

Sensitivity and Specificity of Vcheck Feline Troponin I in Cats with Heart Diseases

Objectives

To determine the optimal cut-off of troponin I concentrations to detect cats with heart diseases, using a Vcheck Feline TnI test kit manufactured by Bionote inc.

Animals

There were sixty-five normal cats and one hundred and twenty-four cats with various heart diseases involving hypertrophic cardiomyopathy (HCM), restrictive cardiomyopathy (RCM), unclassified cardiomyopathy (UCM), and transient myocardial thickening (TMT).

Methods

A retrospective case-control study. The records of all cats that have had a troponin I assay performed between January 2022 and April 2022 at clinics or veterinary schools in several countries, including Taiwan and Korea were reviewed. The optimal cut-off value of troponin I concentration was calculated using receiver operating characteristic (ROC) curve analysis. The area under the ROC curve (AUC) was used as a measure of diagnostic accuracy. The sensitivity and specificity of troponin I concentration to detect cats with heart diseases were calculated using various cut-offs.

Results

ROC analysis revealed an optimal cut-off value of 0.17 ng/ml for troponin I (AUC=0.886, $p < 0.001$, good discrimination). Using a cut-off of 0.17 ng/ml, the sensitivity and specificity of troponin I to detect heart diseases were 81.5% and 80%, respectively.

Conclusions and Clinical Importance

Measurement of serum troponin I is very useful as a screening test for heart diseases in cats using an optimal cut-off of 0.17 ng/ml, reducing false-positive results of the existing cut-off.

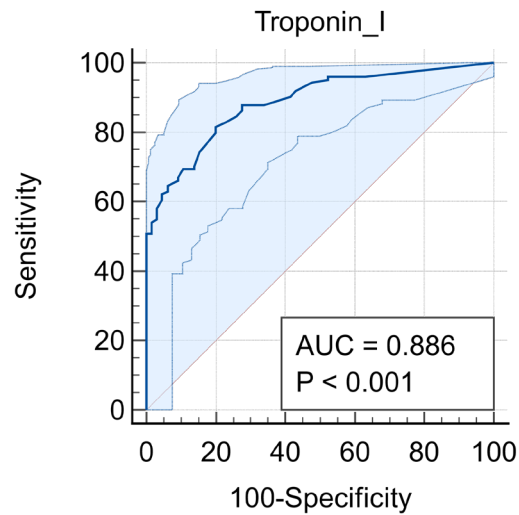


Figure 1. ROC curve of troponin I to the diagnosis of heart diseases in cats

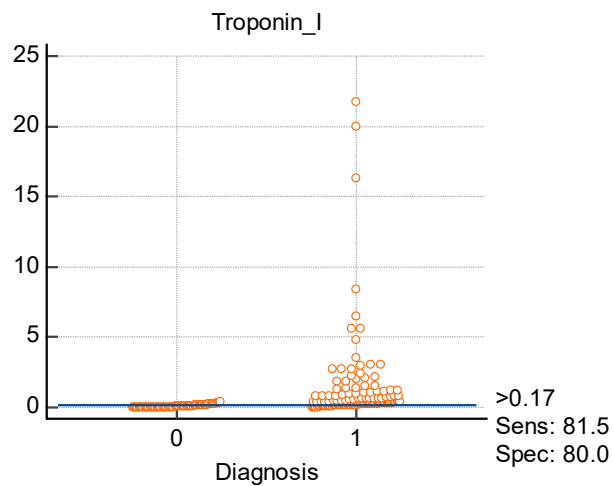


Figure 2. Troponin I concentrations (ng/ml) in normal cats and cats with heart diseases (0=normal, 1=cats with heart diseases)

Table 1. Performance characteristics for troponin I in 189 cats

Cut-off	Sensitivity (95%CI)	Specificity (95%CI)
> 0.03 ng/ml	95.97% (90.8 - 98.7)	47.69% (35.1 - 60.5)
> 0.10 ng/ml	87.90% (80.8 - 93.1)	66.15% (53.4 - 77.4)
> 0.17 ng/ml (optimal cut-off)	81.45% (73.5 - 87.9)	80.00% (68.2 - 88.9)
> 0.20 ng/ml	70.16% (61.3 - 78.0)	86.15% (75.3 - 93.5)
> 0.27 ng/ml	62.90% (53.8 - 71.4)	93.85% (85.0 - 98.3)