

### Lateralized suckling in domestic horse foals (*Equus caballus*)

Martina Komárková<sup>\*,‡</sup>, Jitka Bartošová<sup>\*</sup>

<sup>\*</sup>Department of Ethology, Institute of Animal Science, Prague,

<sup>‡</sup>Department of Zoology, Charles University, Prague,

Animals with eyes placed laterally on their head would respond differently to stimuli detected on their different sides. Visual cues from the left eye are processed in the right hemisphere which controls the intensive emotion expression and fast response to the stimuli, while the left hemisphere receiving the information from the contralateral eye is responsible for the routine behaviour and concentration. Different use of left/right eye for exploring environment and evaluation of different stimuli was recently described in domestic horses. They use left eye predominantly for watching novel object or frightening stimulus which indicates specialization of right hemisphere (RH) for appraisal of these types of stimuli. We presumed such lateralisation also in foals during suckling when only monocular vision can be employed for observing surroundings (foals suck mostly in antiparallel body position). Two mutually exclusive hypotheses about the origin of probable foal's preference for particular suckling side were postulated: 1) visual lateralization, then the foals should suck more often from the mother's right side ('from right'), so as potential danger would be detected by the better adapted right hemisphere (i.e. left eye); 2) motor lateralization (the analogous concept as human "handedness"), then a foal should suck predominantly from one side, either left or right, more often. Within two seasons, suckling behaviour of 59 Kladruby mares giving birth to 79 foals was observed from deliveries to abrupt weaning (4-7 months of age). From 10 607 recorded suckling solicitations, 50.2% were performed from right, thus there was no preference of the suckling side on a population level. However, we found large variability in the probability of suckling from right among individual foals ( $p < 0.0001$ ); the probability ranged from 0.22-0.98. One third of the foals (35.4%) showed strong, either right ( $N=13$ ) or left ( $N=15$ ) side preference which further strengthened with age (interaction suckling side preference\*foal's age:  $p < 0.0001$ ). Other tested variables, i.e. sex of the foal, age of the

mother and identity of the herd were not significant. The probability that the mother rejected foal's suckling solicitation ( $N=108$ ) did not differ according to the suckling side (right/left) or suckling side preference (right/left/no preference). Suckling bout duration was not significantly influenced neither by the suckling side nor suckling side preference regardless the mother or the foal terminated the suckling bout.

In conclusion, only 16% of the foals revealed significant right side preference for suckling while 19% left side and 65% no preference. Thus, we can reject the visual hypothesis because a general trait to suck with left eye open for better danger detection and recognition is unlikely to occur, at least in up to 7 months old foals. Such a young foal is probably fully focused on suckling and relies on mother's vigilance. Observed individual side preferences indicated more likely a kind of motor lateralization in part of the foals. Further research is needed to clear up the effects of age and individual experience of the foal.

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Corresponding author:

Martina Komárková

Tel: +420 267009731

Fax:

E-mail: eto89@seznam.cz