

Abstract - BC Kidney Days

Chronic kidney disease affects 1 in 10 Canadians with estimated costs of over \$2 billion/year. Advanced stages of the disease lead to uremia, which is accompanied by profound disturbance of the immune response comprising both impaired immune defense and enhanced inflammation. This dysregulation of the immune system is also reflected in the change of function as well as composition of the cellular immune system. Lymphocytes, monocytes, as well as natural killer cells are all crucial components of the immune system and during uremia their frequencies and counts are altered, which also results in a loss of function of these cells. Usually, the longer the patients are on dialysis, the stronger is the effect on the disturbance of the immune cells.

Using advanced flow cytometric immunophenotyping to detect high resolution cellular subpopulations based on very specific cellular surface markers and cellular characteristics, the Genome Canada Transplant Consortium at the BC Immunology Laboratory has studied these changes. Immune cell populations in a cohort of ~40 uremic patients were compared to cell populations observed in ~15 healthy controls. Key immune populations that contribute to the state of chronic activation of the immune system in uremic patients will be correlated with other factors known to impact immune cells, such as time on dialysis.

Our goal is to reveal key players in the cellular compartments that show an immunophenotype of uremia and how changes or modifications in these cellular subsets drive disease progression. With more understanding of the dysregulation observed in these disease states, we can potentially recognize the onset of the disease earlier and develop more specific and targeted therapies.