Short communication

Cognitive behavior therapy in treatment-naive children and adolescents with obsessive-compulsive disorder: an open trial

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Abstract

This work aims to evaluate the therapeutic efficacy of cognitive behavior therapy (CBT) in pediatric patients with obsessive-compulsive disorder (OCD) who had not previously been treated with either pharmacotherapy or psychotherapy and who remained medication-free during CBT. Sixteen OCD outpatients, 8–17 years of age, were treated in a 12-week open trial with manualized CBT. Target symptoms were rated at two-week intervals with the Children’s Yale–Brown Obsessive Compulsive Scale (CY-BOCS), the National Institute of Mental Health Global Obsessive-Compulsive Scale (NIMH Global), the Clinical Global Impression Scale (CGI), and the Hamilton Anxiety Rating Scale (Ham-A). Statistical analyses showed a significant benefit for treatment. Ten patients experienced at least a 50% reduction in symptoms on the CY-BOCS; seven were asymptomatic on the NIMH Global. These results build on previous reports that CBT may be effective in the acute treatment of pediatric OCD. Further, the results of this study suggest that CBT can be efficacious in alleviating OCD symptoms in the absence of pharmacotherapy. These results must be considered preliminary, given the small sample size and open administration of treatment. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Child; Obsessive-compulsive disorder; Pediatric; Cognitive behavior therapy

1. Introduction

Obsessive-compulsive disorder (OCD) is a chronic condition characterized by recurrent intrusive thoughts and repetitive ritualistic behaviors that are distressing and debilitating for patients
and over which they typically have very little control. Recently, childhood OCD has been recognized as being more common than previously believed with a lifetime weighted prevalence of approximately 2–3% (Flament et al., 1988; Hanna, 1995; Vallenini-Basile et al., 1994). Up to 80% of OCD patients develop the disorder during childhood or adolescence (Pauls et al., 1995), and childhood onset may predict adult morbidity (March, 1995). Childhood OCD is often associated with severe disruption in social and academic functioning, comorbid emotional and behavioral problems, and family dysfunction (Albano, March, & Piacentini, 1999; Piacentini & Bergman, 2001; Riddle et al., 1990).

Cognitive behavior therapy (CBT) has become a standard effective approach in the treatment of adults with OCD (Kozak & Foa, 1997; Rachman & Hodgson, 1980; Riggs & Foa, 1993; Steketee, 1993). This therapeutic modality has also been shown to be effective in the treatment of children and adolescents with the disorder (de Haan, Hoogduin, Buitelaar, & Keijsers, 1998; March, Mülle, & Herbel, 1994; Piacentini & Bergman, 2001). One appeal of this treatment approach is that patients are provided with a set of tools to cope with the anxiety generated by their obsessions that could presumably allow for a better maintenance of therapeutic gains after cessation of treatment. Although the efficacy of CBT has been empirically examined in youngsters with OCD (de Haan et al., 1998; March et al., 1994; Piacentini & Bergman, 2001), there have been a limited number of published studies in which researchers used structured diagnostic interviews to determine a diagnosis of OCD, and in which patients were treated with CBT only. Most prior studies have been conducted openly with participants receiving CBT and medication, rendering it difficult to distinguish CBT versus medication. To our knowledge, only one published study (de Haan et al., 1998) randomly assigned 22 children with OCD 8–18 years of age to behavior therapy and open pharmacotherapy with clomipramine for 12 weeks. The results of this pilot study suggested that behavior therapy provided a potentially viable alternative to pharmacotherapy, although the sample was small and improvement in the clomipramine (33.4%) condition was quite low.

