Bright Light Treatment May Improve Non-Seasonal Depressive Symptoms

Deborah Brauser, Medscape Medical News, January 21, 2011

Bright light treatment (BLT) improves mood and sleep efficiency in elderly patients with nonseasonal major depressive disorder (MDD), according to a new study from Dutch researchers.

In a double-blind randomized controlled trial (RCT), patients who underwent 3 weeks of pale blue BLT showed significantly improved depression scores and sleep patterns compared with those who received placebo (through dim red light) and an 81% difference in increased melatonin levels. In addition, sleep and depressive symptom improvements continued 3 weeks after treatment stopped, along with an attenuation of cortisol hyper-excretion.

The study's takeaway for clinicians is that BLT "is indeed a treatment option for non-seasonal or normal depression in older adults," lead study author Ritsaert Lieverse, MD, Department of Psychiatry at VU University Medical Center and GGZ in Geest in Amsterdam, the Netherlands, told *Medscape Medical News.*

"We were surprised by the magnitude of the clinical effects, which were comparable with that of antidepressants, by the consistency of the effect among all depression rating scales, that the effect continued after discontinuation of the trial, and that all biological measures improved during the treatment — especially the normalization of pretreatment cortisol hyper-secretion," said Dr. Lieverse. According to investigators this is the first RCT "of sufficient sample size" to evaluate BLT in this patient population.

"[It] may provide a viable alternative for patients who refuse, resist, or do not tolerate antidepressant treatment," they add. The study is published in the January issue of *Archives of General Psychiatry.*

Previous Research Inconclusive

MDD in the elderly is often "accompanied by circadian rhythm disturbances associated with impaired functioning of the suprachiasmatic nucleus, the biological clock of the brain," investigators write. They add that this population is known for less frequent exposure to bright environmental light. According to the study, BLT "targets depression-associated neurotransmitter systems (serotonin, noradrenalin, and dopamine) and targets the same brain structures as antidepressant drug treatments." Although previous research has shown BLT is effective for seasonal affective disorder, studies that focused on this treatment for non-seasonal MDD have been inconclusive.

To determine whether stimulating the suprachiasmatic nucleus with BLT would improve both mood and sleep in elderly individuals with non-seasonal MDD, researchers studied 89 subjects older than 60 years who were diagnosed as having MDD. Participants were randomized to undergo 1 hour daily of either early-morning in-home BLT (n = 42; 67%

female; mean age, 69.7 years) or treatment with dim red light (placebo group; n = 47; 64% female; mean age, 69 years) for 3 weeks. Both treatments used light boxes with a colored single-layer filter wrapped around the fluorescent tubes. The BLT had an exposure of approximately 7500 lux, whereas the placebo had approximately 50 lux.

All patients were assessed for improvement in baseline Hamilton Scale for Depression (HAM-D) scores at the end of the treatment period and 3 weeks later. In addition, 24-hour urinary free cortisol levels were assessed for overall daily cortisol production. Also measured were saliva cortisol and saliva melatonin levels and sleep parameters through use of a wrist-worn recorder and diaries.

Significant Improvement

Results showed significantly greater improvement in HAM-D scores for subjects in the BLT group compared with those in the placebo group from baseline to end of treatment (group difference, 7%; $P = .03$) and to the 3-week after treatment point (difference, 21%; $P = .001$). Although 33% of the BLT patients and 38% of the placebo patients also used antidepressants during the treatment period, this did not affect their HAM-D scores.

Compared with the placebo group, "get-up time after final awakening" was significantly more advanced at the end of treatment for those in the BLT group (difference, 7%; $P < .001$), along with significantly greater increases in sleep efficiency (difference, 2%; $P = .01$) and "the steepness of the rise in evening melatonin levels" (difference, 81%; $P = .03$). The get-up time was still significantly more advanced than the placebo group (difference, 3%; $P = .001$) 3 weeks after treatment ended.

Although the decreased 24-hour urinary free cortisol level was not significantly different between groups at the end of treatment, it was significant for the BLT group at the after-treatment time point (difference, 37%; $P = .003$). At the same measure point, the evening salivary cortisol level in the BLT group was decreased by 34% vs a 7% increase in the placebo group ($P = .02$).

Overall, the findings suggest "rather acute effects on melatonin levels and sleep, whereas effects on clinical improvement in depression symptoms and cortisol hyperactivity are initiated by the treatment but take longer to develop fully. "These results support inclusion of chronotherapeutic strategies in the treatment options for non-seasonal MDD in elderly patients," they add. "The next step will be to elaborate our findings with more and longer trials for more clinical indications and to study [BLT] within clinical treatment guidelines," said Dr. Lieverse.

Important Preliminary Information

"This was an interesting, well-done study that gives us some important preliminary information about the use of light therapy in older patients," Raymond W. Lam, MD, professor of psychiatry at the University of British Columbia (UBC) and head of the Mood and Anxiety Disorders Program at the UBC Hospital in Vancouver, Canada, told

Medscape Medical News. He noted that there have been several previous RCTs done with bright lights.

"What's novel about this study is that it had a reasonable size in terms of looking at this particular issue. There have been many placebo-controlled studies looking at this but not necessarily in older patients and not necessarily in non-seasonal major depression," he said.

Dr. Lam, who was not involved with this study, has himself been involved with several BLT trials, including one in 2004 that found, as reported then by *Medscape Medical News*, that light therapy was as safe and effective as the selective serotonin reuptake inhibitor fluoxetine for treating seasonal affective disorder. He reported that his investigative team is currently working on a large trial focusing on BLT as an added treatment to fluoxetine for non-seasonal MDD.

"Those of us who are working in the field are now very interested in the use of [BLT] for non-seasonal types of depression," he explained. "It's important to also look at this for older patients because we know that they are generally tough to treat, that their responses to antidepressants may not be as good as for younger people, and that they are sensitive to a lot of side effects of medication. So it's particularly important to look for nondrug treatments for them." He reported that there is also currently a lot of interest in BLT in terms of its biological effects.

"They did find some evidence that the light might work by strengthening the biological clock in these patients. That's the area of contention right now in depression. We know it has effects on the biological clock. What we're not sure of is whether those are responsible for the antidepressant responses. So there is quite a bit of controversy in regards to that." Concerns with this study, said Dr. Lam, include that it looked at only 3 weeks of treatment when "8 weeks is the standard treatment period" and has a small sample size.

"Even though it's very reasonable for a light therapy study, it's not particularly large for a depression study compared to, for example, an antidepressant or even some psychotherapy studies. So I think we need to be a little careful about making conclusions beyond the relatively short treatment duration used," he explained. Dr. Lam also voiced surprise that the beneficial effects "seemed to persist" when the treatment was stopped.

"Other studies have not necessarily suggested that for [BLT] and it's certainly not necessarily seen in other treatments for depression. That in particular is a finding that needs to be replicated before we can be confident about it," he concluded.

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the advisory boards for Bristol Myers Squibb, the Common Drug Review, Merck, Takeda, AstraZeneca, Lundbeck, Eli Lilly, Servier, and Litebook Company Ltd; and receiving research funds through UBC from AstraZeneca, Brain Cells Inc, Lundbeck, and Litebook Company Ltd.

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