

**EXAMPLES OF UTERINE CONTRACTILITY PATTERNS
IN EARLY POSTPARTUM COWS WITH RETAINED FETAL MEMBRANES
AS RELATED TO VARIOUS BLOOD Ca^{2+} CONCENTRATIONS:
A PRELIMINARY STUDY**

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Recent knowledge about the characteristics of mechanical activity of the early postpartum uterus in hypocalcaemic animals with retained placenta is controversial. The aim of this preliminary study was to illustrate early postpartum uterine contractility patterns in cows with normo- and various degrees of hypocalcaemia.

Intrauterine pressure (IUP) was measured with a Labview based, digital, open tip catheter system, to quantify contractility of the early postpartum uterus in dairy cows with retained fetal membranes at a large-scale Hungarian dairy farm. Fourteen to 17 hours after calving a 4-hour continuous recording took place, followed two times by further 1-hour recordings in 12-hour intervals collecting pressure signals from the previously gravid uterine horn. Contractions frequency, amplitude, duration, mean and total areas under the pressure curves were calculated. Coccygeal blood was withdrawn at the beginning of the first and at the end of all recordings and Ca^{2+} was measured on site within 30 minutes of sampling. Cows were considered hypocalcaemic with initial blood Ca^{2+} values less than 1.06 mmol/l (group 1, n=6). In a cow, milk fever had spontaneously developed and will be discussed individually. Normocalcaemic cows were involved as controls (group 2, n=5). Statistical analyses included two-sample *t*-tests, repeated measures ANOVA and correlation analysis.

Significant time-related decline occurred in all uterine contractility parameters among the 12-hour intervals recordings ($P < 0.001$ – 0.05) without showing significant group differences, except that of the 36th hour recording, when contraction frequency was significantly higher in group 1. Initial blood Ca^{2+} concentrations in group 1 ranged between 0.79–1.04 mmol/l, representing a mild hypocalcaemia, where the lowest value in one case was 0.67 mmol/l at the end of the 4-hour long IUP recording session. However, the initial blood Ca^{2+} concentration in the clinically diseased hypocalcaemic cow before any treatment was as low as 0.48 mmol/l. This cow showed typical signs of milk fever with recumbency and had a toneless uterus at that stage.

Blood Ca^{2+} concentrations remained significantly lower in group 1 at all time points ($P < 0.01$ – 0.05), as compared with group 2 but a time-dependent change could not be observed. Within the 4 consecutive hours of the first IUP sessions no consequent IUP changes were found. Blood Ca^{2+} level did not show significant correlations with any of the IUP parameters.

Mild hypocalcaemia does not seem to affect early postpartum uterine contractility pattern in cows with retained fetal membranes, however, severe hypocalcaemia with clinical symptoms was accompanied with the loss of uterine contractility.

Keywords: DAIRY COW, INTRAUTERINE PRESSURE, RETAINED FETAL MEMBRANES, HYPOCALCAEMIA