

Vagal Nerve Stimulation–Modulation of the Anti–Inflammatory Response and Clinical Outcome in Psoriatic Arthritis or Ankylosing Spondylitis

C Brock¹, S E Rasmussen², A M Drewes², H J Møller³, B Brock⁴, B Deleuran², A D Farmer^{5,6}, M Pfeiffer-Jensen^{2,7}

Affiliations expand

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Abstract

Objectives: The vagal nerve exerts an essential pathway in controlling the cholinergic anti-inflammatory reflex. Thus, the study is aimed at investigating the acute effect of a noninvasive transcutaneous vagus nerve stimulation on clinical disease activity and systemic levels of inflammation in patients with psoriatic arthritis or ankylosing spondylitis.

Methods: Twenty patients with psoriatic arthritis (PsA) and 20 patients with ankylosing spondylitis (AS) were included and stimulated bilaterally with a handheld vagal nerve stimulator for 120 seconds 3 times a day for 5 consecutive days. All patients were in remission. Cardiac vagal tone, clinical scores, CRP, and cytokine levels were assessed.

Results: In PsA and AS, decreased heart rate was observed, confirming compliance. Furthermore, in PsA, a clear reduction of clinical disease activity associated with a 20% reduction in CRP was shown. In AS, a reduction in interferon- γ , interleukin- (IL-) 8, and 10 was shown. No side effects were described.

Conclusion: This open-label study provides support for an anti-inflammatory effect of transcutaneous vagus nerve stimulation in patients with psoriatic arthritis and ankylosing spondylitis. The modulated immune response and reduced disease activity and CRP-levels raise the fascinating possibility of using neuromodulation as an add-on to existing pharmacological treatments.