Effects of Light Therapy on Suicidal Ideation in Patients With Winter Depression

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Background: Recent case reports suggest that some patients with seasonal affective disorder (SAD) may become suicidal after initial treatment with light therapy. This retrospective study sought to determine the effects of light therapy on suicidal ideation in patients with SAD.

Method: The cases of 191 depressed patients with SAD by DSM-III-R or DSM-IV criteria treated with an open trial of morning light therapy using cool white fluorescent light boxes (2500 lux for 2 hours per day or 10,000 lux for 30 minutes per day) for 2 weeks were retrospectively analyzed. Patients had been rated before and after treatment with the expanded Hamilton Depression Rating Scale (SIGH-SAD).

Results: Sixty-seven percent of patients were rated as clinical responders to light therapy. There was significant improvement in the SIGH-SAD suicide item score, with 45% of patients showing a reduction in score. Only 6 patients (3%) had slight worsening of suicide scores. No patients attempted suicide or discontinued light therapy because of emergent suicidality.

Conclusion: Light therapy relieves suicidal ideation in patients with SAD consistent with overall clinical improvement. Emergence of suicidal ideas or behaviors is very uncommon with light therapy.

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Bright light therapy is recognized as an effective treatment for seasonal affective disorder (SAD), or winter depression.[1–4] Recent large-sample, randomized, placebo-controlled studies have confirmed the efficacy of light therapy using fluorescent light boxes.[5,6] Side effects of light therapy are considered to be generally mild.[7,8] Several recent case reports, however, have suggested that some patients with winter depression may experience suicidal ideation and behaviors after using light therapy.[9,10] The objective of this study was to examine the emergence of suicidal ideation during a standard protocol for light therapy in a clinical sample of patients with winter depression.

METHOD

Patients were seen at a specialized Seasonal Mood Disorders Clinic at a university teaching hospital (Vancouver, British Columbia, Canada). The majority of patient referrals came from family physicians, but a small number of patients were recruited by advertisements for clinical studies. Patients were assessed by experienced, board-certified psychiatrists, and clinical diagnoses were assigned using DSM-III-R or DSM-IV criteria. Clinical information was obtained for each patient using a checklist (available on request), and retrospective report of these chart reviews was approved by our university ethics board.

Patients meeting DSM-III-R or DSM-IV criteria for seasonal pattern of recurrent major depressive episodes (equivalent to SAD) were treated during winter with a standard light therapy protocol. Light treatment was administered using cool white fluorescent light boxes fitted with ultraviolet wavelength filters. Patients were instructed on the use of the light box in the clinic, but used the light box at home. The initial protocol involved use of a 2500-lux light box for 2 hours in the early morning on rising (usually between 6:00 a.m. and 8:00 a.m.).[2,11] The newer protocol used a 10,000-lux light box for 30 minutes in the early morning (usually between 7:00 a.m. and 9:00 a.m.).[6,12,13] Patients were reassessed after 2 weeks of treatment, and compliance was checked by inquiry. Only patients who used the light box for at least 5 days of each week were considered to have had an adequate trial of light therapy.

Table 1. Distribution of SIGH-SAD Suicide Item Scores Before and After 2 Weeks of Treatment With Light Therapy in 191 Patients With SAD[a]

Suicide Item Score	Before Treatment, N	After Treatment, N
0 = Absent	92	161
1 = Feels life is not worth living	59	24
2 = Wishes he were dead or any thoughts of possible death to self	35	5
3 = Suicidal ideas or gesture	5	1
4 = Attempts at suicide	0	0

[a]Abbreviations: SIGH-SAD = Hamilton Depression Rating Scale, Seasonal Affective Disorder Version; SAD = seasonal affective disorder.

Patients were rated before and after treatment with the Structured Clinical Interview for the Hamilton Depression Rating Scale, Seasonal Affective Disorder Version[14] (SIGH-SAD), which comprises the 21-item Hamilton Rating Scale for Depression[15] and an 8-item addendum that rates atypical vegetative symptoms. The SIGH-SAD includes an item for suicidal ideation, scored 0 to 4 with anchor points of "absent," "feels life is not worth living," "wishes he were dead or any thoughts of possible death to self," "suicidal ideas or gesture," and "attempts at suicide." A good clinical response was defined as 50% or greater improvement in SIGH-SAD scores from baseline to posttreatment.

Parametric data were analyzed using paired and unpaired t tests as appropriate. Nonparametric data were analyzed using chi-square tests or Fisher exact tests if the minimum expected count was less than 5. The analysis was done using SPSS v.8.0.[16]

RESULTS

Pretreatment and posttreatment data were available for 191 patients with SAD. There were 134 women (70%) and 57 men (30%), with a mean ISD age of 38.2 ± 11.2 years (range, 19 to 76 years). The diagnoses included 165 patients (86%) with unipolar depressive disorder, 4 patients (2%) with bipolar I disorder, and 22 patients (12%) with bipolar II disorder. Suicidal ideation was noted during a depressive episode (including previous episodes) in 80 (42%) of the patients, and 17 (9%) of these patients also had a previous suicide attempt (data were missing for 2 patients). Sixty-three (33%) of the patients were treated with a protocol using 2500-lux light for 2 hours per day, and 128 (67%) were treated with 10,000-lux light for 30 minutes per day.

