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RHEUMATOID ARTHRITIS

Defective IL-10-producing B_{reg} cells

> B_{reg} cells, especially those expressing IL-10, are associated with arthritis

IL-10-producing regulatory B (B_{reg}) cells are defective and exist in fewer numbers in patients with rheumatoid arthritis (RA) compared with healthy individuals, according to new research. "We have found a significantly lower number of $CD19^+CD27^+IL\text{-}10^+$ B cells in blood samples from patients with RA with long-standing, moderately active or active disease as compared with healthy controls, and that IL-10-producing B_{reg} cells in RA have a significantly lower capacity to inhibit IFNγ production in autologous $CD4^+$ type 1 helper T cells," says Gabriella Sármay, corresponding author of the study.

B_{reg} cells have important roles in inflammation and autoimmunity, such as the regulation of T-cell responses, antigen presentation and cytokine production. B_{reg} cells, especially those expressing IL-10, are associated with arthritis, but their source and specific roles have remained elusive.

Previous studies have shown conflicting results regarding the involvement of IL-10-producing B_{reg} cells in RA. Sármay and colleagues found that IL-10 production could be efficiently induced in human B_{reg} cells by treatment with a combination of CpG oligodeoxynucleotide and CD40 ligand (CD40L) for 48 hours. Treating peripheral blood mononuclear cells with CpG and CD40L revealed that the percentage of IL-10-expressing cells was higher among $CD19^+CD27^+$ memory B cells than $CD19^+CD27^-$ naive B cells.

Using these stimulation conditions, the researchers found that the number of $CD19^+CD27^+IL\text{-}10^+$ B_{reg} cells was lower in the peripheral blood of patients with RA than in healthy individuals. *In vitro*, $CD19^+CD27^+IL\text{-}10^+$ B_{reg} cells from patients with RA had a lower capacity to suppress IFNγ production by $CD4^+$ T cells than the same cells from healthy individuals.

The addition of IL-21 to the stimulation conditions synergistically increased the number and the suppressive function of IL-10-producing B_{reg} cells to the same extent in patients with RA and healthy individuals. "The capacity of IL-21 to expand the IL-10-producing B_{reg} cell population in samples from patients with RA might indicate a possible therapeutic application for IL-21," explains Sármay.

"We are planning to monitor proinflammatory versus suppressive cytokine expression by IL-10-producing B_{reg} cells and regulatory plasmablasts from patients with RA receiving biological therapies to clarify if cytokine expression by these cells has diagnostic or prognostic significance," she concludes.

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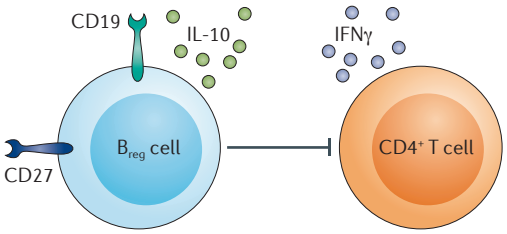

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