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# Long-Term Efficacy of Exposure and Ritual Prevention Therapy and Serotonergic Medications for Obsessive-Compulsive Disorder

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## FOCUS POINTS

- This article describes the long-term outcome of patients with obsessive-compulsive disorder who selected treatment with exposure and response (ritual) prevention (EX/RP) alone, serotonergic drugs (fluvoxamine or clomipramine) alone, or EX/RP with concomitant antidepressant medication.
- Findings supported existing literature in suggesting that both EX/RP and serotonergic medications are effective in long-term amelioration of obsessive-compulsive symptoms, with no difference among treatment groups in symptom severity when compared without regard to patients' medication status at the time of follow-up.
- Long-term prognosis for these patients was complicated by the withdrawal of medications: among patients who were not electively taking medication at the time of the follow-up, the percentage of treatment responders was significantly higher in both groups that received EX/RP than in the drug-only group.
- Serotonergic medications produced long-term benefits equivalent to those of EX/RP, as long as patients stayed on the medication.

## ABSTRACT

*What is the long-term outcome of patients with obsessive-compulsive disorder (OCD) who are treated with exposure and response (ritual) prevention (EX/RP) alone, serotonergic medications alone, or their combination? How is the long-term outcome of these patients affected by the discontinuation? Follow-up assessments were conducted with 62 patients treated for OCD an average of 17 months posttreatment (range: 6–43 months). Patients received one of three treatments: serotonergic medications (fluvoxamine or*

*clomipramine), intensive behavior therapy involving EX/RP, or intensive EX/RP with concurrent antidepressant medication. At follow-up, no differences in OCD symptom severity were found among the three treatment groups. However, when current medication use was taken into consideration, differences among the three treatment groups emerged. Among patients who were medication-free at the time of follow-up assessment (n=37), those in the EX/RP-alone and EX/RP-with-medication groups had lower symptom severity ratings than those in the medication-only group on 4 out of 6 measures. There were no differences in OCD severity ratings among patients taking medications at follow-up (n=25). Although these findings are interpreted with caution due to the uncontrolled nature of the study, results suggested that long-term outcome may be superior following EX/RP than following serotonergic medications, after discontinuation. For patients who remain on medications, the treatment produced benefits equivalent to EX/RP.*

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## INTRODUCTION

The clinical prognosis for patients with obsessive-compulsive disorder (OCD) was substantially improved with the introduction of behavioral therapy by exposure and response (ritual) prevention (EX/RP).<sup>1</sup> These procedures have been found highly efficacious in reducing symptoms of OCD in multiple outcome studies conducted in various sites around the world.<sup>2</sup> Indeed, the substantial majority of patients who complete treatment are classified as "improved" or "much improved" at posttreatment.<sup>3</sup> Pharmacologic management of OCD also improved considerably with the introduction of serotonin reuptake inhibitors (SRIs). The first medication to demonstrate clinical efficacy,

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clomipramine, has been found superior to placebo in numerous trials.<sup>4</sup> Selective serotonin reuptake inhibitors (SSRIs) including sertraline,<sup>5</sup> fluvoxamine,<sup>6</sup> paroxetine,<sup>7</sup> and fluoxetine<sup>8</sup> have also been found superior to placebo. Thus, two well-established forms of treatment are considered efficacious for OCD: behavioral therapy involving EX/RP and pharmacotherapy with an SRI.

Given the demonstrated efficacy of both EX/RP and SRIs for OCD, an important line of inquiry concerns the durability of these treatment effects once treatment has been discontinued. A review of EX/RP studies<sup>9</sup> indicated that treatment responders maintain their gains for the most part, with follow-up periods ranging from several months to 6 years. With SRIs, however, the evidence suggests that patients relapse upon treatment discontinuation. A recent review of the literature on drug discontinuation indicated that up to 80% of patients who responded to SRIs relapse if medication is withdrawn.<sup>10</sup> Indeed, several experts<sup>11</sup> in OCD pharmacotherapy have concluded that patients should be continued on medications for at least 1 year and, in some cases, indefinite continuation of drug therapy following response to SRI pharmacotherapy may be necessary.<sup>12</sup> It is unclear whether augmenting SRI treatment with EX/RP would be beneficial for long-term maintenance of gains.

