

## **Incidence, severity and factors associated with intrauterine fluid accumulation in mares after insemination with cooled or frozen semen**

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### **Introduction**

Under commercial breeding farm conditions the incidence of post-breeding intrauterine fluid accumulation in Thoroughbred mares bred with natural service was approximately 15% and the incidence and severity of intrauterine fluid accumulation increased significantly with mare age.<sup>1</sup> In intensively managed mares inseminated with frozen-thawed semen the incidence of post-breeding intrauterine fluid accumulation varied from 16%<sup>2</sup> to 25%,<sup>3</sup> and mare age was again found to be a significant factor, since the incidence of intrauterine fluid accumulation in mares aged 3 to 9 years, 10 to 16 years and greater than 16 years was 17%, 28% and 68%, respectively.<sup>3</sup> To our knowledge, the incidence of intrauterine fluid accumulation following insemination with cooled semen has not been reported. The objective of this study was to determine the incidence, severity and factors associated with intrauterine fluid accumulation in commercial broodmares inseminated with cooled or frozen semen.

**Keywords:** Equine, mare, insemination, cooled/frozen semen, intrauterine fluid

### **Materials and methods**

This study was performed by retrospectively examining the reproductive records of 156 client-owned mares (1 to 7 cycles/mare) that were managed for breeding with cooled or frozen semen during the 2011 breeding season. The following information was obtained from each breeding record: mare age, type of semen (cooled or frozen), presence (if any) of intrauterine fluid prior to insemination and presence (if any) of intrauterine fluid after insemination. Fluid accumulation after insemination was recorded as none/minimal if no fluid was identified or the amount was so slight that no treatment was deemed necessary; mild when the fluid accumulation was treated with an ecboic agent only; or moderate/severe when the fluid accumulation was treated with an ecboic agent and uterine lavage. Mare age, type of semen (cooled or frozen) and presence of intrauterine fluid prior to insemination were examined for associations with uterine fluid accumulation after insemination with multinomial logistic regression analysis using Stata 12.1 software (StataCorp, College Station, TX). For analyses involving mare age, mares were categorized into three groups, 3 to 9 years, 10 to 15 years and >15 years.

### **Results**

The proportion of mare cycles with moderate/severe fluid accumulation after insemination with cooled and frozen semen was 17.7% and 28.6%, respectively ( $P < 0.01$ ). The proportion of cycles in mares aged 3 to 9, 10 to 15 and >15 years with moderate/severe fluid accumulation after insemination with cooled or frozen semen was 14.0%, 26.7% and 34.6%, respectively ( $P < 0.05$ ). The proportion of mare cycles with moderate/severe fluid accumulation after insemination with cooled or frozen semen was 18.5% for mares that did not have uterine fluid prior to insemination and 39.7% for mares that did have uterine fluid prior to insemination ( $P < 0.001$ ).

### **Discussion**

The findings from this study that approximately 18% of mare cycles in which cooled semen was inseminated and 28% of mare cycles in which frozen semen was inseminated resulted in moderate/severe intrauterine fluid accumulation after insemination are consistent with previous reports that approximately 15 to 25% of mares develop intrauterine fluid accumulation after insemination. Similarly, these results agree with previous reports that aged mares are more likely to develop intrauterine fluid accumulation after insemination compared to younger mares. An important clinically-relevant finding of this study is that the presence of any intrauterine fluid prior to insemination was associated with a greater likelihood of

moderate/severe fluid accumulation after insemination. It has been reported that the presence of more than a 2 cm height of uterine fluid during estrus prior to breeding was a predictor of susceptibility to post-breeding endometritis;<sup>4</sup> however, the results of this study suggest the presence of any ultrasonographically-detectable intrauterine fluid prior to insemination may be indicative of susceptibility to fluid accumulation after breeding.

### References

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