Melatonin Supplementation Reduces Transition from Mild Cognitive Impairment to Alzheimer's Disease

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Over the years, experimental studies have shown that melatonin blocks the build-up of beta-amyloid plaque (a hallmark feature of Alzheimer's disease). (1) In concert with this, human prospective studies have also shown that Alzheimer's disease patients tend to have lower melatonin levels than non-Alzheimer's patients. (2) These preliminary studies lead to the development of a number of recent clinical trials that have tested the ability of melatonin supplementation to reduce the development of Alzheimer's disease in high-risk patients who had been diagnosed with mild cognitive impairment. Mild cognitive impairment is the stage of memory loss and functional brain capacity decline that is the forerunner to the development of full-blown Alzheimer's disease. (3)

Mild Cognitive Impairment

Patients with mild cognitive impairment are diagnosed based on the following signs and symptoms:

A greater tendency than normal for them to:

- forget things
- forget important events such as appointments or social engagements.
- lose their train of thought or the thread of conversations, books or movies they are reading or viewing
- feel increasingly overwhelmed by making decisions, planning steps to accomplish a task or interpreting instructions.
- have trouble finding their way around familiar environments.
- be more impulsive or show increasingly poor judgment.
- their family and friends notice any of these changes (3)

Melatonin Supplementation Studies

In recent years the landmark studies by Furio et al, and Peterson et al, showed that patients with mild cognitive impairment (MCI), who were administered melatonin supplementation, had significantly less progression to Alzheimer's disease over time than MCI patients who were not taking melatonin supplements. In these studies the dosage range was 3-9 mg, taken one hour before bed time. (4, 5) In addition, two other preliminary studies showed improved cognitive performance in MCI patients who were using melatonin dosages as low as 1mg and as high as 6 mg. (3,6)

This research is very compelling when you consider the fact that melatonin levels begin to decline during our teenage years, and by age 40 have reached a low enough level to often trigger sleep disturbance problems. The pineal gland in the brain normally secretes melatonin in the late evening hours (darkness is a trigger), which helps to induce sleep. As such, lower age-related melatonin levels in the brain are a major cause of insomnia and interrupted sleep problems as we get older. Many people take melatonin supplementation, as a natural sleep-aid, because it helps them fall asleep. However, melatonin is also a powerful brain antioxidant, and its ability to quench free radicals in this role, and suppress the build-up of beta-amyloid plaque are the ways in which it has been shown, in experimental studies, to inhibit the steps that lead to Alzheimer's disease. The recent clinical trials showing that melatonin helps prevent Alzheimer's disease in high-risk patients is of great significance when you consider that MCI affects a large percentage of the population over 60 years of age, (3)

Mild Cognitive Impairment, Brain Atrophy and Alzheimer's disease

We have known for many years that the brain of elderly people shows atrophy. More recently we have realized that atrophy occurs even in cognitively healthy subjects, but is much more accelerated in patients with Alzheimer's disease. Studies show the following:

- An intermediate rate of atrophy is found in people with mild MCI
- People over 60 yrs without MCI normally have brain shrinkage of approximately **0.5 %** per year.
- Individuals showing MCI normally show a brain atrophy rate that is twice as fast, at approximately 1% per year
- Alzheimer's patients can lose 2.5 % of brain volume per year

The Oxford project showed that the only proven method, thus far, to slow brain atrophy after age 60, is with B-vitamin supplementation. (7) In light of recent clinical trials, it may also be useful to include melatonin supplementation for older patients, especially in cases where mild cognitive impairment is already present.

Drugs versus Supplements for Sleep Disorders

With the recent finding (BMJ Open – Feb 2012 – reference 8) that prescription sleeping medications are linked to an increased risk of cancer, heart disease, premature death and other health conditions, I have argued that taking melatonin in a supplement that also includes 5-HTP, GABA and Bacopa Monnieri, is a much safer and effective strategy to remedy age-related insomnia, and sleep disturbances. With recent studies showing that melatonin supplementation may be an important measure to help prevent Alzheimer's disease and stabilize cases of MCI, the argument in favor of using a melatonin supplement as a sleep aid, instead of prescription and over-the-counter sleeping pills, becomes even more compelling.

Melatonin Dosage

The way that I suggest you use melatonin supplementation to improve sleep quality in patients who you feel would benefit from this intervention is as follows:

The patient should begin by taking no more than 500 mcg of melatonin, one hour before bedtime. If that is not sufficient to attain the desired effect, then increase the dosage to 1 mg (1000 mcg). Slowly increase the dosage by 500 mcg increments until you find the dosage that provides the patient with a good night's sleep and allows them to awaken feeling refreshed the next morning. Note that too much melatonin can generate vivid dreams that may awaken the patient, or leave them feeling drowsy in the morning. For individuals with MCI, higher dosages may be more appropriate (3-9 mg) to prevent the transition to Alzheimer's disease, as noted above. For a dosage higher than 3 mg, physician monitoring (liver and kidney function tests) on a periodic basis is recommended.

For more information on this or other related topics, please visit:

http://www.meschinohealth.com

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