JAK signaling may be behind polymyalgia rheumatica

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Janus tyrosine kinase (JAK) signaling may be involved in the

pathogenesis of polymyalgia rheumatica (PMR), and tofacitinib may be an effective treatment, according to a pilot study published online June 29 in *PLOS Medicine*.

Xinlei Ma, from Zhejiang University in Hangzhou, China, and colleagues examined pathogenetic features of PMR and assessed the efficacy and safety of the JAK inhibitor tofacitinib in patients with PMR. The analysis included 11 treatment-naive PMR patients and 20 healthy controls. In a second cohort, 76 patients with PMR were randomly assigned to tofacitinib or glucocorticoid treatment in an open-label trial, with 67 completing the 24-week intervention.

The researchers found that gene expression patterns of peripheral blood mononuclear cells in patients with newly diagnosed PMR were significantly different from 20 healthy controls using RNA sequencing. The most notable pathways affected were inflammatory response and cytokine-cytokine receptor interaction, with marked increases in expression of IL6R, IL1B, IL1R1, JAK2, TLR2, TLR4, TLR8, CCR1, CR1, S100A8, S100A12, and IL17RA, which could trigger JAK signaling.

In vitro, tofacitinib suppressed the IL6R and JAK2 expression of $CD4^{+}$T cells from patients with PMR. Among a second cohort of patients with newly diagnosed PMR randomly assigned to tofacitinib or glucocorticoid, all patients in both groups had PMR disease activity scores