاد. موارد وقوع فحلی در فصل تولید مثل در نژاد دره شوری بیشتر بود. فواصل بین فحلی ها در اسبچه های خزر به مراتب طولانی تر از نژاد دره شوری و بطور کلی میزان باروری در اسبچه های خزر کمتر از دره شوری بود.

INTRODUCTION

Mares are seasonally polyestrus, with the breeding season starting in spring and ending in autumn. There are reports on mares cycling throughout the year under certain conditions (3). The incidence of estrus behavior, and particularly of ovulation is low during winter anestrus (10, 13, 19, 21).

Results of extensive studies on various aspects of cyclic changes of the mare have been described in different environments (1, 2, 4, 7, 9, 10, 16, 18, 22). Reliable data on reproduction of Iranian ponies are limited. Caspian ponies are believed to have low reproductive capacity.

Observations, in 1973 by the author and a pilot study (8) have been followed more systematically by the author and data on breeding season, number of estrous cycles per year, duration of estrus, and intervals between ovulations in two local breeds of mares, Darashuri or Shirazi (14) and Caspian miniature (11) were collected and are presented in this paper.

MATERIALS AND METHODS

Nine Caspian and 5 Darashuri mares maintained at the School of Veterinary Medicine, Shiraz University at Bajgah (latitude of 20°, 43′ and altitude of 1641 m above the sea level) were used in this study. Selected characteristics of the individual mares are presented in Table 1.

Table 1. Age, weight and reproductive status of the experimental mares.

Mare	Age (yr)	Weight (kg)	Reproductive status
Caspian			
Akhtar	3.0	199	Foaling
Azarakhsh	3.0	242	"
Borna	13.0	-	"
Nargess	2.0	159	Maiden
Nissa	11.0	246	Foaling
Pardis	4.0	248	"
Rokhsareh	3.5	193	"
Roshan	3.0	269	Maiden
Veis	9.0	156	Foaling
Darashuri			
Ajand	8.0	329	Foaling
Golrokh	12.0	281	"
Homa	14.0	291	"
Jaleh	3.0	294	Maiden
Soheila	6.0	295	Unknown

The mares were stall fed fresh grasses for 3 wk in early spring (April). For the rest of the year, they were kept indoors and received alfalfa hay, or wheat hay and oat which are traditional feeds in Iran. No pasture for grazing was available.

The first month of the year (January) was the beginning of observation and recording for estrous behavior during which 2 Caspian (Pardis and Akhtar) and one Shirazi mare (Golrokh) were in foal.

Non-pregnant mares were teased daily by an entire sexually active Caspian stallion. Two pregnant Caspian mares foaled before spring (late February-early March) but the Shirazi foaled in late summer (late September). These mares were teased after they foaled.

The mare's reaction to the teaser was recorded daily. A mare was considered to be in estrus if she showed interest in the stallion , lifted her tail, and particularly when she showed winking and frequent urination. The ovaries were examined by rectal palpation and the ovarian features recorded and compared with mare's behavior.

Duration of the breeding season, number of estrous periods during one breeding season, and the interval between ovulations were recorded. Average length of estrus and duration of the estrous cycle were calculated.

RESULTS

The typical signs of estrus (winking and frequent urination) in response to teasing by a stallion were shown in both breeds from late March. This was defined as the beginning of the breeding season. The breeding season continued throughout spring and summer until early October in Caspian mares and the breeding season of Shirazi mares was approximately 1 mo longer.

Normal follicular development was confirmed in all mares of both groups during the breeding season except in one of the maiden Caspian mares (Nargess) which had split estrus in two consecutive breeding seasons and even 2 mo later than the usual breeding season of Caspian mares. She had no sizeable follicle and did not ovulate. Golrokh had produced one foal each year.

Duration of estrus for both Caspian and Shirazi mares was very close with an average of 5.49±2.96 d (range 1-11 d) for Caspian and 5.5±14.40 d (range 1-19 d) for Shirazi mares.

If ovulation occurred, it was in the last 3 d of estrus for both groups. Incidence of ovulation failure was considerably high in both Caspian and Shirazi mares, mostly in early and late breeding season.

The number of estrus periods per season was greater in Shirazi mares (8-14 for Shirazi and 2-10 for Caspian). The average interval between two estrus periods was 26.75±14.89 d (range 5-73 d; 50% was 20-27 d) for Caspian as compared with 22.63±15.43 d (range 3-78 d; 50% was 20-29 d)

for Shirazi mares. An estrus period of 183 d was recorded in one of the Caspian mares which was excluded in the calculation of estrous intervals.

DISCUSSION

The information obtained in this study establishes the baseline data on reproductive soundness of two Iranian breeds of horses, namely Caspian and Darashuri. Information on mare's reproduction in comparison with the cow is limited (20). Some parameters, such as duration of the breeding season, number of estrus per season, average interval between estrous periods, duration of estrus and particularly incidence of ovulation failure which is suggested as a very serious cause of infertility of the mare (22) were evaluated as possible causes of infertility in these mares.

Apparently, the actual fertile breeding season for Caspian mare is relatively short compared to Darashuri and most breeds of horses. Carrol (6) reported a longer than normal breeding season for Caspian mares. However, in the present study duration of estrus in Caspian mares was in close agreement with the recorded average for mares (3, 17, 20, 23) and it was also similar to Darashuri mares.

No evidence was found for the occurrence of twin ovulations in Caspian and Darashuri mares. Low incidence of twin ovulations in pony mares has also been stated by Arthur (3). Shorter breeding season, longer interval between ovulations, low number of estrous cycles per season, occurrence of 183 d anestrus during breeding season, 50% ovulatory failure and doubtful ovulation may be the reason for the small number of foals produced by Caspian mares (6, unpublished data) and the generally low reproductive efficiency of the Caspian mares, leading to the statement (11) that " low fertility is one of the characteristics of Caspian horses".

Hatami and Pandit (15) reported that the Caspian ponies possess either 65 or 64 chromosomes and they postulated that although the Caspian pony is a fertile animal, its low reproductive capacity may be related to its karyotype.

On the other hand, the Darashuri mares may have a better reproductive potential, since they had longer breeding seasons, shorter

inter-estrous intervals and therefore, more estrous cycles per season. In fact one of the Darashuri mares had regular cycles and ovulated throughout the year.

Further investigations on a larger number of animals for better evaluation of fertility in these breeds are necessary. Nevertheless, these preliminary results point out to the problem areas that are likely to be encountered by breeders of these mares.

ACKNOWLEDGEMENTS

The author wishes to thank Mrs. Z. Davanipour and other senior students who helped with some observations and records, Drs. R.V. Pandit and W.E. Allen for help with manuscript, Dr. M.J. Zamiri for criticism and encouragement during the process of publication and School of Veterinary Medicine, Shiraz University for financial support.

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