RESEARCH ARTICLE Indian Journal of Animal Research, Volume 56 Issue 4: 412-415 (April 2022)

A Study on Oestrus and Parturition Behaviour of Manipuri Pony Mares

Ningthoukhongjam Linda[1], Fazal Ali Ahmed[1], Thingujam Chaa Mangilal[2]

10.18805/IJAR.B-4529

ABSTRACT

Background: The aim of this research was to study the behavioural signs exhibited during the different phases of oestrus and parturition in Manipuri pony mares.

Methods: A total of ten each for oestrus and pregnant female Manipuri Ponies were selected for the behavioural signs study and a total data of 30 numbers of set questionnaires were analysed for studying the oestrus and foaling during various seasons and months of Manipuri Pony mares.

Result: The behavioural oestrus signs observed in female Manipuri pony were raised tail, vulva swelling, vaginal mucous secretion, stallion seeking, inappetance and male acceptance. Pre-partum sign includes swelling of vulva, waxing, udder development, teats engorgement with milk discharges. Restlessness, isolation from human and herd mates, abdominal straining were shown during first stage of parturition. Abdominal straining with expulsion of fetus was displayed in the second stage followed placenta expulsion at the third stage of parturition. The occurrences of timing of birth were lesser between 6 pm and midnight (20.00%). The highest occurrence of oestrus was recorded during spring season (46.67%, 56.67%) respectively and in months it occurred highest during March to June (16.67%).

Key words: Foaling, Manipuri pony, Oestrus, Parturition, Pre-partum.

INTRODUCTION

Manipuri pony (*Equus ferus caballus*) is an important registered equine breed of India under registration number (INDIA _ HORSE _ 1200 _ MANIPURI _ 07003) which has been breeding in the erstwhile kingdom of Manipur, India over centuries.

There was a negative growth of -35.66% (percentages of deviation) during 2003 to 2007 of the pony population in its breeding state and National Bureau of Animal Genetic Resources considered Manipuri pony as threatened breed which is due to the increasing pressure of urbanization their habitation have been forfeited by the encroaching human hordes. The total number of ponies recorded in 19th livestock census 2012 was 1042 in rural areas and 59 figures in urban areas.

For preserving the genetic heritage of Manipuri pony populations, it is essential to characterize their reproductive traits and functions and much needed to learn about the features of females if breeding and conservation programmes are to be successful in the near future but reliable data on reproduction has neither been identified nor has any objective study been made on reproductive performance. Consequently, the present study was undertaken keeping the prime objective of studying the behavioural signs of oestrus and parturition of Manipuri pony mares.

MATERIALS AND METHODS

Manipur Horse Riding and Polo Association, Lamphelpat, Imphal West district of Manipur, India was selected as study area keeping in view of the confined population of Manipuri ponies in the area (24.30°N - 25.00°N latitudes and 93.45°E - 94.15°E longitudes). The research protocol was permitted by the College of Veterinary Sciences and Animal Husbandry, CAU, Mizoram, India. The study was undertaken systematically for a period of seventeen months *i.e.* from January, 2018 to June, 2019.

Animals

All the experimental ponies were maintained under standard feeding and managemental conditions. The mares at this farm were bred by natural mating. A total of ten pregnant (due term) and 10 oestrus female Manipuri ponies were selected for the present study.

[1]Department of Animal Reproduction, Gynaecology and Obstetrics, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl-796 014, Mizoram, India.
[2]State Veterinary Department of Manipur, Lamphelpat-795 001, Manipur, India.

Corresponding Author: Ningthoukhongjam Linda, Department of Animal Reproduction, Gynaecology and Obstetrics, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl-796 014, Mizoram, India.
Email: ningthoukhongjamlinda@gmail.com

How to cite this article: Linda, N., Ahmed, F.A. and Mangilal, T.C. (2022). A Study on Oestrus and Parturition Behaviour of Manipuri Pony Mares. Indian Journal of Animal Research. 56(4): 412-415. DOI: 10.18805/IJAR.B-4529.

