Mindfulness lowers inflammation in cognitively impaired older adults

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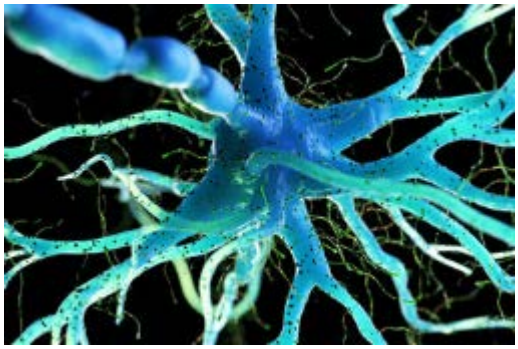

Approximately half of older adults diagnosed with mild cognitive impairment (MCI) eventually progress to develop Alzheimer's Disease. A diagnosis of MCI may provide a window of opportunity to slow, halt, or reverse further cognitive decline, and researchers are interested in novel interventions to help maintain cognitive functioning.

Mindfulness-based interventions may offer a means to potentially preserve cognitive function by lowering stress and inflammation and promoting neuroplasticity. Inflammation is associated with cognitive impairment, the arterial changes associated with vascular dementia, and the inter-neuronal plaque formation associated with Alzheimer's disease.

Ng et al. [*Translational Psychiatry*] conducted a randomized controlled pilot study investigating the effects of a mindfulness-based program on biomarkers of stress, inflammation, and neuroplasticity in older adults with MCI.

The researchers randomly assigned 55 older adults (average age = 71 years; 75% Female; 98% Singaporean Chinese) with MCI to Mindful Awareness Practice (MAP) or a health education control group. For the first three months, MAP and control participants attended 12, weekly, 1-hour sessions. For the subsequent 6-months, they attended once monthly 1 hour booster sessions.

MAP was modelled after Mindfulness-Based Elder Care, an adaptation of Mindfulness-Based Stress Reduction for older adults with impairments in attention-span and difficulty in following instructions. The mindfulness program included mindful breathing, sensory mindfulness, body scanning, and mindful movement components.

The health education control covered topics such as sleep, diet, exercise, grief, stress, social support, and the management of common chronic diseases associated with aging.

Participants provided blood and saliva sample at baseline, 3 months, and 9 months. Researchers obtained blood biomarkers of inflammation (C-reactive protein, IL-6 and IL-1β), saliva biomarkers of stress (cortisol and DHEA-S), and a blood biomarker of neuroplasticity (BDNF, a protein facilitating brain cell growth, maturation, and survival).

While attendance to class sessions was satisfactory for MAP participants (88%) and controls (89%), poor diary keeping on behalf of the participants made it difficult to assess home practice

The results showed that MAP participants had significantly lower blood C-reactive protein levels at 9 months compared to controls. Exploratory subgroup analyses showed that C-reactive protein was only significantly lower for female MAP participants and MAP participants with memory deficits.

MAP males (but not females) had significantly lower IL-6 and IL-1β levels at 3 months compared to controls, with a trend for lower levels at 9 months.

The study suggests that a structured mindfulness program adapted for older adults can lower a biomarker of inflammation (C-reactive protein) in older women with MCI and in older persons with the amnestic subtype of MCI. It may also lower levels of pro-inflammatory cytokines (IL-6 and IL-1β) in men. Both of these results are important because inflammation is linked to brain changes associated with vascular dementia and Alzheimer's Disease.

The study is limited by the small number of men enrolled in the study, which makes it difficult to interpret the lack of significance for C-reactive protein in men. Furthermore, the researchers noted that participants needed constant repetition of instructions during intervention sessions and frequent reminders to engage in home practice.

Reference:

Ng, T. K. S., Fam, J., Feng, L., Cheah, I. K. -M., Tan, C. T. -Y., Nur, F., . . . Ho, R. C. -M. (2020). Mindfulness improves inflammatory biomarker levels in older adults with mild cognitive impairment: A randomized controlled trial. Translational Psychiatry.

[Link to study]

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