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Near-Infrared Light Therapy Shines as Possible Depression Treatment

*Massachusetts General Hospital research suggests that this painless therapy may help with traumatic brain injury, too.*

Jay Roland-January 31, 2018

Exposure to a light that isn’t visible to the naked eye may be the next breakthrough treatment for depression. Massachusetts General Hospital psychiatrist Paolo Cassano, MD, PhD, and other researchers at MGH and elsewhere, are seeing encouraging results in studies of near-infrared light—the light closest on the spectrum to visible light.

In this new type of depression therapy, a wand emitting near-infrared light is shined on the forehead—sessions are usually 30 minutes long, twice a week. Though only a small percentage of light reaches the brain, it’s enough to reach cells in the prefrontal cortex. Dr. Cassano explains that in someone with depression the prefrontal cortex can be less “connected” to parts of the brain that affect emotion, such as the amygdala. Cellular activity in these areas of someone with depression can overwhelm less-active cells in the prefrontal cortex. Normally, the prefrontal cortex helps control excessive activity in the amygdala and the brain’s other emotion centers.

But infrared light can fuel the mitochondria, a cell’s powerhouse. “The cells become energized and they’re more likely to function properly,” Dr. Cassano says. “They re-establish the connectivity. Shining the near-infrared light might ‘wake them up,’ to speak, and improve communication between the prefrontal cortex with the deeper areas associated with emotion.”

**A Different Type of Light Therapy**

You may be familiar with the type of bright light therapy used to treat seasonal affective disorder (SAD), a type of depression that usually lingers through the winter months, when gray skies deprive us of healthy, mood-boosting sunlight. A person with SAD spends about half an hour a day near a light box that mimics outdoor light. The light enters the brain through the retina in the eye, and affects brain chemicals that control sleep and mood.

Near-infrared light enters the brain through the forehead. Dr. Cassano’s earlier research suggests that near-infrared light may be effective in treating traumatic brain injury.

**Encouraging Research**

Dr. Cassano and his colleagues recently completed their second study of near-infrared light therapy for depression and have started their third separate study. The studies have been small—there were 21 subjects in the second study—but Dr. Cassano says the average improvement of depressive symptoms is very promising.

The research shows that near-infrared therapy helps improve a person’s response to other depression treatments, such as antidepressant medications. Dr. Cassano envisions this type of light therapy being approved by the FDA for clinical use in the next few years. It could be one more tool available to therapists either as a stand-alone treatment or as a complement to other therapies.

There appear to be no physical or cognitive side effects, and the therapy itself is painless and non-invasive. Some near-infrared products are already on the market, but Dr. Cassano warns against using any type of light therapy—including SAD light boxes and near-infrared light—without the supervision of your physician.