The potential for genetic selection against Bovine Spastic Syndrome (Crampy) in Canadian Holstein dairy cattle

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Bovine spastic syndrome (Crampy) is a neuromuscular disorder characterised by the involuntary hyperextension of the hindlimb and seen when affected cattle attempt movement. The disorder typically affects cattle aged three years and older, is detrimental to cattle welfare and is increasing in prevalence among Canadian dairy herds, which is a cause for concern in the industry. The objective of this study was to estimate genetic parameters of Crampy in Canadian Holstein dairy cattle to assess the potential for genetic selection. Lactanet Canada (Guelph, ON, Canada) provided data from 678 dairy herds, where producers recorded at least one case of Crampy (1,952 cases). The average within-herd prevalence of Crampy was 4.7% and the overall prevalence of Crampy within this study was 3.6%. Crampy was evaluated as a binary phenotype using a univariate threshold animal model. The liability scale heritability was estimated to be 0.47 ± 0.039, which corresponds to a heritability of 0.085 on the observed scale. This estimated observed scale heritability is similar to a recent estimate of 0.074 reported in literature, based on a prevalence of 3.6%. These results indicate that reducing Crampy incidence through genetic selection is feasible and the trait could be considered for inclusion in Canadian national genetic evaluations.
Take home message: Crampy is a neuromuscular disorder that causes pain and stress through muscle spasms when cattle transition from a lying position. Genetic selection is a tool that could help reduce Crampy incidence in Canadian herds.

Classifying Holstein dairy cows by body condition score and the effects on dry matter intake and milk production during the late dry period and early postpartum period

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Classifying cows by body condition score (BCS) prepartum and through the course of lactation may be a predictor of reduced dry matter intake (DMI) and milk production in the early postpartum period. The aim of the study was to determine if there is a connection between BCS, DMI, milk yield and milk components. Fifty multiparous (MP) and 30 primiparous (PP) Holstein cows were BCS weekly from -4 to +10 wk relative to calving were classified as high (>3.5; H), ideal (2.75 -3.25; I), and low (<2.75; L). Milk yield and DMI were recorded daily. Milk samples were collected once weekly until d70 after calving and analyzed for components. Prepartum DMI did not differ between H, I, and L. Postpartum DMI was lowest in H, intermediate in I and highest in L (15.2, 19.9, and 21.3 kg/d; $P < 0.01$). Milk yield was lowest in H, intermediate in I, and highest in L (31.1, 36.7, and 39.9 kg/d; $P < 0.01$), but 3.5 % fat corrected milk (FCM) did not differ between H, I, and L. Milk fat content was greater in H compared to L (4.73, vs 4.11%; $P = 0.05$) and no differences were observed between H and I or L and I. Protein content was greater in H and I compared to L (3.41,and 3.19, vs. 2.98%; $P = 0.04$). Yields of milk fat and protein were similar for H, I, and L. Milk fat and protein content were similar for MP and PP cows, but MP cows had greater yields of milk fat (1.85 vs.,1.35 kg/d; $P < 0.01$) and protein (1.33 vs., 1.01 kg/d; $P < 0.01$). Results from our study showed that BCS impacts pre- and postpartum DMI and milk production responses during the early postpartum period of Holstein cows.
Take home message: BCS of Holstein cows in late gestation and early postpartum has an impact on DMI and milk production and should be considered in management decisions.