Demonstrations that treatment with CBT alone is efficacious would justify either direct comparisons of the efficacy of CBT to medication, or effectiveness trials comparing algorithms in which CBT is the preferred treatment to algorithms in which medication is the preferred treatment. One important reason for examining the efficacy of CBT in the absence of medication lies in the often-strong parental prejudices against the use of medication. Children whose parents feel strongly about medication are unlikely to be enrolled in clinical trials potentially requiring randomization to medication, and clinicians dealing with such parents lack the guidance of a well-developed literature either to provide CBT in the absence of medication, or to make empirically based recommendations to parents that they reconsider medication because it is the best available treatment. If intent-to-treat analyses were extended to take into account parents being offered but refusing enrollment in a study potentially involving their children being randomized to receive medication, it is likely that high refusal rates could substantially reduce or eliminate the effectiveness observed for medication.

In the present study, we report findings on a 12-week open trial of CBT with pediatric OCD patients in an outpatient setting all of whom received a DSM-IV diagnosis of OCD based on structured clinical interviews. Participants were treatment naive with none having previously received any psychotherapy or pharmacotherapy. The treatment administered in the present study was protocol-driven, and represents an integration of two treatment manuals (March & Mülle,
There were two notable features to the treatment provided. First, it emphasized the use of cognitive strategies which patients were instructed to apply between sessions in an effort to decrease patient and parent dependence on in-session practice. Second, parents were highly involved in their child’s treatment and received instruction on how to coach their child to apply cognitive strategies to manage the anxiety generated by obsessional thoughts.

2. Methods

2.1. Participants and procedure

Sixteen male \((n=8)\) and female \((n=8)\) children with OCD, aged 8–17 years, participated in this study. All participants were outpatients treated in our child psychiatry outpatient clinic. All patients were Caucasian. Legal guardians gave written informed consent, and all children gave written assent. The study was approved by the Institutional Review Board at Wayne State University School of Medicine.

Inclusion criteria: (1) written informed consent of parent(s) and assent of patient; (2) age 8–17 years; (3) met DSM-IV criteria for OCD; and (4) CY-BOCS score \(>16\). Exclusion criteria: (1) significantly debilitating medical condition that required long-term medication or that interfered with participation in the protocol; (2) mental retardation, autism, Tourette’s Syndrome or other tic disorders, conduct disorders, psychosis, bipolar or unipolar depression, and learning disabilities; (3) history of seizure disorders; (4) concomitant therapy with either psychotropic medication or psychotherapy; (5) met criteria for substance abuse within the previous 6 months; and (6) posed a significant suicidal or homicidal risk. Eight patients had one or more comorbid DSM-IV diagnoses, including anxiety disorders \((n=1)\), trichotillomania \((n=2)\), attention-deficit disorder without hyperactivity \((n=1)\), oppositional defiant disorder \((n=1)\), dysthymia \((n=2)\), separation anxiety disorder \((n=2)\), and transient tic disorder \((n=1)\).

2.2. Clinical assessment

All subjects were evaluated with the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Lifetime version \(\text{(Kaufman et al., 1997)}\), using the child and parent(s) as informants. A board-certified child and adolescent psychiatrist \(\text{(D.R.R.)}\) and a licensed psychologist \(\text{(N.R.B.)}\) confirmed the presence of DSM-IV criteria for OCD with the child and family and reviewed all clinical information for each subject. OCD symptom severity was assessed with the CY-BOCS \(\text{(Seahill et al., 1997; Wolff & Wolff, 1991)}\). Severity of anxiety was measured with the Hamilton Anxiety Rating Scale \(\text{(Ham-A)}\) \(\text{(Hamilton, 1959)}\), severity of depression was measured with the Hamilton Depression Rating Scale \(\text{(Ham-D)}\) \(\text{(Hamilton, 1967)}\), and severity of tics was rated with the Yale Global Tic Severity Scale \(\text{(YGTSS)}\) \(\text{(Leckman et al., 1989)}\). Overall improvement was assessed by the Clinical Global Impression Scale \(\text{(CGI)}\) \(\text{(Guy, 1976)}\), and the National Institute of Mental Health Global Obsessive-Compulsive Scale \(\text{(NIMH)}\) \(\text{(Insel et al., 1983)}\). The CY-BOCS, Ham-A, and Ham-D were administered throughout the trial at weeks 0, 2, 4, 6, 8, 10, and 12. All other measures were administered at baseline and again at week 12.
2.3. Treatment

The treatment was based on an integration of two similar therapy manuals (March & Mulle, 1998; Schwartz, 1996) (see Table 1). All patients received twelve 60-minute sessions of CBT; the duration of treatment for each patient ranged between three and four months. Parents were encouraged to attend a minimum of four sessions and the last 10 minutes of each session. However, in most cases \( n=14 \) parents played a more active role in treatment, unless the child was unwilling to involve the parents in treatment.

