

Left-sided Displaced Abomasum in German Holstein Dairy Cows: Is there an Association with Milk Performance Traits ?

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Introduction

- Left-sided displacement of the abomasum (LDA) is a commonly observed disease in dairy cows.
- A genome-wide scan already gave evidence of five QTL for LDA.
- LDA was previously shown to be correlated with milk performance traits and length of productive life.
- The objective of this study was to assign these correlations genetically.

Methods

- Whole genome scan on paternal half-sib design to detect QTL for the traits milk yield (MY), fat yield (FY), fat percentage (FP), protein yield (PY), protein percentage (PP), somatic cell score (SCS) and length of productive life (LPL) in German Holstein cows affected by LDA.
- Material of 360 German Holstein cows and seven sires out of 14 paternal half-sib families affected by LDA.
- Multipoint non-parametric linkage analysis. The statistical analyses were performed using the MERLIN Software, version 1.1.2.
- Comparison of QTL locations for LDA and those of milk performance traits, SCS, and LPL.

Results and Discussion

- We identified seven genome-wide significant QTL, and further 30 QTL with $p < 0.05$ for milk performance traits, SCS, and LPL.
- All four QTL for LPL, two of the QTL for FY, and one of the QTL for PP overlap with those identified for LDA (Figures 1-4).
- Eight new and LDA-independent QTL were found on bovine chromosomes 7 (FP), 8 (FY, PP), 16 (FY, SCS), 18 (PP), 19 (SCS), and 27 (PP).

Conclusions

- Regarding the extent of QTL for each trait overlapping with QTL for LDA, we conclude, that LDA is correlated with LPL to a high degree.
- A lower correlation was found for LDA with FY and PP.
- The traits MY, FP, PY, and SCS do not seem to interfere significantly with the occurrence of LDA.

Figure 1. QTL for LDA, LPL, and FY on BTA1.

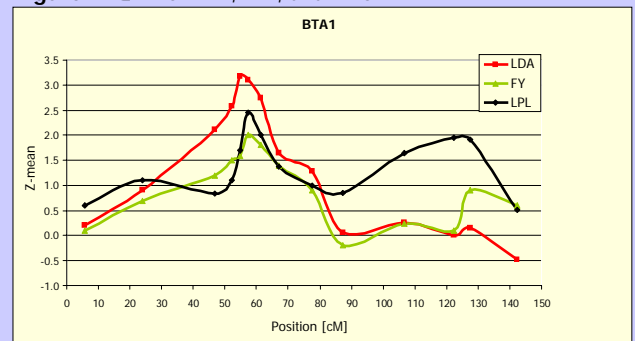


Figure 2. QTL for LDA and LPL on BTA21.

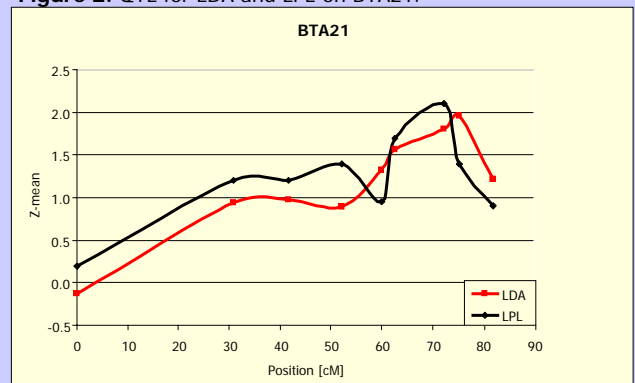


Figure 3. QTL for LDA, LPL, and PP on BTA23.

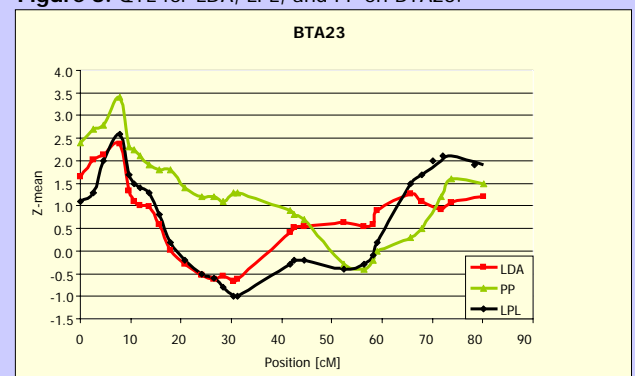


Figure 4. QTL for LDA, LPL, and FY on BTA24.

