Article summary by Pamela Cines, MD

Increasing Walking and Bright Light Exposure to Improve Sleep in Community-Dwelling Persons with Alzheimer’s Disease: Results of a Randomized, Controlled Trial

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1-Background:

a. Sleep disturbances are a source of discomfort for patients with Alzheimer’s Disease

b. Sleep disturbance in the patient with Alzheimer’s can be a large part of caregiver burden and caregiver fatigue

c. Sleep disturbances are one of the important reasons that patients with dementia are institutionalized

d. Sleep problems are difficult to treat. Sedatives, antidepressant, and antipsychotics have all been used in an attempt to improve sleep in patients with Alzheimer’s, but it is not clear that these have had a beneficial effect

e. Most of the work on sleep and dementia has been conducted in nursing homes. This study is a follow up to a small 2005 study of 36 patient/caregiver pairs in the community who were randomized to a sleep hygiene program including light and light box exposure, daily exercise, and individualized sleep education programs versus controls who were given literature about sleep and dementia. In this small study, patients in the intervention group had sustained improvements in sleep efficacy as measured by actigraphy.

2-Aim and Hypothesis

a. Randomized, controlled trial to look at efficacy of walking, light exposure, and combination of light and walking with sleep education for improving sleep in patients with Alzheimer’s Disease

b. Hypothesis was that any form of active treatment would show an improvement over control at a 2 month post-test and a 6 month follow-up

3-Methods

a. One hundred thirty two patients and their caregivers were recruited from the community and from Group Health Cooperative (a nonprofit integrated health plan in state of Washington).

b. Eligible participants had 2 or more problems on the Sleep Disorders Inventory occurring several times/week, probable or possible Alzheimer’s Dementia according to GHC records or confirmation by pcp, no h/o primary sleep disorder, no major visual disturbance, ability to walk across a room, a caregiver who lives with patient and can monitor sleep habits and institute a treatment plan, a favorable score on the sleep apnea subset of sleep questionnaire indicating that patient does not have this diagnosis, agreement not to make any changes to sedating medications during 2 months of study period. After being included based on these criteria, pts wore wrist actigraphs for one week. Those whose waking time averaged greater than an hour per night were invited to participate.
c. Pts randomized into 4 groups: light, walking, combination light and walking with guided sleep education, control. Caregivers kept daily logs of sleep times as well as adherence to assigned intervention

1- pts in light group were instructed on use of a light box to be used for 1 hour/day within 2 hours of normal bedtime. After first training session, trainers returned at weeks 2 and 8 to help solve problems in implementing use of light box. Trainers also called during weeks 4 and 6 to follow up on any issues.

2- for pts in walking group an individualized walking program was developed with the aim of walking for 30 continuous minutes each day. For frail patients, goals were adjusted. Trainers returned at weeks 2 and 8 to trouble shoot for any problems implementing walking program and also called to answer questions during weeks 4 and 6.

3- In combination group, patients were instructed on walking and use of light boxes and also had six in-home visits with a trainer who helped come up with an individualized sleep plan to minimize wakenings and establish consistent bedtimes and waking times.

4- Control group received a handout that all participants received regarding sleep changes in aging and dementia. They also had 3 visits from trainers during which they recvd dementia care support.

5- Assessments were conducted by interviewers blinded to group assignment

4-Results

a. Two primary outcomes looked at

1- Actigraphic measure of total night wake time

2- Caregiver report of nighttime behavioral disturbances

b. Secondary outcomes were comparisons between groups

c. Figure 1. Flow of patients thru trial

d. Table 2. Baseline characteristics of subjects and caregiver

e. Table 3.

1-Participants in each of the active treatment groups had an improvement in actigraphic wake time

2-No significant changes on Sleep Disorders Inventory

3- Sleep improvement not maintained at 6 month follow-up

f. Table 4.

1- Study was initially powered to look at differences between treatment groups. High level of attrition before 2 month posttest diminished power of the study to look for these differences.

2- No significant differences between active treatment groups

3- Trend toward decreased awakenings in walking group
5-Authors’ Conclusions

a. It is possible for various types of caregivers of community-dwelling patients with dementia to carry out walking and light exposure programs that increase sleep time for patients with varying degrees of dementia, varying severity of sleep disturbance

b. Better adherence to each program produced better results

6- Limitations

1- High drop-out rate limited ability to detect differences between treatment groups

2- Without polysomnography, not clear if some participants had underlying sleep disorders

3- For the active treatment group in which light, walking, and a sleep program was implemented, the sleep programs were very individualized, limiting the typically regimented nature of a RCT. This is also the case in that some of the subjects assigned to the walking group were more robust than others and the walking programs varied

4- Timing of use of light box? Could this be more effective if used in the morning or afternoon?

7-Will this change your practice?

Impractical to expect such intense training on use of light and instructions on walking. Information of sleep changes in aging and dementia can be addressed fairly easily with PCP as long as this in on our radar. I would always recommend as much physical activity and daytime light exposure as possible.