Can serum progesterone be used to decide altrenogest supplementation discontinuation in problem pregnancies in mares?

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Introduction

Altrenogest is commonly used as a treatment as well as a prevention in high-risk pregnancy. Administration is sometimes initiated as early as 2 days post-ovulation and is commonly continued until day 100-120. However, this long administration of altrenogest is not always necessary. The aim of this study was to determine if altrenogest interfered with progesterone (P4) assay and if timing of altrenogest administration discontinuation could be based on blood concentration of P4.

Materials and methods

Animals:

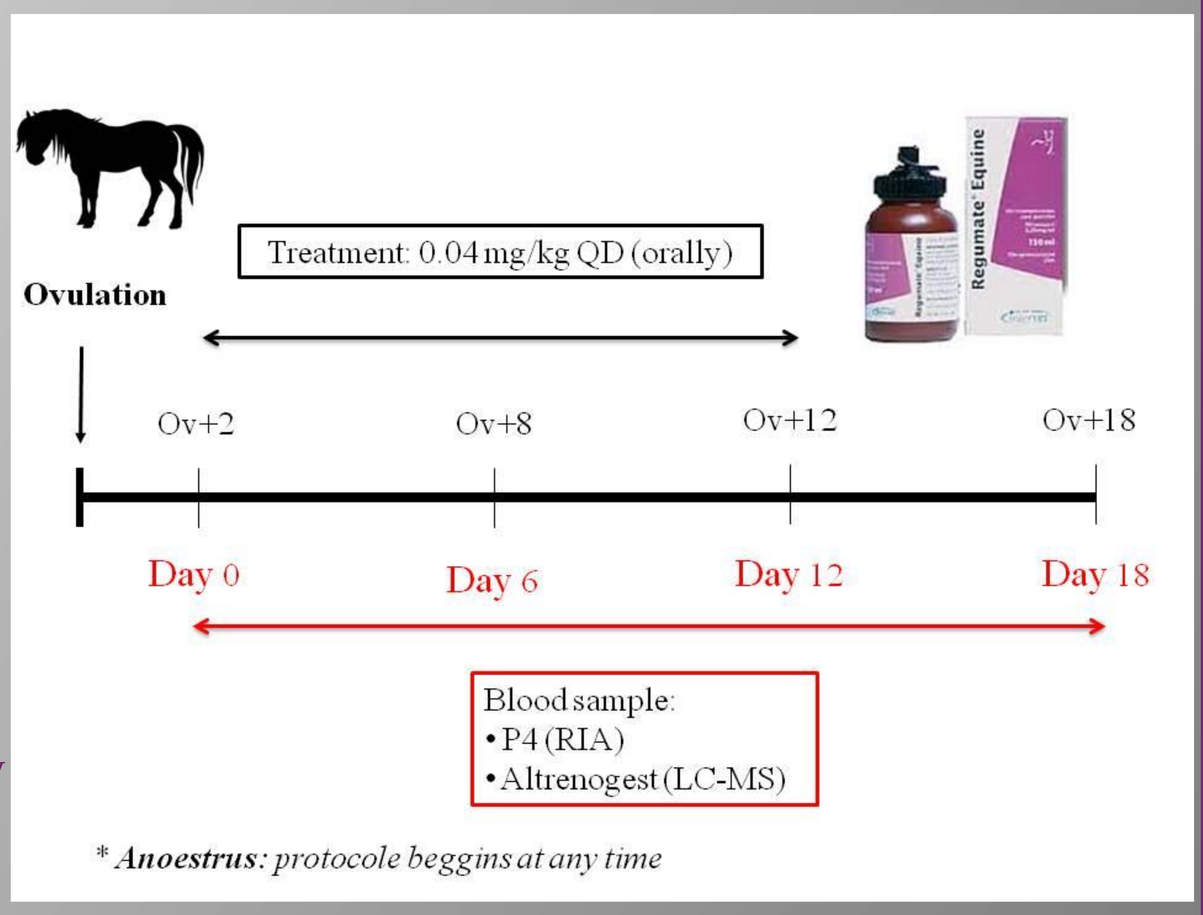
- 7 mares in diestrus during the breeding season.
- 7 mares in seasonal anoestrus out of the breeding season.

Experimental design:

- Mares received 0.04 mg/kg of Regumate PO once a day for 12 days, starting:
  - 2 days after ovulation for mares in diestrus
  - At any time for mares in anoestrus.
- Blood samples :
  - Day 0 (1st day of treatment)
  - Day 6
  - Day 12
  - Day 18 (6 days after treatment discontinuation)
- Laboratory analysis:
  - P4 → Radioimmunoassay (RIA)
  - Altrenogest → Liquid Chromatography-Mass Spectrometry

Statistical methods:

- Differences between sampling were determined by Friedman non parametric test.
- Significance was established at $p<0.05$.



Results

- **Altrenogest**, in both groups:
  - Day 0 was used as a control : concentration almost not detectable
  - Day 6 > Day 0
  - Day 18: basal concentrations
- **Progesterone**:
  - Anoestrus group: basal concentration (<0.4 ng/ml) all through the experiment
  - Diestrus group:
    - Highly variable concentrations from one mare to the other (eg 4.2 to 28 ng/ml at day 6)
    - T6 >T12.

Discussion

- P4 remained basal throughout all the experiment in the anoestrus group even with altrenogest supplementation. Therefore, a cross-reaction between assays of both molecules was not observed.
- In the diestrus group, the evolution of P4 concentrations was as expected in a non supplemented mare. The administration of altrenogest did not have any effect in the concentration of P4 during the study period.
- As expected (half-life of 10.7h +/- 4.3) altrenogest was no longer detectable 6 days after the cessation of the treatment.

Conclusion

Concentration of P4 assayed by RIA seems to be a reliable method to evaluate the functionality of the secondary CL's in mares supplemented with altrenogest. However further studies are necessary to investigate the potential effect of long-term altrenogest administration on endogenous P4.