Uterine clinical findings, fertility rate, leucocyte migration and amount of COX-2 protein in endometrial tissue of susceptible mares treated with PRP at different moments of estrous cycle

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Persistent mating induced endometritis (PMIE) is an important cause of fertility decrease in horses, thereby causing a significant impact in the horse industry. A modulator of the inflammatory response that has been largely used in veterinary medicine is the platelet-rich plasma (PRP) that acts directly on inflammatory mediators. Thus, the present study aimed to investigate the effect of platelet-rich plasma on 1) uterine inflammation, conception rate, and endometrial polymorphonuclear cells (PMNs) migration, 2) the amount of COX-2 protein in the endometrial tissue, and 3) the best moment to use the PRP treatment, before or after artificial insemination (AI). A total of 13 mares classified as susceptible to PMIE were used. The mares were inseminated with fresh semen in three consecutive cycles in a cross-over study design. Platelet-rich plasma was prepared by single centrifugation protocol (120 g/10min). The cycles were classified as control cycle (C): no pharmacological interference; PreAI: 20 mL of PRP was infused 24 hours before AI; PostAI: 20 mL of PRP was infused four hours after AI. Artificial insemination was performed 24 hours after ovulation induction with 1mg of deslorelin acetate. Intrauterine fluid (FLU) was evaluated by ultrasonography, before and 24 hours after AI; PMNs in uterine cytology (CYT) and biopsy (HIS) were also observed before and 24 hours after AI; pregnancy diagnosis were performed 14 days after ovulation. Number of COX-2 positive cells was evaluated using immunohistochemistry by the number, intensity and the location of the labeled cells. Continuous variables were submitted to variance analyses and conception rates were evaluated by logistic regression model. Significance was set at p ≤ 0.05 for all tests. Both PRP treatments were able to reduce (p<0.05) the PMNs number in CYT after breeding compared with the control cycles. Intrauterine fluid did not differ (p<0.05) between cycles, however the conception rate was higher (p<0.05) when mares were treated with PRP (63.5% - 16/25) compared with the control cycle (31% - 4/13). The number of positive mares to endometritis in the HIS, decreased (p<0.05) in both treated cycles and a more intense (p<0.05) positive COX-2 labelling was observed in the control cycle compared to the PreAI and PostAI cycles. In conclusion, there is a potential benefit of PRP to reduce the inflammatory response in PBIE mares independent of the time of treatment, increasing the chances of achieving a pregnancy in this group of mares.

Keywords: Endometritis, equine, embryo transfer, PRP.