Notably, no studies have directly compared the long-term outcome for patients who were discontinued from these monotherapies. In a complex experimental design, Marks and colleagues<sup>13</sup> found that clomipramine had a small and transitory, 8-week additive effect when combined with exposure, and concluded that systematic self-exposure is a relatively more potent intervention. The design of the study did not permit conclusions about the efficacy of drug or behavioral therapy alone, nor about the effects of behavioral therapy on relapse following drug discontinuation. A 6-year follow-up of 34 patients who participated in this study revealed no drug effect and superior long-term outcome associated with better compliance with exposure instructions.<sup>14</sup> deHaan and colleagues<sup>15</sup> reported no differences 6-months posttreatment among patients who received cognitive therapy, exposure in vivo, fluvoxamine plus cognitive therapy, and fluvoxamine plus exposure in vivo. In each of these studies, patients were switched from one type of intervention to another after several weeks, a design that limits the degree to which conclusions can be drawn about the long-term efficacy of EX/RP, SRI medication, or their combination.

Cottraux and colleagues<sup>16</sup> followed patients who participated in a randomized comparison of fluvoxamine plus anti-exposure instructions, fluvoxamine plus exposure, and placebo plus exposure. Eighty percent of patients who received exposure (with or without fluvoxamine) were medication-free at 18 months, as opposed to 40% of those who received fluvoxamine without exposure. Patients in the anti-exposure condition reported noncompliance with anti-exposure instructions, which confounds the examination of both the short- and long-term outcome. In a small case series, Baer and colleagues<sup>17</sup> found that behavioral therapy

techniques did not provide the same level of protection against OCD symptom recurrence when delivered during SRI discontinuation as when used alone. In general, the available empirical data for addressing the important question of long-term efficacy of EX/RP, SRIs, and their combination are insufficient to guide clinical practice with OCD patients.

The present study examined long-term outcome of OCD patients who received EX/RP alone, serotonergic drugs (fluvoxamine or clomipramine) alone, or EX/RP with concomitant antidepressant medication. The study capitalizes on the unique opportunity afforded by a clinic specializing in treating OCD. Following an intake evaluation that confirmed a primary diagnosis of OCD, patients were offered one of two options: a randomized controlled trial with an SRI (either clomipramine or fluvoxamine), or treatment via intensive EX/RP. If patients who selected EX/RP were already receiving pharmacologic treatment with antidepressants (clomipramine, fluvoxamine, fluoxetine, or imipramine), they were instructed to remain at a stable dose on the medication during behavioral therapy. All patients who completed one of these treatment programs were contacted in order to evaluate their long-term status. Thus, while the present study does not include random assignment to treatment conditions, the systematic examination of the long-term outcome of these treatments as they are delivered in a clinical setting can provide valuable information for the treatment of OCD.

Patients were treated at the Center for the Treatment and Study of Anxiety at the Medical College of Pennsylvania in Philadelphia. All patients met *Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised (DSM-III-R)*<sup>18</sup> criteria for OCD and had both obsessions and overt compulsions. Follow-up assessments were conducted between 6 and 43 months posttreatment (mean: 16.3 months). The research team predicted that: (1) patients treated in each of three treatment programs (EX/RP, SRI medication alone, EX/RP plus antidepressant medication) will differ in the degree to which they show long-term improvement; (2) patients who received EX/RP will show greater long-term maintenance of gains than patients who were treated with and withdrawn from medication; and (3) patients who received EX/RP in addition to medication will show greater long-term maintenance of gains than patients who were treated only with medication, once the medications are removed. In addition, the researchers explored the possibility that additional treatment would be associated with better maintenance—will patients receiving additional psychotherapy following intensive EX/RP or the drug trial show greater long-term maintenance than patients who did not receive psychotherapy?

## METHODS

### Treatments

Participants in the follow-up sample were patients who had previously consented to be treated in one of three protocols that were approved by the institutional review board: a 10-week, double-blind trial of clomipramine versus

placebo; a 10-week, double-blind trial of fluvoxamine versus placebo; and a 3-week intensive trial of EX/RP. As described earlier, the patients were given a choice between EX/RP and drug protocols. Those who chose a drug protocol were aware they would receive either active drug or placebo. Each of these protocols also included assessment of symptoms by independent evaluator at multiple time points. Following is a brief description of each treatment.

