A study on serum bone specific alkaline phosphatase activity alterations in dairy cows with white line disease

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White line disease is a major cause of lameness, particularly when cattle are housed and fed concentrates. The incidence in multiparous cows can be as high as 35%. The disease is characterized by the separation of the fibrous junction between the sole and wall on the abaxial border of the sole at the heel-sole junction. The corium becomes infected through this opening and tracks of infection may localize as an abscess or may penetrate deeper to form a retroarticular abscess. In this study, we have investigated the possible relationship between white line disease and serum bone specific alkaline phosphatase activity in dairy cows. This study was performed in an industrial dairy farm in Shahrekord, Iran. Animals were housed in a loose-stall system. White line disease diagnosis was carried out by a veterinary practitioner. Venous blood samples were collected from tail vein in evacuated tubes without any additives. Blood samples also were taken from the same number of healthy cows. Samples were centrifuged at 1800 G for 10 minutes. The serum samples were stored at −70°C until analysis, which was performed within 2 weeks of sample collection. Serum BALP activity was quantified by heat inactivation method. All values were presented as mean ± SD. Data were analyzed using Student’s t-test. There were no significant difference in serum BALP activities in cows with white line disease and normal cows, 32.33±6.83 and 26.02±4.83 respectively, p>0.05. Serum BALP is a reliable biomarker for monitoring bone tissue metabolism. Several studies have reported increased serum BALP during the skeletal disorders in animals and human. However, there is not so much information about behavior of this enzyme in cattle. Although white line disease caused an increase in serum BALP activity, it was not significant statistically when compared with healthy cows. This finding is not unexpected when considering the more penetrating nature of white line disease. It seems in cows suffering from white line disease lameness and lack of natural distribution of weight may stimulate bone tissue osteoblasts to synthesis relatively more enzyme.


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Lameness in dairy cows is second only to mastitis in terms of its detrimental effect on herd productivity. As well as productivity losses lameness severely compromises the welfare of affected animals and is probably the single most common cause of distress in dairy cattle. The annual incidence ranges between 4 and 55. Cases per 100 cows per year depending on farm location and year of study. Incidence rate is appropriate when the speed of development of new cases in a population needs to be known. We conducted a historical cohort study to investigate the incidence rate of lameness in dairy herds in Tehran province. 7067 first- and second-parity Holstein dairy cows that calved from March 21 2007 to March, 20 2008 and were followed until next calving. The annual incidence rate of lameness at this study was 20.5% (95% CI: 19.5-21.44). Herd size was an important factor in increasing – incidence rate (P< 0.05). The incidence rate of lameness in large herds was significantly higher than in small herds. The results presented herein demonstrated that the incidence rate of lameness in this area is high.

Effect of different housing systems on hock lesions and evaluation the effect of parity and milk production on these lesions

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Lameness and hock scores indicate a herd's comfort level, as lesions on the hock are result of bedding quality including type of bedding and other resting area specifications. This current study was done to evaluate the effect of housing systems and some other management criteria on bovine hock scores. The study was conducted in a dairy farm with 2900 milking cows that kept in loose stall (LS), free stall with yard (FSY) and free stall without yard (FS) systems. Eighty cows in LS, 293 in FSY and 203 in FS housing systems were selected. Lateral hock (LH) and tuber calcis (TC)