Infectious endometritis is associated with endometrial expression of transforming growth factor-β and integrin α5β1
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Persistent endometritis is a leading reproductive health concern in mares. Despite increasing knowledge and improved treatment strategies, the multifactorial pathogenesis of the disease complex still remains a puzzle. In this study it was hypothesized that the endometrial gene expression of transforming growth factor –β1 (TGF-β1) and alpha-5 beta-1 integrin (integrin α5β1) was correlated to uterine growth of pathogens in brood mares.

Endometrial biopsies were obtained from brood mares at a Danish AI-center during the 2014 breeding season. Mares with clinical signs of endometritis and/or a history of previous unsuccessful breeding were selected for the study. Two biopsies were obtained from each mare. One biopsy was used for bacterial culture and cytology and one biopsy was used for RNA extraction. Relative gene-expression analyses were performed by quantitative reverse transcriptase PCR (qRT-PCR) using validated primers and SYBR green detection. Infectious endometritis was diagnosed in 49% of the mares (29/59) with S. equi subspecies zooepidemicus isolated most frequently (45%). Expression of TGF-β1 and integrin α5β1 was significantly increased in mares with infectious endometritis compared to mares with no growth of uterine pathogens and/or endometrial inflammation (positive cytology). Mares with growth of S. zooepidemicus had an increased endometrial expression of TGF-β1 compared to mares with no growth or growth of other pathogens although it was not significant (p=0.06).

The results indicate that TGF-β1 and integrin α5β1 play a role in the pathogenesis of persistent infectious endometritis. A similar observation has been demonstrated in tonsillary epithelium.1 This study showed that bacterial invasion was critically dependent on a TGF-β1 promoted presence of α5β integrins. Further studies are however needed to investigate this hypothesis in relation to persistent infectious endometritis in the mare.

Keywords: Infectious endometritis, transforming growth factor-β1, integrin α5β1, S. zooepidemicus

Reference