Comparison of two pharmacologic protocols to induce ex copula ejaculation in novice stallions

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Ex copula ejaculation can be induced pharmacologically to collect semen from injured or debilitated stallions. Studies of ex copula induction of ejaculation in stallions using imipramine and xylazine have cited high response rates (up to 70%); however, in our clinic the rates have been low and highly variable (0-55%, overall 21%). One variable in success may be the sexual development and experience of the stallion. Spontaneous ejaculation in stallions sedated with detomidine (Dormosedan®, Zoetis, Florham Park, NJ) has been reported. The objective of this study was to compare two pharmacologic protocols to induce ex copula ejaculation in novice stallions, and their effects on ampullae contraction and circulating testosterone levels. The hypothesis was that imipramine and detomidine, an alpha-2 agonist with higher receptor affinity than xylazine, would result in higher rates of ejaculation compared to imipramine and xylazine. Five healthy novice (non-breeding) stallions aged 3 to 7 years were enrolled in the study to compare the following protocols to induce ex copula ejaculation: imipramine 3 mg/kg PO followed two hours later by either xylazine 0.66 mg/kg IV or detomidine 0.015 mg/kg IV. Testicular measurements and ultrasonography were performed to identify any pre-existing abnormalities, of which there were none. As the stallions were not trained to an AV, no semen collections were performed prior to enrollment. Each stallion was administered each treatment four times in a crossover design with 24 to 72 hours rest between treatments, time consistent with what is used in clinical practice. Three blood samples were collected twice for each treatment: at the time of imipramine administration, at the time of alpha-2 agonist administration, and after ejaculation or 45 minutes, whichever came first. Serum was stored at -20°C until assayed for testosterone by radioimmunoassay. Transrectal ultrasonographic measurement of the ampullae diameter was performed twice per treatment, the evening before treatment and after ejaculation or 45 minutes after alpha-2 agonist administration, whichever came first. Only one stallion ejaculated once, under the imipramine-xylazine protocol. There was no significant difference in the ampullae diameter before and after treatment for both treatments as analyzed by paired t-test (p>0.05). Analysis of serum testosterone by repeated measures ANOVA demonstrated no difference before imipramine treatment, before alpha-2 agonist administration, or after ejaculation or 45 minutes. Interestingly, however, there was a significant effect of treatment on testosterone, with detomidine-treated animals having higher testosterone at all three time-points (p<0.05). This observation remains unexplained. In conclusion, both treatments resulted in poor response of novice stallions to induction of ex copula ejaculation. Response to these treatments may be testosterone-independent. Further evaluation of factors affecting response, such as level of stress and environmental conditions, are being pursued in our laboratory.

Keywords: Imipramine, detomidine, ampullae, ultrasonography, testosterone