Session 1 was devoted to psychoeducation, which consisted primarily of encouraging patients and parents to view OCD as a neuropsychiatric illness. In Sessions 2 and 3, patients were instructed in Schwartz’s (1996) four steps — Relabel, Reattribute, Refocus, and Revalue. The four steps are essentially an enhancement of traditional cognitive behavioral therapy methods, and involve systematically training persons with OCD to recognize their symptoms as being related to brain biochemical imbalances that can be responded to adaptively and in ways that lead to improved function. The objective of these four steps is to cultivate insight necessary for consciously choosing new and more adaptive responses to the intrusive and intensely bothersome thoughts and urges, which bombard patients consciousness (see Schwartz, 1996 for a more detailed description of the four steps). Patients were provided with an audiotape delineating the four steps, and they were asked to listen to it in order to become sufficiently well versed so as to be able to teach the steps to their parents in Session 3. The objective was to train patients and parents to apply the cognitive distancing techniques at times when the child was distressed by an obsession. To our knowledge, this is the first application of Schwartz’s (1996) four steps in children and adolescents. In the case of younger children, the terms relabel, reattribute, refocus and revalue were not used. Instead, the therapist conveyed the essence of each step without introducing cumbersome jargon.

In Session 4, standardized exposure and response prevention (E/RP) was introduced to disrupt the association between: (1) the obsessions and anxiety and (2) the anxiety and the performance of compulsive behaviors. Obsessions and compulsions were assigned a value that indicated a subjective unit of distress on a scale of 1–10, in which the item 10 is the most anxiety-provoking to confront. Behavioral hierarchies were constructed. With the support and assistance of the therapist, patients were directed to confront their fears in a graduated fashion (for a more detailed description of the application of exposure and response prevention, see Chapters 5 and 6 in March & Mulle,

Table 1
CBT treatment protocol

<table>
<thead>
<tr>
<th>Visit number</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 1</td>
<td>Psychoeducation</td>
</tr>
<tr>
<td>Session 2</td>
<td>Cognitive training</td>
</tr>
<tr>
<td>Session 3</td>
<td>Mapping OCD</td>
</tr>
<tr>
<td>Session 4–11</td>
<td>Cognitive training</td>
</tr>
<tr>
<td></td>
<td>Exposure and response prevention</td>
</tr>
<tr>
<td>Session 12</td>
<td>Relapse prevention</td>
</tr>
<tr>
<td>Parent sessions</td>
<td>1, 3, 7, 12</td>
</tr>
</tbody>
</table>
1998). Graded exposure continued through Session 11 in combination with the four cognitive steps learned in Sessions 2 and 3. In-session practice was conducted and patients carried out weekly homework assignments. In cases of pure obsessions, patients were instructed in imaginal exposure, which consisted of recording the obsession on endless loop audiotapes for between session exposures.

Parents were included in Sessions 1, 3, 7, and 12. These sessions consisted of psychoeducation, instructing the parents in Schwartz’s (1996) four cognitive steps, and incorporating targets for parental response prevention or extinction, with the child selecting targets from the behavioral hierarchy. The degree of parental involvement was based on an evaluation of the extent to which parents affected and were affected by the child’s OCD (see Chapter 19 in March & Mulle, 1998).

Treatment was provided by an experienced cognitive behavior therapist (N.R.B.) with expertise in both the March and Mulle (1998) and the Schwartz (1996) manuals. Cases were discussed with the authors of these manuals in order to ensure treatment adherence and fidelity.

