

SUBCLINICAL HYPOCALCEMIA IN DAIRY COWS: STUDY IN A VETERINARY PRACTICE IN THE FRENCH DEPARTEMENT OF THE ARDENNES

Marie Gillet¹, Pierre Kirsch², Patrick Besnier³, Yves Millemann¹

1 : Alfort National Veterinary School - Hospitalisations Grands Animaux - 7, avenue du Général de Gaulle - 94700 Maisons Alfort - France

2 : Clinique vétérinaire d'Auvillers, 2 Rue du Château Vert, 08260 Auvillers-les-Forges, France

3 : Obione, 239 rue Fernand Léger, 71000 Mâcon, France

Introduction

The prevalence of subclinical hypocalcemia, i.e. calcemia decrease at calving below 80 mg/L (or 85 mg/L depending on authors) without associated clinical signs, is not described to date in France. Nevertheless, this disease could have a lot of consequences for the dairy cow: it could represent an additional stress at calving, it could also increase early lactation negative energy balance, impair immune system, and make dairy cows more susceptible to postpartum health disorders. According to several American studies, subclinical hypocalcemia could affect up to 25% of primiparous cows and 50% of multiparous cows.

Objectives

To determine if subclinical hypocalcemia also exists in France, calcemia around calving was measured in 106 Holstein cows from a veterinary practice in the Ardennes.

Materials and methods

Calcemia was measured before calving, then 12 to 24 hours, 4 days and 8 days after calving, then each week if calcemia remained below 85 mg/L. Subclinical hypocalcemia threshold retained was 80 mg/L and a cow was considered in subclinical hypocalcemia if one blood sample was below 80 mg/L, without any hypocalcemia clinical sign.

Results

Among the 106 cows included in the study, 45% exhibited subclinical hypocalcemia, notably 16% of primiparous cows and 57% of multiparous cows. A significant association was evidenced between a low calcemia at calving and several postpartum diseases like metritis, mastitis, retained placenta and ketosis ($p = 0.03$ for retained placenta and $p = 0.01$ for at least one of these four diseases). A trend to develop at least one of these diseases was observed for cows with a calcemia under 83 mg/L ($p = 0.06$). A clear association between subclinical hypocalcemia and these diseases was observed from 75 mg/L of calcemia ($p = 0.03$). No significant association was emphasized between on one hand subclinical hypocalcemia and on the other hand body condition score, rumen fill score, lameness score, urinary pH (all estimated during the week before calving), magnesemia (at calving), or β -hydroxybutyrate serum concentration (determined at 4 days and 8 days postpartum). However, hypocalcemic cows produced, on average, 4.8 kg more milk in the first month of lactation when compared with other cows ($p < 0.01$). No significant difference about milk quality was found: milk protein percentage, milk fat percentage and somatic cell count were not significantly different.

Conclusions

This study is to our knowledge the first that stresses the importance of subclinical hypocalcemia in France and that underlines the association with postpartum diseases in this context.