Submitted:18-05-2021 **Accepted:** 02-08-2021 **Online:** 09-08-2021

Oestrus behaviour study

All the mares were observed twice daily from 6 to 7 am in morning and from 5 to 6 pm in the evening. Female Manipuri ponies were confirmed for oestrus by using a teaser stallion followed by rectal palpation as per Talluri *et al.* (2016). The oestrus symptoms of all mares were carefully observed and behavioural signs were studied and recorded.

Parturition behaviour study

The pre-partum physical signs were observed before the expected day of parturition till the time of foaling.

Foaling signs were recorded as per Blanchard *et al*. (2003). All the animals were kept confined during this period and constant observations were made throughout the period (a day before expected date of foaling to the time of expulsion of placenta). The different stages of parturition were observed and recorded. The onset of second stage of labour was considered with the appearance of the amniotic bag and the second stage was observed and recorded till the foal is completely delivered followed the placental expulsion. Placenta expulsion was recorded as the time between expulsions of the foal till expulsion of placenta.

The timing of the birth was recorded as per Meliani *et al*. (2013).

Occurrence of oestrus in Manipuri Pony during various seasons

It was determined from the structured questionnaires collected from the Central Agricultural University and Manipur Horse Riding and Polo Association including individual pony owners. A total data of 30 numbers of such questionnaires were collected and analysed.

Statistical analysis

The data were subjected for statistical analysis by means of descriptive analysis (Micro Soft Excel-2010; http://office.microsoft.com).

RESULTS AND DISCUSSION

Oestrus behaviour study

The frequencies of occurrence of different behavioural signs of oestrus in female Manipuri pony are shown in (Table 1). In the present study the behavioural oestrus signs observed in female Manipuri pony was raised tail, vulva swelling, vaginal mucous secretion, stallion seeking, inappetance and male acceptance were found to be analogous with the observations of (Emady,1999; Taberner *et al*., 2008 and Panwar and Yadav, 2010). Although winking of clitoris has been described as an outstanding sign of oestrus in mares (Arthur *et al*., 1996) nevertheless in the present study the said signs were not observed.

Occurrence of seasonality of oestrus

It was observed that the Manipuri pony mares showed the occurrence of oestrus were highest during spring (46.67%) and summer (43.33%) seasons and the occurrence of oestrus was maximum during March to June (16.67%) and no oestrus was recorded from the month of October to January which was similar with the findings of Strickland, (1996) and Hughes *et al*. (1975) stated that in northern hemisphere the breeding season starts from April to September in addition Ginther (1992) accounted the official breeding season as from February to June. Contri *et al*. (2013) also found an increase oestrous length during spring and summer than autumn and winter seasons in female donkeys besides horses are seasonal breeders with extensive sexual activity in spring, summer and autumn (Talluri *et al.,* 2016).There are reports on mares cycling throughout the year under certain conditions. During winter anoestrus the incidence of oestrus behaviour and ovulation is low (Ginther, 1974).

Parturition behaviour study

Pre-partum physical signs

Occurrences of pre-partum physical signs in female Manipuri pony are shown in (Table 2 and Fig 1). Pre-partum signs exhibited by all mares corroborates with the findings of

Table 1: Behavioural signs of oestrus in female Manipuri pony.

Signs of oestrus	Frequency (%)
Raised tail	100.00
Vulva swelling	100.00
Vulva congestion	100.00
Vaginal mucous	100.00
Stallion seeking	100.00
Inappetance	50.00
Clitoris winking	0.00
Male acceptance	100.00

Table 2: Occurrence of various pre-partum physical signs in female Manipuri pony.

Signs	Frequency (%)
Oedematous swelling of vulva	40.00
Waxing	70.00
Udder development	100.00
Teats engorgement	100.00
Milk discharge	50.00

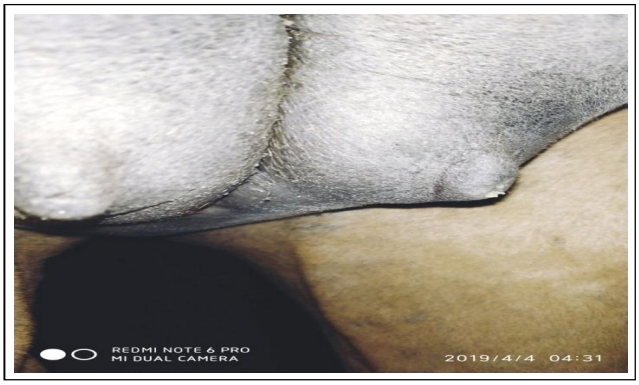

Fig 1: Waxing of the teats.