### **Clomipramine**

The initial dosage of 25 mg/day was gradually increased in 25-mg increments to 100 mg/day, and then in 50-mg increments until a dosage of 200 mg/day was achieved, usually by the end of week 3. Thereafter, the dosage was increased to 250 mg/day when indicated. The mean dosage at study completion was 193 mg/day. After the 10-week trial, patients who showed significant response to treatment were offered the opportunity to continue the same medication they received in the trial for up to 1 year. Patients who received placebo and requested an open trial of clomipramine were referred to a psychiatrist and lost to follow-up.

### **Fluvoxamine**

The initial dosage of 50 mg/day was gradually increased in 50-mg increments to 150 mg/day by week 2. Thereafter, the dosage was increased to a maximum of 300 mg/day if the patients were not responding adequately and were not suffering dose-limiting symptoms. The mean dose at study completion was 291 mg/day. At the completion of the core study, both placebo and active drug patients were offered continued fluvoxamine treatment for up to 1 year. Thus, some patients who had been in the placebo group later received fluvoxamine. In outcome analyses, data for these patients were collapsed with that of the patients who received active drug in the core study, providing that they received fluvoxamine for at least 3 months.

### **Exposure and Response Prevention**

Fifteen daily 2-hour sessions were conducted over a 3-week period. At week 4, patients were visited in their homes for 4 hours on 2 consecutive days in order to facilitate generalization to the patient's home environment. Treatment consisted of three components: imaginal exposure, in vivo exposure, and response prevention. As reported previously, 15 (39%) of the 38 EX/RP patients in the follow-up sample were taking antidepressant medication concurrent with behavioral therapy.

Both imaginal and in vivo exposure were employed in each treatment session. Anxiety-evoking objects or situations were introduced in a hierarchical manner, starting with items evoking moderate discomfort and working up to the most feared situation by the sixth treatment session. Homework was assigned daily and consisted of further exposure to the same situation used during that day's session. Response prevention entailed complete prohibition of ritualistic behavior throughout the 3-week period.

### **Participants**

Patients with OCD (N=105) who completed treatment in one of the three protocols (EX/RP alone, SRI alone, EX/RP plus antidepressant) were sent a letter requesting permission to contact them for an evaluation. Sixty-eight patients (65%) completed the assessment. Of the remainder, 24% could not be reached or failed to respond, and 11% declined to be interviewed. Of the 37 patients for whom follow-up assessments were not obtained, 20 had received drug treatment, and 17 received EX/RP. Of the 68 patients with complete follow-up data, 24 had received fluvoxamine or clomipramine (n=18 and n=6, respectively), 6 received only placebo, 23 were treated with EX/RP without concomitant medications, and 15 entered EX/RP while already receiving medication (the EX/RP-plus-medication group). Patients in this group were taking antidepressants electively at the time they presented for psychosocial treatment. The length of time they received the medications, both before and after EX/RP, is unknown. In accord with clinic policy, these patients remained on the antidepressants throughout intensive EX/RP. The six patients who received placebo only were excluded from outcome analyses, leaving a total of 62 patients.

The follow-up interval ranged from 6–43 months, with a mean length of 14.1 (SD=7.1), 17.5 (SD=10.0), and 17.3 (SD=11.5) months for the medication, EX/RP, and EX/RP plus medication groups, respectively. Subjects included 30 male and 38 female patients with a mean age of 35.1 years (SD=10.5). The mean duration of OCD symptoms was 13.6 years (SD=11.0).

At follow-up, 25 patients were receiving psychotropic drugs and 37 were not. Twenty-three of the 25 patients receiving medications were taking SRIs: 11 were on fluvoxamine, 10 were on fluoxetine, and 2 were on clomipramine. One patient was taking imipramine, and one was taking buspirone. Two of the 24 patients taking antidepressants were also receiving benzodiazepines.

### **Measures**

Two measures of OCD symptom severity (Yale-Brown Obsessive-Compulsive Scale [Y-BOCS]<sup>19</sup> and Assessor Severity Rating<sup>20</sup>) and one measure of depressive symptoms (Hamilton Depression Rating Scale [HAM-D]<sup>21</sup>) were administered at the follow-up assessment.

