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Luteinizing hormone receptors and IL-10 in the endometrium of mares with different degrees of fibrosis

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Endometrial fibrosis in mares is a determining factor for reproductive performance. Although the exact pathogenesis of endometrial fibrosis remains unclear, studies indicate that fibrotic tissue remodeling occurs through the action of multiple cytokines and chemokines. Luteinizing hormone receptors (LHR) may be present in extragonadal tissue, particularly in the female reproductive tract. This study aimed to evaluate the gene expression of LHR and interleukin-10 (IL-10) in the endometrium of mares with different degrees of fibrosis. Thirty-four cyclic mares (14 ± 6.4 years old) underwent uterine biopsy during diestrus (D5–D10). Endometrial samples were classified according to the uterine fibrosis grading system (Kenney, 1978): Category I (n = 12), Category II (n = 12), and Category III (n = 10). Samples were stored in RNAlater®, transported under refrigeration, and then frozen at -80 °C. Gene ex-pression of LHR and IL-10 was analyzed by qPCR. Relative quantification was performed, and the mRNA levels of the target genes were normalized against β-Actin mRNA levels. Data were analyzed with Kruskal-Wallis test. The results demonstrated higher LHR gene expression in Category II compared to Category III, with no significant difference observed in Category I. The same results were founded in gene expression of IL-10, with a higher expression in the Category II than Category III and no significant difference was found for Category I. Previous studies have confirmed the presence of LHR in non-gonadal tissues of the reproductive tract. The findings of this study demonstrated that LHR may be involved in severe endometrial fibrosis, with difference of gene expression between categories, but the precise role for this receptor in the reproductive tract still needs further investigation. The IL-10 is an anti-inflammatory cytokine and its lower expression in Category III may be due to a reduced capacity to control uterine inflammation in this group. The differences in gene expression of LHR and IL-10 across the samples could indicate that these factors may be involved in the endometrial fibrosis in mares. In conclusion, the lower expression levels of both LHR and IL-10 in category III suggest their potential role in the pathophysiology of equine endometrial fibrosis. The findings of this study reinforce the association between these molecular changes and the fibrotic condition, contributing to a better understanding of its underlying mechanisms.

Keywords: Fibrosis. LHR, IL-10. Mares.