EDITORIAL

NONPHARMACOLOGICAL TREATMENT OF COGNITIVE IMPAIRMENT

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“Memory is a passion no less powerful or pervasive than love”

~Ellie Wiesel
All Rivers Run to the Sea

Drugs available to treat dementia produce small improvements in cognition, but the clinical significance of these effects are questionable (1-3). In addition, they produce a variety of side effects including anorexia, weight loss, diarrhea, nausea, abdominal pain, dizziness, bradycardia, syncope and weakness. Thus, while dementia has traditionally been conceptualized from a medical model (4), it has become clear that dementia prognosis is strongly related to the environment and interpersonal relationships (5). Kitwood (5) identified 6 central needs for a person with dementia, viz., love, comfort, attachment, inclusion, occupation and identity. This has led to a variety of lifestyle and non-pharmacological interventions to manage cognitive impairment and behavioral and psychological symptoms of dementia (BPSD) (Table 1) (6).

Table 1
Lifestyle and nonpharmacological strategies to treat dementia

Cognition	Behavioral and Psychological Symptoms
Lifestyle:	Music Therapy
Exercise	Behavioral Management Therapies
Mediterranean Diet	Caregiver Based Interventions
Extra Virgin Olive Oil	Staff Training in Communication Skills
Socialization	Person Centered Care
Prevent Cardiovascular Disease	Environment-based Intervention
Computer Games	Animal Assisted/Robotic Therapy
	Exercise
Behavioral:	Snoezelen Room
Montessori Activities for Seniors	Namaste Room
SAIDO	STAR (Staff Training in Assisted Living
Reminiscence Therapy	Residences)
Reality Orientation	
Cognitive Retention Therapy	
Cognitive Stimulation Therapy	

Lifestyle Interventions

A recent meta-analysis found that exercise therapy improved cognition with aerobic exercise performing better than resistance exercise (7). Other meta-analyses have failed to find similar effects, though this outcome is supported by animal studies.

There is strong epidemiological evidence that a Mediterranean diet enhances cognition and slows the development of dementia (8-10). In an animal model of Alzheimer’s disease, the SAMP8, extra virgin olive oil decreased oxidative damage and reversed memory problems (11). Other polyphenol containing foods also reverse memory problems (12, 13). The PREDIMED study showed that extra virgin olive oil, and, to a lesser extent, mixed nuts, improved cognition (14, 15). The MIND diet (a combination of a Mediterranean and the DASH diet) lowered the risk of dementia by 54% (16). While fish oils improve memory in the SAMP8 mice (17), the available data in humans has failed to show memory improvement (18, 19).

The FINGER study was a multidomain intervention in older persons with high cardiovascular risk factors utilizing a Mediterranean diet, exercise, cognitive training and treatment of vascular risk factors (20). The study was conducted over 2 years. It showed a statistically significant improvement in a comprehensive neuropsychological test battery in the intervention group. This is in keeping with the recent decline in dementia in the United States, suggesting that cardiovascular disease prevention decreases the development of dementia (21). Based on postmortem studies at least 33% of dementia is due to vascular lesions (22).

Cognition Therapy for Dementia

The Cochrane Reviews found that reminiscence therapy had a small improvement in cognition and in quality of life (23). A particularly enjoyable form of reminiscence therapy has been sports reminiscence, such as football in Scotland (24) and baseball in St. Louis (25).

Cognitive Stimulation Therapy (CST) is an evidence-based, structured group intervention that was developed at the University College of London (www.cstdementia.com). It has 18 key principles and a set of manuals to allow it to be reproduced with high fidelity. It is conducted twice a week for seven weeks and can be followed by Maintenance CST for up

to one year. The original CST trial was carried out in 23 centers and showed significant improvement in Mini Mental Status Examination (MMSE), Alzheimer's Disease Assessment Scale (ADAS), and quality of life (26). The number needed to treat to improve cognition was 6. Recently, a metaanalysis found that cognitive stimulation significantly improved scores on MMSE, ADAS-Cognitive Subscale and Quality of Life (27). It is more cost-effective than donepezil (28). It is seen by participants as being emotionally positive and that it produces changes in everyday life (29). Maintenance CST appears to maintain the cognitive improvement (30). The National Institute for Health and Clinical Excellence (NICE) has stated that "People with mild/moderate dementia of all types should be given the opportunity to participate in a structured group cognitive stimulation program.....irrespective of any anti-dementia drug received..." It has been demonstrated that it can be introduced into non-academic community settings with positive outcomes (31, 32).

SAIDO, a Japanese version of CST, has been demonstrated to successfully improve cognition in Japan (33).

Conclusion

Available data confirms that lifestyle and cognitive therapies can improve memory at least as well as drug therapy (34, 35). There is a need for controlled community-based studies to demonstrate that it can be successfully instituted in a variety of community settings with reasonable fidelity. While not reviewed in this editorial it is clear that nonpharmacological interventions of a variety of types work (including repetitive transcranial magnetic stimulation) much better than antipsychotic drugs (36-40).

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