

Effect of serum calcium status at calving on survival, health, and performance of post-partum dairy cows and calves

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Introduction

Holstein dairy cows experiencing hypocalcemia at calving are more likely to experience dystocia, retain fetal membranes, and develop metritis or displaced abomasum, which affect survival, milk yield, and fertility. However, limited evidence is available in the literature about the effect of hypocalcemia (HYPO) of dams at calving on survival and health of calves. The objective was to assess the effect of clinical and subclinical HYPO (≥ 8 mg/dL) at calving on survival, health, and performance of lactating dairy cows and calves.

Materials and Methods

Prepartum dairy cows (primiparous, $n = 450$; multiparous, $n = 334$) from 1 dairy herd were monitored (close-up pen) for imminent signs of birth (appearance of amniotic sac outside the vulva) until birth. Calving ease, time of birth, single or multiple calves, calf sex, and stillbirth (born dead or died within 24 h after birth), BCS immediately after calving, and hygiene score of the perineum were recorded. All female calves were subject to the same newborn care and colostrum management. Total serum Ca (HYPO) of cows was determined within 2 h after calving. The effect of HYPO on survival (died or culled within 30 DIM), metritis, and pregnancy per AI (P/AI) for first services of lactating cows were assessed using GLIMMIX. The effect of HYPO on calf survival, failure of passive transfer (FPT; serum total proteins

< 5.5 mg/dL), and diarrhea within 10 d of age were assessed using GLIMMIX. Diarrhea was defined as a calf presenting fluid or bloody feces (scores 2-3; 0-3 scale) and $> 5\%$ dehydration or fever (> 39.5 °C).

Results

The overall prevalence of HYPO was 15%. Cows experiencing HYPO at calving had greater proportion ($P < 0.05$) of metritis (29.4%) and culling within 30 DIM (23.5%) compared to non-hypocalcemic cows (17.3% and 6.9%, respectively). The proportion of P/AI at first service was not different between HYPO (30%) and non-HYPO cows (37%; $P > 0.05$). The proportion of stillbirth and FPT was not different ($P > 0.05$) between calves born from HYPO or non-HYPO cows. However, calves born from HYPO cows had greater (49%; $P < 0.05$) proportion of diarrhea than those calves born (33.3%) from non-HYPO cows.

Significance

Dairymen, consultants, and veterinarians often trouble-shoot transition cow diseases and this process requires constant monitoring and comprehensive assessment of several events. Findings from the present study showed that HYPO at calving had significant health implications for both dams and calves. The present study was submitted for the 2014 ADSA meeting.