2.4. Statistical methods

Results were analyzed using paired t-tests (2-tailed), and multivariate repeated-measures analysis of variance, followed by univariate tests for each of the three outcome variables. Treatment effect sizes were evaluated using Cohen’s d (1977). To calculate the percentage of patients who improved and recovered, reliable change indexes were calculated (Jacobson & Truax, 1991). The time course of treatment response was measured by means of repeated-measures analyses of variance, followed by trend tests applied to the time variable at baseline and at 2, 4, 6, 8, 10, and 12 weeks. For the one participant who received medication in combination with CBT at week 6, her week 6 assessment scores were used as the final assessment. Patients with missing data were assigned the group mean score or their highest score, whichever was greater, on the variable in question. Six patients had missing data, primarily on the CY-BOCS, Ham-A and Ham-D administered between pre- and posttreatment; no patient had more than one missing data point per scale. Results were equivalent for analyses conducted with and without replacement of missing data.

3. Results

3.1. Treatment intervention

Patients with OCD showed a significant decrease in OCD symptom severity as reflected by their CY-BOCS scores (baseline 22.56±6.45; endpoint 11.81±6.59; mean CY-BOCS change 10.75±6.58 [SD]; \( t_{15}=6.54, p=0.0001 \)). Ten patients experienced a greater than 50% reduction in CY-BOCS scores at posttreatment. As judged by an NIMH Global score of 2 or less, seven (44%) patients were asymptomatic by the posttreatment visit. Table 2 presents the mean pre- and posttreatment scores for the three outcome measures. Because the outcome variables were correlated, a multivariate repeated measures analysis was performed. Wilks lambda (\( F=36.08 \) [3,13], \( p<0.0001 \)) was significant and was followed by univariate tests for each of the three outcome variables. The results revealed clear benefit for treatment on the CY-BOCS (\( F=42.7 \) [1,15], \( p<0.0001 \)), NIMH Global (\( F=99.4 \) [1,15], \( p<0.0001 \)), and CGI (\( F=80.0 \) [1,15], \( p<0.0001 \)).
Patients showed a significant decrease in severity of anxiety as measured by the Ham-A (baseline 9.75±6.86; endpoint 3.38±5.25; mean Ham-A change of 6.37±5.86 [SD]; t<sub>15</sub>=4.35, p=0.001). Patients also showed a significant decrease in severity of depression as measured by the Ham-D (baseline 9.13±6.27; endpoint 3.75±5.52, mean Ham-D change of 5.38±5.44 [SD]; t<sub>15</sub>=3.95, p=0.001).

Three of the 16 patients were non-responders. One was a 9-year-old girl with severe OCD referred for treatment during a hospital stay on a general pediatric unit where she was being treated for anorexia nervosa. During the hospitalization it became clear that she had been misdiagnosed with anorexia nervosa and the refusal to eat was related to her obsessions about specific foods leading to illness, a symptom of OCD. She also had comorbid separation anxiety disorder and panic disorder. There was no prior history of psychiatric treatment. After 6 weeks of CBT, despite a notable decrease in CY-BOCS scores (pretreatment =40; posttreatment =29), it was decided that a combined medication and CBT approach would be most beneficial. By the end of the 12 weeks, the patient was markedly improved with a CY-BOCS score of 20.

Another was a 14-year-old girl with OCD and comorbid separation anxiety disorder. She showed markedly poor insight and little motivation to complete behavioral homework assignments. On her parents’ insistence, she completed the 12-week trial but did not derive benefit, though later markedly improved as a result of pharmacotherapy. Finally, an 8-year-old boy with OCD showed little insight and motivation for treatment, and attended therapy sessions only at his parents’ insistence. This patient also improved significantly when treated subsequently with pharmacotherapy. No patients withdrew from treatment.

Differences in treatment response as measured by change in CY-BOCS scores for each of the dichotomous variables of gender and presence or absence of comorbid anxiety disorders were tested with t-tests; there were no significant differences. Given the small sample size and the aforementioned negative findings, additional multivariate analyses for outcome predictors were not performed.