#### **Yale-Brown Obsessive-Compulsive Scale**

This is a 10-item scale that rates from 0 ("none") to 4 ("extreme") the amount of time occupied by obsessions and compulsions, as well as the degree of interference, distress (or anxiety), attempted resistance, and control. It yields an obsession score, a compulsion score, and an overall total (sum score) ranging from 0–40 (extremely severe).<sup>19</sup> The Y-BOCS severity scale has satisfactory psychometric properties and has been found sensitive to treatment effects.<sup>20</sup>

#### **Assessor Severity Rating**

This is a 9-point (0–8 [very severe]) Likert-type scale that measures obsessive fear, avoidance, and compulsive

behavior. Scores have been found sensitive to treatment effects in previous studies and have good inter-rater reliability ranging from 0.92–0.97.<sup>20</sup> The mean ratings of the patient's three main (primary) fears, associated avoidance, and three most prominent rituals were used in analyses. If fewer than three fears, avoidances, or rituals were reported, the mean of the available ratings was used.

**Hamilton Depression Rating Scale**

This is a 17-item scale used to evaluate vegetative symptoms, as well as depressive mood and thoughts.<sup>21</sup> Scores range from 0 (no symptoms) to 50 (very severe symptoms). The sound psychometric properties of the HAM-D are supported by an extensive body of literature.<sup>22</sup>

**Procedure**

Assessments were conducted via telephone by two experienced psychologists blind to treatment conditions. Both assessors had extensive experience in administering the assessment measures and had been trained to criterion by Foa and colleagues as part of the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* field trial.<sup>23</sup> At the beginning of each 45-minute interview, the assessor asked the patient to refrain from disclosing information about his or her treatment at the Center for the Treatment and Study of Anxiety. After evaluating symptom severity via the three measures described in the previous section, the assessor obtained information about the type and dosage of current psychotropics, the type of medications used since treatment at the center (target treatment), and current involvement in psychotherapy since target treatment at the Center for the Treatment and Study of Anxiety.

**RESULTS**

**Preliminary Analyses**

Because only 65% of the patients targeted for the study participated, analysis of variance (ANOVA) was conducted to examine possible differences between participants and nonparticipants. There were no differences in age, duration of symptoms, pretreatment OCD symptom severity, or depression between the two groups. There was only one significant difference between the groups in posttreatment ratings: patients who participated in the follow-up study were rated as less depressed on the HAM-D at the end of the target treatment compared to nonparticipants ( $F_{[1,79]}=7.9, P<.01$ ). However, both groups reported some mild symptoms of depression at posttreatment (HAM-D mean scores were 7.8 and 10.8 for participants and nonparticipants, respectively). Table 1 presents the means and standard deviations for pretreatment, posttreatment, and demographic variables for the two groups.

The research team also examined possible differences among the treatment groups (EX/RP alone, SRI medications alone, EX/RP plus medication) in symptom severity prior to and immediately after treatment. Means and standard devi-

ations for assessor ratings and HAM-D at pre- and posttreatment were calculated for each group and are presented in Table 2. A multivariate ANOVA on pretreatment assessor ratings and HAM-D scores revealed no differences among the treatment groups (based on Wilk's  $\lambda$ ):  $F_{[8,98]}<1.0, P>.45$ . A similar analysis of posttreatment assessor ratings and HAM-D scores revealed significant differences among the

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**TABLE 1. MEANS AND STANDARD DEVIATIONS OF SYMPTOM SEVERITY AND DEMOGRAPHIC CHARACTERISTICS FOR PARTICIPANTS AND NONPARTICIPANTS**

	Participants (n=68)	Nonparticipants (n=37)
Pretreatment Ratings		
Mean fear	6.3 (1.1)	6.4 (1.0)
Mean avoidance	6.2 (1.5)	6.4 (1.1)
Mean ritual	5.8 (1.6)	6.0 (1.4)
HAM-D	12.3 (4.9)	12.8 (4.6)
Posttreatment Ratings		
Mean fear	3.2 (2.2)	4.0 (2.1)
Mean avoidance	2.7 (2.6)	3.8 (2.7)
Mean ritual	2.5 (2.3)	3.2 (2.6)
HAM-D	7.6 (4.9)	10.7 (6.0)
Demographic Characteristics		
Age (years)	35.6 (10.7)	33.4 (10.9)
Duration of OCD symptoms	14.1 (11.5)	12.9 (10.2)

Standard deviation presented in parentheses.  
 Nonparticipants>participants;  $P<.05$ .  
 HAM-D=Hamilton Depression Rating Scale; OCD=obsessive-compulsive disorder.  
 Hembree EA, Riggs DS, Kozak, MJ, Franklin ME, Foa EB. *CNS Spectr.* Vol 8, No 5. 2003.

