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## Evaluation of point-of-care thoracic ultrasound and NT-proBNP for the diagnosis of congestive heart failure in cats with respiratory distress.

Language: English J Vet Intern Med. September 2018;32(5):1530-1540. DOI: <u>10.1111/jvim.15246</u> Jessica L Ward<sup>1</sup>, Gregory R. Lisciandro<sup>2</sup>, Wendy A Ware<sup>1</sup>, Austin K Viall<sup>3</sup>, Brent D Aona<sup>4</sup>, Kari A Kurtz<sup>4</sup>, Yamir Reina Doreste<sup>4</sup>, Teresa C DeFrancesco<sup>4</sup>

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**BACKGROUND:**The diagnosis of congestive heart failure (CHF) in cats is challenging. Pointof-care (POC) thoracic ultrasound and NT-proBNP testing are emerging tools that may aid in diagnosis.

**HYPOTHESIS/OBJECTIVES:**To assess the diagnostic accuracy of POC lung ultrasound (LUS), focused cardiac ultrasound (FCU), and NT-proBNP in predicting a final diagnosis of CHF.

**ANIMALS:**Fifty-one cats in respiratory distress.

**METHODS:**Blood NT-proBNP, LUS, and FCU evaluating left atrial (LA) size and presence of pericardial effusion (PCEFF) were performed in all cats. Lung ultrasound findings including pleural effusion (PLEFF), number of B-lines, and sub-pleural abnormalities were noted. Medical records were evaluated for final diagnosis.

**RESULTS:**Thirty-three of 51 (65%) cats were diagnosed with CHF. Lung ultrasound and blood NT-proBNP were significant predictors of CHF in a multivariate model. The LUS criterion that maximized accuracy for CHF diagnosis was presence of >1 site strongly positive for B-lines (>3 B-lines per site), resulting in sensitivity of 78.8%, specificity of 83.3%, and area under the curve (AUC) of 0.833. Subjective LA enlargement was 97.0% sensitive and 100% specific for CHF (AUC 0.985). Presence of PCEFF also was 100% specific, but only 60.6% sensitive, for CHF (AUC 0.803). A positive blood NT-proBNP test was 93.9% sensitive and 72.2% specific for the diagnosis of CHF (AUC 0.831).

**CONCLUSIONS AND CLINICAL IMPORTANCE:**Point-of-care diagnostic techniques of LUS, FCU, and NT-proBNP are useful to diagnose CHF in cats with respiratory distress.

Keywords

Biomarkers; Peptide Fragments; pro-brain natriuretic peptide (1-76); Natriuretic Peptide, Brain; B-lines; biomarker; cardiac; feline; lung; point-of-care; respiratory;