3.2. Estimating treatment effects

The effect of treatment was represented in terms of Cohen’s d, a standardized measure of effect size. Cohen’s d is defined as

\[ d = \frac{m_1 - m_2}{s} \]
where \( m_1 \) and \( m_2 \) represent group means and \( s \) is the pooled standard deviation. Using the above formula, we obtained an effect size of 1.65, which represents a large effect size. We examined the proportion of patients who improved and recovered to assess the clinical significance of treatment. Clinical significance was represented in terms of Jacobson and Truax’s (1991) Reliable Change Index (RC) defined as

\[
RC = \frac{(x_2 - x_1)}{S_{diff}}
\]

where \( x_1 \) represents a subject’s pretest score, \( x_2 \) represents that same subject’s posttest score, and \( S_{diff} \) is the standard error of difference between the two test scores. When RC is greater than 1.96, the posttest score likely reflects real change. In our sample, 13 of the 16 patients (81.25%) had an RC above 1.96, suggesting that the change observed in these patients reflects more than the fluctuations of an imprecise measuring instrument and reflects a clinically significant treatment effect. However, to classify a patient as “recovered” it is necessary that their posttreatment score both correspond to an RC greater than 1.96 and also be above an established cut-off on the outcome measure, which would indicate “recovered” status. To date, an established cut-off on the CY-BOCS, indicating recovery or normative data for this measure have not been reported in the literature. However, researchers studying OCD in adults have published normative data on the Yale–Brown Obsessive Compulsive Scale (YBOCS), which ranges from a score of 5–9 (Steketee, Frost, & Bogart, 1996). Based on these findings, we calculated the percentage of patients who both had a posttreatment score of 9 or less and an RC score above 1.96. Twenty-five percent (25%) of the patients met these two criteria and were classified as “recovered”. These analyses must be viewed as exploratory, and in need of replication once normative data on the CY-BOCS are available, and cut-off scores to determine “recovery” status in clinical populations have been identified in pediatric OCD.

3.3. Time course of treatment response

Means of repeated-measures analyses of variance, followed by trend tests applied to the time variable at baseline and at 2, 4, 6, 8, 10, and 12 weeks, with a significance level set at \( p<0.05 \), were used to measure the time course of changes for patients receiving CBT. Only the linear trend proved significant (\( F=46.86 \) [1,14], \( p<0.001 \)), indicating that there was a gradual decrease in symptom severity as measured by the CY-BOCS over the 12-week period of treatment. \( \eta^2 \) for the linear trend was 0.77, suggesting that 77% of the variance was accounted for by the linear trend. We repeated this analysis with the Ham-A and obtained similar results, (\( F=17.04 \) [1,14], \( p<0.001 \)). \( \eta^2 \) for the linear trend was 0.55. For both these outcomes, the linear trend accounted for most of the variance, none of the other trends were significant.

4. Discussion

This study replicates previous work demonstrating the efficacy of CBT for childhood OCD, and offers an extension of previous work, in that patients did not have the benefit of concomitant
pharmacotherapy. During this 12-week trial of CBT, most patients ($n=10; 62\%$) demonstrated at least 50% improvement in OCD symptom severity. This is comparable with previously reported response rates to CBT in pediatric OCD (de Haan et al., 1998; March et al., 1994). Patients demonstrated a significant reduction in associated anxiety symptoms and this effect was not limited to those who had received other formal DSM-IV Axis I diagnoses of anxiety disorders. Further, a significant decrease in depressive symptoms was also reported.

One set of issues relevant to interpreting the results of this study concerns the relative efficacy of CBT versus medication. It is likely that both are efficacious and superior to placebo, but questions remain as to their relative efficacy and if there are limits on the efficacy of CBT. The severity of symptoms in this study as measured by the CY-BOCS was comparable to published studies combining medication and psychotherapy (Franklin et al., 1998; March et al., 1994) and to a study where one of the groups received medication only (de Haan et al., 1998), but lower than a recently published medication trial (Rosenberg, Stewart, Fitzgerald, Tawile, & Carroll, 1999). However, it remains to be shown that patients with more severe and chronic symptoms are amenable to CBT. CBT requires some aversive experiences in terms of exposure and younger patients may not be willing to endure it.

