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Nonpharmacological Treatment Using Leisure Activities for Patient with Dementia

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Dementia inflicts a tremendous burden on the healthcare system. Identifying protective factors or effective prevention strategies may lead to considerable benefits. One possible strategy mentioned in the literature related to participation in cognitive leisure activities. Actively participating in cognitive leisure activities during mid- or late life may be beneficial in preventing the risk of Alzheimer's disease and other dementia in the elderly. However, the evidence is currently not strong enough to direct causal relationship, further RCT studies are needed to establish the effect of leisure activities for prevention in patients with dementia.

Introduction

As the number of people aged 60 and over increases, age-related disease such as dementia and Alzheimer's disease (AD) are becoming major public problems. Dementia is a progressive debilitating syndrome that inflicts a tremendous burden of care on the family, individual caregivers, health care professionals and use of resources, especially institutional care. With its irreversible nature, existing therapeutic interventions can only help control or reduce symptoms, and slow the disease's progression. While treatment for dementia is not intended to cure the disease, identifying protective factors or effective prevention strategies would result in considerable benefits through prolonged independent quality of life expectancy, reduced social burden, and improved quality of life.¹ Prevention

strategies for dementia may be empirically grouped into 3 categories; treatment of vascular risk factors, neuroprotection and building up neuronal reserves.² Current data suggest that participation in leisure activities may lower the risk of dementia by improving neuronal reserves.³ Leisure activities may be defined as activities that individuals engage in for enjoyment or well-being that are independent of work or activities of daily living. Leisure activities can be broadly divided into either cognitive or physical activities. This review will focus on the role of cognitive activities in prevention of dementia.

Biologic mechanism and role of cognitive leisure activities

Cognitive activity is thought to provide some protection against dementia, but the mechanism and timing of these effects are unknown. Although the exact underlying biological mechanisms for why cognitive leisure activities are beneficial are yet to be established, possible explanations include strengthening neuronal connections in vulnerable brain areas, reducing chronic stress or promoting a healthy

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lifestyle. Cognitive leisure activities have been proposed to have a preventive function that can retard the onset of dementia.⁴ The repetition of cognitive skills may improve processing skills such as working memory and perceptual speed by possibly dendritic plasticity. Education and cognitive activities could lead to more neurons and synapses and therefore delay the onset of dementia despite the accumulation of disease pathology.⁵ In experiments on rats, environmental enrichment has been shown to inhibit spontaneous apoptosis, increased neurogenesis in dentate gyrus and spatial memory.⁶ This may suggest a possible link between environment/social stimulation and regenerative brain processes.

Clinical evidence of cognitive leisure activities

A longitudinal cohort incidence study containing 1,772 non-demented individuals aged 65 years or older was conducted to examine for the effects of engaging in leisure activities. Findings suggested a relationship between the degree of leisure activity and risk of developing Alzheimer's disease. Even when factors such as ethnic group, education, and occupation were controlled for, subjects with high leisure activity had 38% less risk of developing dementia.⁷ In a study by Wilson et al, persons aged 65 years and older were asked to rate frequency of participation in seven cognitive activities (e.g. reading a newspaper) and nine physical activities (e.g., walking for exercise). Results of follow-up after 4 years indicated that an increase in cognitive activity score was associated with 33% reduction in risk of incident Alzheimer's disease (HR 0.67).⁸ Similar results were found in a prospective cohort study of 469 community-dwelling older subjects aged 75 and over, which revealed that involvement in cognitive leisure activities (playing board games, reading, playing musical instrument, doing crossword puzzles, etc) is associated with a reduced risk of developing dementia.⁴ Leisure -time physical activity at midlife at least twice a week was associated with a reduced risk of dementia and AD (OR 0.48, 95% CI 0.25-0.91) and 0.38 (0.17-0.85), respectively. The protective effect of midlife activity was more pronounced in

those carrying ApoE e4 carries.⁹ Epidemiologic studies in healthy adults have consistently found the beneficial effects of leisure activities (in particular intellectual and physical activities) in terms of lowering the risk of dementia over time.¹⁰ There are a few randomized controlled trails have reported that leisure activities can slow down the rate of dementia progression. A cluster randomized open-label controlled trial by Cheng, et al. was conducted on the effects of mahjong(a.k.a. mah-jongg, a mental activity) and Tai Chi (physical activity) in nursing home. Compared with control, cognitive activity using mahjong led to a slower increase in CDR-SB and hence less dementia progression overtime.¹¹ Recently, musical therapy intervention, a kind of leisure activity, had shown effect to reduce depression in elderly person with dementia. It also delayed the deterioration of cognitive functions, particularly short-term recall function in patient with mild to moderate dementia.¹² Otherwise, several case studies and small trials suggest that art therapy engages attention, provides pleasure, and improves neuropsychiatric symptoms in patients with dementia. Other benefits include enhanced self-esteem and improved communication and reduced anxiety, agitation, and depression. Two small trails of Memories in the Making (MIM), a fine arts program designed for people with early or moderate dementia, report attention, affect, and self-esteem during art therapy sessions. A few case studies suggest that art therapy might improve behavioral symptoms outside the studio. In one patient with moderate AD and no previous artistic experience, art therapy reduced behavioral disturbances while making art and at home. In another patient with severe AD, collage and coloring on pre-drawn line drawings once or twice a week reduced neuropsychiatric symptoms during and following art therapy. A randomized controlled trial conducted in Japan reported that art therapy diminished apathy and improved patient's quality of life.¹³

Conclusions

For physicians and family members caring for patients with AD, the questions of what can be done is persistent

one. Diseases modifying therapies are limited and a cure is not immediately forthcoming. With long clinical course of dementia, non pharmacological treatments including leisure activities that alleviate neuropsychiatric symptoms and improve quality of life and caregiver distress would be helpful.

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