

Short communication

Increased cervical electrical activity during oestrus in progestagen treated ewes: Possible role in sperm transport

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Abstract

The aim of this investigation was to characterize the pattern of cervical myoelectrical activity (EMG) in the sheep, during the periovulatory period, after synchronization of oestrus with progestagen and eCG. EMG was measured with a computerised modular system in five ewes previously fitted with a pair of monopolar Teflon needle electrodes in the muscle layers of the cervix. Each ewe was submitted to oestrus synchronization treatment with intravaginal progestagen sponge during 12 days, and the administration of 500 IU of eCG at the withdrawal of sponge. EMG was recorded in each animal during 19 h, starting 44 h after withdrawal of sponge. The number and duration of events were determined every hour during the experiment. Two distinct event durations were identified: one lasting less than 200 s and another lasting between 300 and 500 s. The two types of events analysed (less than 200 s and lasting between 300 and 500 s) had a similar pattern during the period of observation although they were not in synchrony. For events lasting less than 200 s, activity increased between 48 and 50 h after sponge withdrawal, with the peak of activity being observed between 51 and 53 h. For events of 300–500 s duration, the peak of activity was observed between 48 and 50 h after sponge withdrawal and activity was maintained until 51–53 h. The increase in cervical motility observed in progestagen–eCG treated ewes is in keeping with the increase in cervical activity observed by others in natural cycling animals, and suggests that exogenous hormones used in synchronization protocols had no deleterious action on cervical motility during periovulatory period. The enhanced activity of cervical muscle layer found around the time of mating and/or AI suggests it may play an important role as a regulatory mechanism of sperm transport. Taking advantage of the cervical responsiveness to various drugs, experimental modulation of cervical activity could be used to facilitate cervical sperm transport and consequent improve of fertility after cervical AI.

Keywords: Cervix; Oestrus; Electromyography; Artificial insemination; Sperm transport; Ewe