A separate issue is that of the effectiveness of treatment, as distinct from efficacy. Effectiveness studies refer to studies in which a previously tested efficacious intervention is examined with a more heterogenous sample in a naturalistic setting or is provided by real world service practitioners as opposed to research therapists (Hoagwood, Hibbs, Brent, & Jensen, 1995). There is increasing interest in the question not whether treatment is efficacious in a carefully selected sample enrolled in a randomized trial, but rather whether it is effective in a sample identified as needing treatment (Coyne, Thompson, Klinkman, & Nease, 2001). Thus, in the instance of OCD, intent to treat analyses might be extended to all patients who are identified with OCD in a screening of consecutive pediatric patients. Under those conditions psychotherapy might acquire a relative advantage over medication because parents are more likely to reject assignment of their children to medication. Alternatively, the greater time and patient insight and motivation required by psychotherapy might reduce its effectiveness in such population-based sampling. Regardless, the crucial determinants of effectiveness may be different from the determinants of efficacy. Open trials of CBT without medication can serve as the first step in justifying comparisons of CBT to medication in either efficacy or effectiveness trials. The present study can be seen, as a contribution to this needed literature.

5. Limitations

Interpretation of these findings needs to be tempered by reference to a number of the study’s methodological shortcomings. First, although this study demonstrated that in a non-randomized design non-medicated patients showed improvement with CBT, comparable to what is observed with medication, these results are limited to a relatively short-term observation period. One advantage to CBT is that in contrast to medication, it provides patients with a set of tools that can be applied after the end of formal treatment. Longer-term follow-up is needed to determine if hypothesized benefits of CBT are maintained. Second, although ratings of symptom severity were based on reports of specific symptoms elicited in the presence of parents, treating clinicians did
the ratings and thus were not blinded. Second, because the clinicians administered treatment as a package, it is not possible to disentangle the relative contributions of cognitive training, E/RP, and family interventions. It remains unclear if cognitive training serves only to permit adequate exposure, or whether these strategies in themselves are sufficient to produce the observed treatment effects. Further, although the high level of parental involvement was a distinctive feature of the treatment package, the specific contribution of this component cannot be disentangled from the larger treatment effect. Finally, in the absence of placebo control it is not possible to determine the extent to which the OCD patients’ improvement can be attributed to CBT alone.

6. Clinical implications

The present study lends support to the idea that CBT in the absence of medication is a viable approach to treating childhood OCD. The question remains as to whether the efficacy of CBT extends to more severe patients. Having said this, the results of this study do suggest that for the many patients whose parents would not agree to a treatment with medication, CBT may be a viable alternative approach. Additional controlled studies in pediatric OCD patients are necessary.

The cognitive-behavior theory of OCD proposes that obsessional thoughts occur as a consequence of the particular meaning or significance patients attach to the occurrence and content of their intrusive thoughts (Salkovskis, 1985; Rachman, 1997). More recently, theorists have emphasized that when intrusions are interpreted as indicating increased personal responsibility, this propels the performance of compulsions and exacerbates the condition (Salkovis, Forrester, & Richards, 1998). In the present study, patients were instructed that OCD is a neuropsychiatric illness for which they are not to be blamed, an approach that is distinct from, but compatible with what is currently being offered in CBT. It is not clear whether this departure from conventional CBT was decisive in terms of the results. What may be most important is that patients be discouraged from blaming themselves for their condition, an idea that is compatible with either the treatment offered in this study or conventional CBT. One advantage of the psychoeducation offered in this study is that it is quite compatible with integration into a clinical trial involving active medication or pill placebo. Patients who received this rationale would be prepared for randomization to either this form of CBT or medication, or for a switch in treatment if initial assignment did not prove efficacious.

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