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NATURAL KILLER (NK) CELLS IN DOGS WITH SEPSIS

Author1FIRSTname Author1LASTname, Author2FIRSTname, Author2LASTname,

University of Clinical Pathology College of Veterinary Medicine, Asheville, North Carolina, USA

Background: Sepsis is a life-threatening manifestation of the systemic inflammatory response syndrome (SIRS) resulting from the body's response to severe infections. Study of the immunopathology of sepsis has primarily focused on identification of protein and cellular biomarkers. Recently, Natural Killer (NK) cells were identified as essential for the response to sepsis in mice and humans. NK cells have not been evaluated in septic dogs.

Objective: To characterize peripheral NK cell population numbers and phenotype in septic dogs.

Methods: Peripheral blood mononuclear cells (PBMCs) and abdominal effusate cells were isolated from dogs with naturally occurring sepsis of intrabdominal origin. NK cell (CD3⁻NKp46⁺CD5^{dim}) frequencies and phenotype were quantified by flow cytometry (FC). Healthy breed- and age-matched dogs were utilized as controls and for FC protocol optimization.

Results: Total NK cells from total live PBMCs from healthy control dogs (n=7; 2.11% +/-0.60 SEM) were not different from septic dogs (n=5; 1.47% +/-0.87). A large part of NK cells from healthy dogs expressed both intracellular interferon (IFN) γ and granzyme B (48.7 % +/-17.26) versus 39.62% (+/-19.07) in septic dogs. B cell and T cell lymphocyte populations evaluated were significantly diminished in septic dogs versus control dogs.

Conclusions: To the best of our knowledge, these preliminary results are the first to characterize NK cells in dogs with sepsis. Due to the low percentage of NK cells present in circulation and their dynamic role in disease, a larger number of septic dogs will be required to elucidate trends.