Leukemia linked T cells may drive autoimmune diseases

In a new study, researchers have shown that leukemia patients were at risk of developing autoimmune disease, such as rheumatoid arthritis or aplastic anemiam showing that immune cells, killer T cells, may be key role player. In this study they were able to show that rogue killer T cells drive autoimmunity.

It is known that people with various autoimmune diseases acquire rogue killer T cells over time, but the consistent exposure to inflammation causes immune cells to proliferate and develop mutations.

To examine blood from kids with uncommon hereditary autoimmune illnesses, the researchers employed new high-resolution screening techniques. Then, in animal models, they employed a method known as CRISPR/Cas9, a genome editing tool, to ascertain what transpires when the protein STAT3 is genetically changed. The body’s STAT3 protein is essential for many cellular processes, including the regulation of T and B cells in the immune system.

Future uses might involve more precise targeting of drugs, such the JAK inhibitors that have previously received TGA approval. The study also discovered two distinct receptor systems, or channels through which cells communicate, that are connected to stress.

If rogue killer T cells are implicated in all autoimmune

disorders, and what percentage of persons with rheumatoid arthritis and other autoimmune diseases have rogue cells and STAT3 mutations, further study is required to answer these questions.

Journal article: Masle-Farquhar, E., et al., 2022. STAT3 gain-of-function mutations connect leukemia with autoimmune disease by pathological dysregulation and accumulation of NKG2Dhi CD8+ T cells. *Immunity.*

Summary by Stefan Botha