The mean ± SD SIGH-SAD score after 2 weeks of light treatment was 13.5 ± 8.0, compared with a baseline score of 30.5 ± 7.2 ($t = 26.9$, $df = 190$, $p < .001$). The mean ISD percentage improvement in SIGH-SAD scores between baseline and posttreatment was 56% ± 24%, and 128 patients (67%) were rated as responders. No significant differences were found between the 2500-lux and 10,000-lux light therapy protocols in baseline SIGH-SAD score (31.6 vs. 30.0; $t = 1.5$, $df = 189$, $p = .55$), percentage improvement in SIGH-SAD scores (55% vs. 56%; $t = 0.50$, $df = 189$, $p = .62$), or percentage responders (66% vs. 64%; $\chi^2 = 0.2$, $df = 1$, $p > .65$).

Table 1 shows the distribution of SIGH-SAD suicide item scores at baseline and posttreatment. The mean ISD score on the suicide item of the SIGH-SAD after 2 weeks of light therapy was 0.19 ± 0.45, compared with a baseline score of 0.75 ± 0.84 ($t = 9.5$, $df = 190$, $p < .001$). After treatment, 85 patients (45%) had a reduction in the suicide item score. Sixty-two patients (32%) had a 1-point improvement, 18 patients (9%) had a 2-point improvement, and 5 patients (3%) had a 3-point improvement. In contrast, only 6 patients (3%) had a higher suicide score after treatment; all these patients had a 1-point worsening. Three patients showed an increase in suicide item score from 0 to 1, 2 patients had an increase from 1 to 2, and 1 patient had an increase from 2 to 3. There was no significant association between the baseline rating on the suicide item and worsening of the suicide item score ($\chi^2 = 0.2$, $df = 3$, $p > .95$). There was also no association between worsening of the suicide item score and suicidal ideation during a depressive episode (Fisher exact test, $p = 1.00$) or previous suicide attempt (Fisher exact test, $p = 1.00$). The 6 patients with a higher suicide item score had a significantly lower percentage of change in SIGH-SAD scores (mean ± SD = 21% ± 7% vs. 57% ± 24%; $t = 3.7$, $df = 189$, $p < .001$) and higher posttreatment SIGH-SAD scores (mean ± SD = 25.2 ± 7.4 vs. 13.1 ± 7.7; $t = 3.8$, $df = 189$, $p < .001$) than the other patients. No suicide attempts occurred during the light treatment, and none of the patients had to discontinue the light therapy because of emergence of suicidality.

DISCUSSION

The results from this large case series illustrate that light therapy is an effective treatment for winter depression, with an average 56% improvement in depression scores after 2 weeks and a clinical response rate of 67%. Although this was an open study and thus the responses include placebo effects, our use of standard light therapy protocols very likely approximates "real world" clinical treatment. These data are also consistent with those of other open and controlled studies of light therapy for SAD. In this sample of 191 patients, there was no evidence for emergence of clinically significant suicidal ideation after light therapy. Many of the patients (45%) showed improvement in suicide ratings. Only 3% of patients showed a slight increase of 1 point in the SIGH-SAD suicide item score. The 6 patients who had worsening in suicide ratings also had lower responses to light therapy and higher posttreatment SIGH-SAD scores, indicating that they were still clinically depressed.

A previous study[9] of 33 patients with SAD treated with 3000-lux fluorescent light for 2 hours in the early evening (5:00 p.m. to 7:00 p.m.) reported that 3 patients (9%) became intensely suicidal (2 patients attempted suicide) between 4 and 14 days after light treatment. In another report,[10] a patient with bipolar disorder type II committed suicide after 5 days of light therapy consisting of 10,000 lux for 30 minutes starting at 8:00 a.m. In contrast to these previous reports, we found no marked worsening of suicide ratings in patients with previous suicidal ideation or attempts, nor in patients with higher baseline suicide ratings. In our clinical experience, we have never had to discontinue light therapy because of emergent suicidal ideation. Of note is that our standard light therapy protocol uses morning timing of light exposure. Praschak-Rieder and colleagues[9] used evening light exposure in their study, which has been shown to be less effective for SAD than morning exposure in most,[5,6,17–19] but not all,[20–22] light therapy studies. Hence, some of the patients may not have received optimal light therapy.

We have shown that suicidal ideation occurs less frequently in patients with SAD than in those with nonseasonal depression.[23] In part, this may be because many SAD patients recognize that their depression will likely remit in the spring. Thus, patients with SAD may not become as hopeless as do patients with nonseasonal depression, who have more uncertainty about when their episodes will remit. Hopelessness is strongly linked to suicidal thoughts and behaviors.[24] We note, however, that 42% of patients in this study experienced some suicidal ideation during winter depressive episodes, indicating that suicidal ideas are still commonly found in SAD. Light therapy rapidly reduces suicidal ideation in concert with its antidepressant effect.

Increased suicidality has been observed as a complication in the early phase of treatment for depression, in part due to dissociation between improvement in the cognitive features of depression (low mood, hopelessness, guilt, and so on) and the physical symptoms (sleep, appetite, energy). However, it may also be due to the natural worsening of the depressive episode and not necessarily be related to the specific treatment. Additionally, biological treatments for depression, including light therapy, may induce hypomanic[7,25] or manic[26] symptoms that may include suicidal ideation or behaviors. While our results show that worsening suicidal ideation is very uncommon in patients treated with morning light therapy, we support the clinical maxim to be especially vigilant of suicidality when patients are beginning to improve with antidepressant treatment.

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