

Light Therapy as a treatment for sexual dysfunction; focus on testosterone levels

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Seasonal trends have shown to have a significant influence on sexual function and the pineal gland plays a key role in the neuroendocrine control of sexual activity. The retinohypothalamic tract carries information on the cycles light/dark to the suprachiasmatic nucleus of the hypothalamus that projects to the pineal gland and inhibits the production of melatonin [1]. When these impulses stop (at night, when light no longer stimulates the hypothalamus), pineal inhibition ceases and melatonin is released. Melatonin increases the secretion of prolactin, which contributes to sexual dysfunction. We aimed at demonstrating that inhibition of the pineal gland activity through a light treatment may favorably affect sexual function reducing plasma levels of melatonin.

We recruited a sample of 38 male subjects among outpatients referred to the Urology Department of the University of Siena on the basis of a diagnosis of primary hypoactive sexual desire disorder (HSDD) and sexual arousal disorder (SAD). Participants were randomly assigned to active light treatment (ALT) or placebo light treatment (L-PBO) and assessed before and after 2 weeks of treatment ALT/L-PBO via the Structured Clinical Interview for DSM-IV sexual disorders (SCID-d) and self-administered rating scale of the level of sexual satisfaction (1 to 10); testosterone levels were also assessed at baseline and after two weeks of treatment through blood samples. The ALT consisted of daily exposure to a white fluorescent light box (Super-Lite 3S), fitted with an ultraviolet filter and rated at 10,000 lx at a distance of 1 meter from screen to cornea for 30 min as soon as possible after awakening, between 7.00 a.m. and 8.00 a.m. The L-PBO was an identical light box fitted with a neutral density gel filter to reduce light exposure to 100 lx. The Mann-Whitney test for nonparametric data has been applied to analyze the differences between the ALT and L-PBO group at the time of recruitment and after 2 weeks of therapy. At baseline the two groups were clinically comparable; results after 2 weeks of therapy showed a significant improvement in sexual satisfaction in the group treated with ALT approximately 3 times higher than the group that received the placebo ($p < 0.05$), while no significant improvement was observed in the group L-PBO. Testosterone levels (range 2.7-10.9 ng/ml) at baseline were 2.1 +/- 1.3 ng/ml in ALT and 2.3 +/- 0.6 ng/ml in L-PBO group; after two weeks they raised at 3.6 +/- 1.1 ng/ml in ALT group ($p < 0,05$) while no significant difference emerged in L-PBO group.

Our results suggest that the level of sexual satisfaction at baseline was roughly comparable in the two groups, with no statistically significant differences. After 2 weeks of treatment the group that received ALT showed a significant improvement in sexual function with respect to baseline level, about 3 times higher than the group that received L-PBO. This difference could also be attributed to increased levels of testosterone in subjects treated with active light therapy.

References

- [1] Bossini L, Caterini C, Koukouna D, Casolaro I, Roggi M, Di Volo S, Fagnoli F, Ponchiatti R, Benbow J, Fagiolini A. Light therapy as a treatment for sexual dysfunctions--beyond a pilot study. *Psychiatr Pol.* 2013 Nov-Dec;47(6):1113-22.
- [2] Bossini L, Fagiolini A, Valdagno M, Roggi M, Tallis V, Trovarelli S, Ponchiatti R, Castrogiovanni P. Light therapy as a treatment for sexual dysfunctions. *Psychother Psychosom.* 2009;78(2):127-8. doi: 10.1159/000203119. Epub 2009 Feb 18.

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