Toll-like receptor-2 mRNA expression in the endometrium of mares resistant and susceptible to endometritis

S.E. Eaton, T. Raz, C.E. Card

Animal Care Hospital, Williams Lake, BC, Canada; Department of Biological Regulation, The Weizmann Institute of Science, Rehovot, Israel; Large Animal Clinical Sciences, Western College of Veterinary Medicine, Saskatoon SK, Canada

Toll-like receptor 2 (TLR-2) is a key regulator of the inflammatory cascade resulting from bacterial infections, and may play a role in equine endometritis. Our objective was to compare TLR-2 mRNA expression in the endometrium of mares resistant and susceptible to endometritis; we hypothesized it would differ between these two categories of mares during physiologic estrus cycle, after insemination with seminal plasma or sperm, and after intra-uterine challenge with Streptococcus equi subsp. zooepidemicus (Strep).

Mares were evaluated for susceptibility to endometritis using the standard Strep challenge model. Accordingly, ten resistant (R) and seven susceptible (S) mares were enrolled. Each mare was used in five cycles (random cross-over design): 1) estrus; 2) diestrus; 3) anestrus; 4) 24 h post-semenal plasma infusion; 5) 24 h post-sperm infusion; with an untreated rest cycle between experimental cycles. In each cycle, a uterine low volume lavage (for culture and cytology) and endometrial biopsy were performed. Individual endometrial tissues were stored frozen in liquid nitrogen until further processing. For analysis, endometrial tissues were thawed, lysed, and mRNA was extracted. The mRNA was processed into cDNA and real-time polymerase chain reaction (RT-PCR) was performed for each sample in duplicate for TLR-2 and glyceraldehyde-3-phosphate dehydrogenase (normalizing gene, GAPDH).

Endometrial TLR-2 mRNA expression differed in R mares between Strep and seminal plasma (p<0.04), sperm (p<0.02) and estrus (p<0.01); and in S mares between Strep and seminal plasma (p<0.02). Our findings indicate that R and S mares both respond to Strep infection. However, no differences in TLR-2 tissue expression were found between R and S mares that could account for their differing responses to intrauterine infection with Strep or after insemination therefore disproving our hypothesis.

Keywords: Toll-like receptor-2, endometritis, real-time PCR, mRNA, mare

References