

Possible implication of vagal nerve stimulation for treating refractory psoriasis

Possível implicação da estimulação do nervo vagal para o tratamento da psoríase refratária

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Psoriasis is a chronic, relapsing, immune-based skin disease that affects an estimated 1-3% of the world's population.¹ There is no consensus regarding the exact etiology of psoriasis; among several postulated pathophysiological causes, excessive activity of T cell-mediated immune response, and T-helper (Th) in particular, is the most accepted theory. This is supported by increased levels of pro-inflammatory cytokines, especially tumor necrosis factor (TNF- α) in the serum, skin lesions and joints of these patients.^{2,3}

Although inhibitors of tumor necrosis factor (TNF- α) have been shown to be effective for treating refractory psoriasis,^{3,4} there are no therapies providing long-lasting remission for these patients.

Since Tracey⁵ proposed the so-called inflammatory reflex, the data now emerging has been elucidating and supporting the existence of a neural circuit that modulates immune response. This cholinergic anti-inflammatory pathway originates from efferent vagal fibers. It seems that inhibition of TNF- α production in the spleen following vagal nerve stimulation occurs through acetylcholine signaling via the $\alpha 7$ nicotinic acetylcholine receptor that is expressed on cytokine-producing macrophages.^{5,6} This signal is relayed through an acetylcholine-producing, memory phenotype T cell population that has been identified in mice, which is necessary for inhibition of cytokine production through vagus nerve stimulation.⁷

Immunomodulation via vagal nerve stimulation has been implicated in the treatment of other immune disorders involving the TNF- α pathway, such as inflammatory bowel disease.⁸ In this regard, we support the hypothesis that vagal nerve stimulation may prove useful for treating refractory psoriasis and psoriatic arthritis through its cholinergic anti-inflammatory effects, by means of modulating TNF- α production.⁹

This novel idea encourages interest in conducting a double-blind case-control study to investigate the possible role of vagal nerve stimulation in treating psoriasis and psoriatic arthritis.

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