

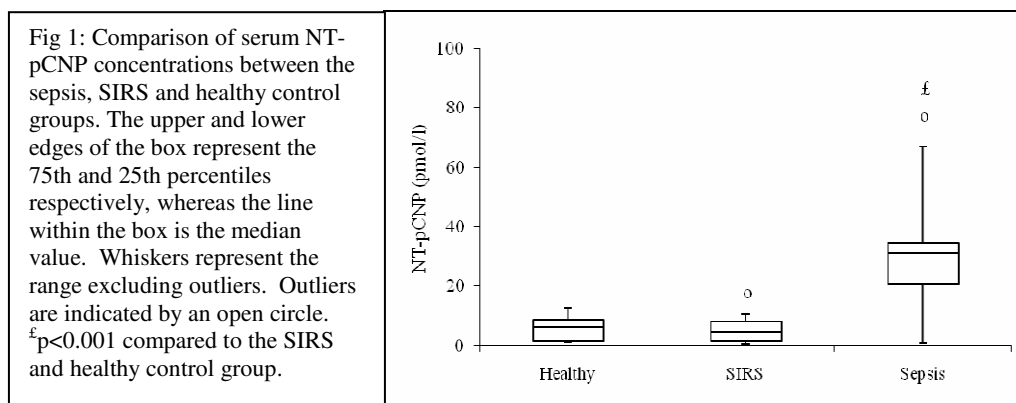
Serum NT pro-CNP concentrations in dogs with sepsis, SIRS and healthy controls

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Introduction: Rapidly differentiating sepsis from non-infectious causes of systemic inflammatory response syndrome (SIRS) in dogs is challenging. C-type natriuretic peptide (CNP) belongs to a well characterized group of natriuretic peptides and is expressed primarily by the vascular endothelium in response to stimuli including lipopolysaccharide, TNF and IL-1 β . In humans, plasma CNP concentrations are significantly greater in sepsis patients compared to healthy controls and people with other forms of illness. Thus, we wanted to investigate if the N-terminal fragment of CNP (NT-pCNP), a more stable compound with greater potential for clinical utility, could serve as a biomarker for sepsis in dogs. We hypothesized that dogs with sepsis would have significantly greater serum NT-pCNP concentrations than dogs with non-infectious SIRS or healthy controls.

Methods: Dogs that presented to the University of Missouri VMTH were enrolled in this study with client consent. Dogs were assigned to the sepsis group (n=11) if they fulfilled $\geq 2/4$ SIRS criteria (temperature ≤ 100 or ≥ 103 F; heart rate ≥ 160 bpm; respiratory rate ≥ 40 bpm; WBC $\geq 12,000$ cells/uL, $\leq 4,000$ cells/uL or $\geq 10\%$ bands) and had confirmed infection. Dogs with $\geq 2/4$ SIRS criteria without evidence of infection were assigned to the SIRS group (n=17). Dogs with unremarkable history, PE, CBC/chemistry served as controls (n=50). Serum was obtained at presentation and frozen at -80C within 1 hour. NT-proCNP assay was performed by a commercial laboratory (Veterinary Diagnostics Institute). Data were compared using an ANOVA on ranks and post-hoc Dunn's MCP with $p < 0.05$ considered significant.

Results: Dogs in the sepsis group had significantly greater serum NT-pCNP concentrations ($p < 0.001$) than dogs in the SIRS group or healthy controls (Fig 1). Using a cut off point of 10.2 pmol/l, serum NT-pCNP had a good sensitivity (82%), specificity (94%), positive predictive value (90%) and negative predictive value (89%) for differentiating sepsis from non-infectious SIRS in dogs.



Conclusions: Based on these data, serum NT-pCNP appears to be a useful diagnostic test to differentiate sepsis from non-infectious SIRS in dogs.