RADIOGRAPHIC FEATURE OF SOLE ULCER IN DAIRY CATTLE

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Abstract:

Bovine lameness is a major health problem in dairy industry. Lameness accounts for tremendous economic cost due to lose in milk yield, weight and fertility. Sole ulcer is one of the primary causes of lameness in most herds. Bony changes in third phalanx can be followed by radiography. In this study, the radiographic appearance of the distal phalanx in 20 dairy cows with sole ulcer was presented.

Twenty cows from six dairy farms were chosen. Initially, the conditions were assessed clinically according to severity of ulcer, heel edema, grade and duration of lameness. The radiographs were taken in 4 directions: lateromedial, dorso-palmar (plantar), lateral (interdigital cassette technique), and dorso-palmar (plantar) oblique views. Radiographic findings were scored 1-4 based on the bony changes observed. The correlation between the radiological and clinical finding were determined by correlation coefficient test.

Ten radiographic changes were regularly noted in the ulcerated claw pedal bone: perivascular sclerosis (95%), vascular dilations (80%), extensor process entheseophyte (70%), solar margin irregularities (65%), tuberculum flexorium entheseophyte and P_3 torsion (35%), solar surface zigzag new bone formation (30%), solar surface bone proliferation (25%), dorsal wall bone proliferation and solar margin bone absorption (5%). The median and range for the ulcer severity, hell edema, and lameness score were 2 (1-4), 1 (0-4), and 2.5 (2-3), respectively. Mean of milk loss was 11±3.56 kg. There were many significant correlation coefficients between the regions of the pedal bone for bone changes scores. Between the P_3 regions, the most number of significant correlation coefficient was seen in sole surface, and the greatest strength of association was detected in tuberculum flexorium. Among the clinical findings, lameness duration had the most number of significant correlation coefficient in compare to the radiographic findings detected in P_3, whereas lameness score had the least number.

In the present study many of the radiological findings were supposed to be in relation to chronic laminitis. Many significant correlations of sole surface and tuberculum flexorium bone changes score with other regions of the pedal bone can be considered as origin of the sole ulcer in this point. The significant correlation between clinical and radiological findings show that in claws with sole ulcer, the lameness score is not an appropriate factor to predict the amount of bone changes, however the lameness duration, heel edema score, and severity of ulcer appearance can be a good prediction factor of bone changes in the pedal bone.