Forsyth *et al*. (1975) and Blanchard *et al*. (2003).The behavioural signs of foaling observed in the present study during the different stages were similar with the findings of Blanchard *et al*. (2003), Morel (2003), Thangamani *et al*. (2018) and Purohit (2019).

Signs of parturition

Behavioural signs including restlessness, isolation from human and herd mates, frequent lying down and getting up, abdominal straining, tail raising and inappetance were shown during first stage of parturition (Table 3, 4 and Fig 2). Results showed that all the experimental mares show evidence of amniotic bag at the vulva, lateral recumbency with appearance of fetal legs and abdominal straining. The outcomes are similar with the report findings of Amann *et al*. (1989) and Morel (2003).

Behavioural signs during the end of the second stage of parturition in female Manipuri pony are depicted in the (Table 5 and Fig 3, 4). Behavioural signs during third stage of parturition in female Manipuri pony are depicted in the (Table 6). Results revealed that 90.00% had normal expulsion of placenta with an incidence of retention of placenta (10.00%). In the present study the behavioural signs of foaling observed were almost similar with the findings of Blanchard *et al*. (2003), Morel (2003), Meliani *et al*. (2013) and Purohit, (2019).

Table 3: Behavioural signs during first stage of parturition in female Manipuri pony.

Signs	Frequency (%)
Restlessness	100.00
Isolation from human and herd mates	100.00
Frequent lie down and getting up	100.00
Abdominal straining	100.00
Tail raising	90.00
Inappetance	50.00

Table 4: Behavioural signs during the onset of second stage of parturition in Manipuri pony.

Signs	Frequency (%)
Amniotic bag appearance	100.00
Lateral recumbency	100.00
Appearance of fetal legs	100.00
Abdominal Straining	100.00

Table 5: Behavioural signs during the end of second stage of par turition in Manipuri pony.

Signs	Frequency (%)
Crouching	100.00
Straddling movement	100.00
Getting down and raising up	100.00
Chorio-allantoic rupture	100.00
Escape of allantoic fluid	100.00

Table 6: Behavioural signs during third stage of parturition in Manipuri pony.

Signs	Frequency (%)
Placenta expulsion	90.00
Retention of placenta	10.00
Foal care	100.00

Placental characteristics

In the present study, the chorionic membrane of placenta was red colour and the amnion is almost translucent bluish colour and it was of micro cotyledonary diffuse placenta. Similar observations had been made by Morel (2003) and Thangamani *et al*. (2018) (Fig 5).

Fig 2: Presence of water bag and escaping of allantoic fluids.

Fig 3: One limb of foal precedes the other and muzzle of the foal was positioned at carpal level.

Fig 4: Head and limbs of the foal expelled out.

Fig 5: Outer view of the voided placenta.

Table 7: Occurrence of timing of birth.

Parameters (Timing)	Frequency (%)
a) between 6 pm and 12 midnight	20.00
b) between 12 midnight and 6 am	80.00

Timing of foaling

Twenty percent of foaling occurred between 6 pm and 12 midnight and remaining occurred between 12 midnight and 6 am (Table 7). As per the published studies, the primary foaling time peak was around 2 am and the secondary smaller peak around 1 pm but generally most of the foaling happened at night hours. In the present study the time of foaling observed were almost similar with the findings of Meliani *et al*. (2013) which was influenced by environmental factors such as the month of birth, maternal mechanism factor of foaling and the sex of the foal Meliani *et al*. (2013).

CONCLUSION

Behavioural signs of oestrus were not prominent in Manipuri pony mares. The two clinically noticeable external signs exhibited by mares during oestrus consist of vulva swelling, vaginal mucous secretion where the most important sign being winking of clitoris was not observed. It was bring to a close that the behavioural signs of parturition in Manipuri pony mares were prominent however they typically gave birth during silent hours of night time and noticed that human interference results in disturbance particularly during the straining stage in first stage of parturition furthermore aggravating the condition leading to repulsion of placenta.

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