PSORIASIS

DYNAMIN-RELATED PROTEIN 1 IS A NOVEL BIOMARKER AND TREATMENT TARGET FOR PSORIASIS

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Introduction: Psoriasis is an immune-mediated disease characterized by epidermal hyperplasia and chronic inflammation. There is still a lack of safe and effective long-term treatment for psoriasis. Mitochondrial dynamin-related protein 1 (Drp1), the key mediator of mitochondrial dynamics, has been shown to regulate proliferation and function of T cells and mast cells. In addition, Drp1 is upregulated in lesional skin of patients with atopic dermatitis, but research about Drp1 in psoriasis is scarce.

Objective: We aimed to examine the expression of Drp1 in lesional skin of psoriatic patients and perform in vitro study to determine whether Drp1 regulate keratinocyte proliferation and inflammatory mediator secretion.

Materials and methods: Lesional skin biopsies were collected from patients with psoriasis vulgaris (n=50) and healthy controls (n=50), and processed for Drp1 immunohistochemistry and quantitative RT-PCR. Blood samples were collected and serum TNF-α levels were determined by ELISA. The immortalized HaCaT keratinocytes were used as in vitro model of psoriasis, and Drp1 siRNA knockdown was performed to assess changes in keratinocyte proliferation and inflammatory mediator release.

Results: Drp1 was strongly expressed in psoriatic lesional skin and positively correlated with PASI score and serum TNF-α level. Drp1 knockdown reduced proliferation of HaCaT keratinocytes, as well as basal secretion of TNF-α, IL-6 and CXCL8.

Conclusions: Our results provided evidence of upregulated Drp1 expression in psoriatic lesional skin, which was positively correlated with disease severity. Drp1 also regulated proliferation and inflammatory mediator production in keratinocytes. As such, Drp1 may serve as a novel biomarker and treatment target for psoriasis.