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The Centre for Blood Research Seminar Series

Wednesday, September 17th, 2014
LSC 3 - Life Sciences Centre
2350 Health Sciences Mall
12-1pm

Dr. Patricia Liaw

Associate Professor
Division of Hematology and Thromboembolism,
Department of Medicine, McMaster University

"Crosstalk between innate immunity, coagulation, and inflammation: basic and translational studies of cell-free DNA and histones in sepsis"

Sepsis is a life-threatening condition characterized by systemic activation of inflammation and coagulation pathways in response to microbial infection. Sepsis is considered by experts to be a global medical emergency with an estimated 10,000 lives lost daily. In recent years, cell-free DNA (cfDNA) has emerged as an important link between innate immunity and coagulation/ inflammation. In response to microbial stimuli, activated neutrophils release neutrophil extracellular traps (NETs), which are web-like structures containing cfDNA, histones, and antimicrobial proteins. NETs play a key role in innate immunity by binding and killing microorganisms. However, cfDNA and histones also exert procoagulant, anti-fibrinolytic, and cytotoxic effects. In septic patients, we have shown that high circulating levels of cfDNA predicts poor clinical outcome, and is associated with impaired fibrinolysis and a procoagulant state. In a murine model of sepsis, we have shown that removal of cfDNA (with DNA-degrading enzymes) improves outcome. The goals of our research program are to improve sepsis prognosis, and to explore new biological therapies for sepsis through an improved understanding of sepsis pathophysiology.

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