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Brief report

A pilot study of adherence with light treatment for seasonal affective disorder

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Abstract

Non-adherence with antidepressant medication regimens is now recognised as a substantial problem when evaluating depression outcome. Given the behavioural demands of light treatment (LT), it might be expected that non-adherence would be even more pronounced in LT, a form of intervention for seasonal affective disorder (SAD). However, little research has focused upon the extent to which patients in light treatment protocols adhere to set regimens. Nineteen patients with SAD were allocated to either treatment with bright white light (intervention) or dim red light (control condition) in a four-week protocol. Light exposure was estimated automatically (without participants' knowledge) with elapsed time meters built into the light box. Daily diaries were also used to measure self-reported light box use. Participants were instructed to use the light box for 30 min each day during week 1, 45 during week 2 and one hour during weeks 3 and 4 (total duration of prescribed light exposure 1365 min). The results indicated that mean duration of light box operation for the entire sample was 59.3% of the prescribed 1365 min. Six of nineteen (31.6%) patients dropped out of treatment. Amongst those completing treatment, adherence to the prescribed duration of exposure averaged 83.3% (S.D.=31.4). A trend was found for the intervention condition to generate a lower dropout rate, as well as a trend for the degree of adherence to be greater in the intervention condition. Importantly, there was no association between adherence as measured automatically and the higher rates of self-reported adherence as measured in diaries. In summary, the results of this pilot study suggest that adherence with light treatment is of a similar order of magnitude to antidepressant medication adherence. Patient self-report was found to be unrelated to objectively estimated duration of light box use, a finding with significant research and clinical implications. Future research studies should routinely measure and evaluate adherence with light therapy and evidence-based techniques for maximising treatment adherence should be incorporated into routine clinical practice.

Keywords: Seasonal affective disorder; Light therapy; Adherence

1. Introduction

Seasonal affective disorder (SAD) is a variant of recurrent major depression characterised by typical and atypical depressive symptomatology with a distinct

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seasonal pattern (Rosenthal et al., 1984; Lam and Levitt, 1999). More than seventy controlled studies of light therapy for SAD have been conducted, and three systematic reviews incorporating meta-analyses have also supported the efficacy of the treatment intervention (Lee and Chan, 1999; Thompson, 2001; Golden et al., 2005). This evidence resulted in the recommendation of light therapy as a first-line treatment for SAD in expert and consensus clinical guidelines (Lam and Levitt, 1999; American Psychiatric Association, 2000; Kennedy et al., 2001; Bauer et al., 2002). However, certain clinical questions remain to be addressed with respect to light treatment. In particular, the behavioural restrictions of the treatment intervention are substantial; patients are typically required to sit in front of a light box for at least 30 min each morning, sometimes for upwards of an hour (see Partonen and Magnusson, 2001). A priori, it might be expected that such regimens would present a significant challenge to patient adherence.[1]

Non-adherence is receiving growing attention as a factor in antidepressant treatment outcome (Demyttenaere et al., 2004; Pampallona et al., 2004). In a review of the literature, Lingam and Scott found a median prevalence of non-adherence to be 53% (Lingam and Scott, 2002). In controlled therapeutic studies, dropout rates ranging from 21% to 30% have been reported (Pampallona et al., 2002), and a 30% dropout rate was identified in a meta-analysis (Bollini et al., 1999). Although dropout rate is the most common measure of adherence, Lingam and Scott also emphasise that this dichotomous measure provides an incomplete estimate of adherence, and patients may be partly or intermittently adherent. For example, Demyttenaere and colleagues have assessed adherence quantitatively as the proportion of days on which treatment was followed (Demyttenaere et al., 1998).

In comparison, very little research has examined the issue of adherence with light therapy, or tried to ascertain how these rates may compare to those obtained for antidepressants, which are recognised as an alternative form of treatment for SAD (Kasper et al., 2001). In a conference proceeding, Desan and colleagues have reported on data from seven participants enrolled in a controlled study of light therapy (intervention) vs. deactivated negative ion generator (control) for SAD in which light therapy adherence was measured by microprocessors concealed in the light boxes that recorded time and duration of treatment (Desan et al., 2004). Although the majority of their participants used their light boxes on a daily basis, they did not accurately report missed days, duration of treatment or time of treatment, failing to complete treatment by 8 am as instructed on 41% of days. Adherence in the control arm of the study was not measured, and could not therefore shed any light on the on-going debate concerning plausible control interventions for bright light (Eastman, 1990). Most controlled trials of light therapy have used either dim red light or low-density negative ion generators as a 'placebo' intervention. Bright white light has been shown to be more efficacious than red light, but given the media attention on SAD, doubts remain about red light as a plausible placebo (Eastman et al., 1998), and in turn adherence rates with red light, which may be reduced if expectations of treatment efficacy are lower (Masand, 2003).

We expand here on pilot data on adherence in a community-based controlled trial of light therapy that we previously published in a letter format (Michalak et al., 2002). This extended paper expands on our previous brief publication by incorporating more detailed statistical analyses of the data and taking into account literature on adherence with antidepressant medications that was not available at the time of the original publication. As an initial attempt to illuminate the relationship between adherence, expectations and intervention, we compared adherence in the intervention versus control conditions, and tested whether adherence was associated with expectations held by patients in both groups.[2] Three predictions were set to focus analyses. First, as assessed in dropout rate, it was predicted that adherence with light therapy would be poorer than the approximate one third non-adherence observed across antidepressant studies. Adherence was also explored as a quantitative variable, in terms of the recorded light exposure as a percentage of the total prescribed light exposure. Second, it was expected that more positive expectations of treatment would be associated with better adherence. Third, it was expected that adherence would be poorer under the red light control condition in comparison to the bright white light treatment condition, possibly due to lower treatment expectations or experienced inefficacy. Finally, self-reported light box usage was assessed in daily logs permitting calculation of the correlation between patient-derived and objectively derived rates of adherence.

2. Methods

Participants were recruited as part of the Outcomes of Depression International Network (ODIN) project, a large

[1] The term adherence is considered preferable to the related term compliance, because it emphasises active participation from the patient (Lingam and Scott, 2002).

[2] The relationship between these variables and clinical outcomes is more complex again (see, for example, Murphy and Coster, 1997).