

Serum cardiac troponin I concentrations as a diagnostic aid of pericarditis in cattle

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Cardiac troponin I (cTnI), a specific marker of myocardial damage, is widely used in man and of increasing importance in veterinary medicine. It is not commonly used in cattle practice although it might be useful as a diagnostic aid of pericarditis. Pericarditis is a common complication of traumatic reticuloperitonitis in cattle but clinical signs are non-specific and diagnostic aids are not readily available in field conditions. The aim of the study is to test the usefulness of cTnI as a blood marker of pericarditis in cattle.

Nineteen cows of various breeds with clinical signs of pericarditis were compared to a control group composed of 8 age and breed-matched cows. Serum cTnI levels were measured in all cows by a direct chemiluminescence sandwich-immunoassay using one polyclonal goat-anti cTnI and two monoclonal mouse anti-TnI anti-bodies (ADVIA Centaur TnI-Ultra-Test, Biocontrol, Ingelheim, Germany). Pericarditis was confirmed by typical echocardiographic images and/or post-mortem examination. Statistical analysis was performed using non-parametric Mann-Whitney Wilcoxon test.

Cardiac TnI levels of control group cows were below 0.04 ng/mL. Five of the pericarditis-affected cows had cTnI levels of 0.04 ng/mL or below. Fourteen pericarditis-affected cows had serum cTnI levels from 0.06 to 5.10 ng/mL. The sensitivity of the optimal cut-off value of 0.04 ng/mL was 74% (95% C.I., 54% to 93%), specificity 100% (95% C.I., 100% to 100%), positive predictive value 100% (95% C.I., 100% to 100%), negative predictive value 62% (95% C.I., 35% to 88%). The cTnI blood concentration was significantly higher ($p < 0.01$) in pericarditis-affected group of cows, compared to the control group.

The results of this study indicate that cTnI is a useful diagnostic aid for the confirmation of pericarditis in cattle. Cardiac TnI has long been considered as a specific marker of ischemic cardiomyocyte necrosis; however, more recent studies have shown that cTnI levels rise in a variety of diseases, indicating non-ischemic myocardial damage of toxic, traumatic or inflammatory origin. This latter has been proven to occur in pericarditis in man and is probably also responsible for the rise of cTnI levels in the pericarditis-affected cattle of the present study. Further studies should demonstrate the usefulness of cTnI measurement in other cardiac diseases such as endocarditis or cardiomyopathies in cattle.

Key words: heart, blood marker, cattle, diagnosis, pericarditis