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Poster Presentation

A Promising Approach in Inflammation Management, Cytokine Therapy for Alzheimer's Disease

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Abstract

Alzheimer's disease (AD) is a neurodegenerative disease characterized by cognitive and other CNS impairments which is increasing worldwide and poses a major public health problem, yet no effective treatments are found and available drugs only alleviate the symptoms temporarily. Postmortem analyses on the brains of AD patients and observed lower risk of AD in NSAIDs users among other studies have presented inflammatory evidence for this problem. Further research proved an imbalance between pro (such as IL-6, IL12) and anti-inflammatory cytokines and also a prolonged activation of microglial cells. In such state, an increase in IL-1-ß, TNF-α, IL-12 and IL-6 and a decrease in TGF-ß levels plus the accumulation of amyloid beta (Aß) in the brain can be seen. Altering the cytokine levels can be a promising approach for AD treatment although it should be considered that each cytokine is a member of a body network, so we suggest target therapy by using nano carbon made capsules able to pass the blood-brain barrier coated with surface markers specified for microglial cells containing IL-4 and TGF-ß because IL-4 and TGF-ß both can promote phagocytosis of amyloid deposits , or IFN-y as a substitute for IL-4, which has the same but weaker effect than IL-4. Also using anti-IL-6 receptor(tocilizumab) accompanied with 1,2 dihydroxy vitamin D- as IL-12 production inhibitor can be useful. As well it should be noted that prolonged usage of IL-4 and TGF-ß can cause more Aß deposition, so we suggest a periodic usage cycle including a consumption period followed by a withdrawal period to prevent prolonged complications.

Keywords: Cytokine, Alzheimer's disease, Treatment, Microglial cell

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