**TABLE 2. MEANS AND STANDARD DEVIATIONS OF PRETREATMENT AND IMMEDIATE POST-TREATMENT OUTCOME MEASURES FOR THE THREE TREATMENT GROUPS**

	Treatment Group		
	Medications (n=24)	EX/RP Alone (n=23)	EX/RP Plus Medication (n=15)
Pretreatment			
Mean fear	6.3 (0.8)	6.0 (1.3)	6.6 (1.3)
Mean avoidance	6.2 (1.4)	5.9 (1.6)	6.8 (1.3)
Mean ritual	5.7 (1.6)	5.6 (1.7)	6.3 (1.4)
HAM-D	11.2 (3.6)	12.3 (6.1)	15.0 (4.5)
Posttreatment			
Mean fear	4.4 (2.3)	1.8 (1.2)	2.6 (2.0)
Mean avoidance	4.1 (2.8)	0.8 (0.8)	2.4 (2.0)
Mean ritual	3.9 (2.2)	1.0 (1.0)	1.3 (1.3)
HAM-D	7.9 (5.0)	5.3 (3.5)	9.1 (5.7)

Standard deviation presented in parentheses.  
 EX/RP=exposure and response (ritual) prevention; HAM-D=Hamilton Depression Rating Scale.  
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treatment groups (based on Wilk's  $\lambda$ )  $F_{[8,78]}=4.06$ ,  $P<.001$ . Follow-up ANOVA revealed significant differences in post-treatment assessor ratings of fear ( $F_{[2,53]}=9.95$ ,  $P<.001$ ), avoidance ( $F_{[2,52]}=12.70$ ,  $P<.001$ ), and rituals ( $F_{[2,52]}=18.60$ ,  $P<.001$ ), but not on the HAM-D ( $F_{[2,44]}=2.49$ ,  $P>.05$ ). Post hoc comparisons using the Student-Newman-Keuls test indicated that immediately posttreatment, the medication-only group was rated as having more fear and rituals than either the EX/RP alone or EX/RP-plus-medication groups. With regard to assessor-rated avoidance, all three groups differed from one another, with the medication-only group rated the most severe, followed by the EX/RP-plus-medication group and the EX/RP-alone group.

Finally, Pearson correlations were used to examine the relation of demographic characteristics, pre- and posttreatment assessor ratings, and length of time since target treatment to follow-up measures. Age, prior OCD severity ratings, and length of follow-up were not related to symptom scores at follow-up.

### Long-Term Effects of Treatment

The initial analyses examined the question of whether patients in each of the three programs (EX/RP alone, SRI medications alone, EX/RP plus medication) would show similar levels of OCD symptoms at the follow-up assessment. Means and standard deviations for all outcome measures at follow-up were calculated for each treatment group and are presented in Table 3. A one-way multivariate analysis of variance (MANOVA) was used to examine the effect of drug, EX/RP, and EX/RP-plus-medication treatments on the severity of OCD symptoms and depression at follow-up. Six outcome measures (assessor-rated fear, avoidance, and rituals; Y-BOCS obsession and compulsion scores; and HAM-D) served as dependent variables. The overall MANOVA failed to reach significance, indicating that the three groups did not differ in the severity of their reported symptoms at the follow-up assessment.

### Long-Term Effects of Treatment Following Withdrawal of Serotonergic Drugs

To examine the prediction that patients withdrawn from SRI medications would show poorer maintenance of gains than patients treated with EX/RP, we compared the follow-up symptom scores for the three treatment programs using only those participants who were not taking medications at the time of the follow-up assessment ( $n=37$ ). Nine (37%) of the 24 patients originally treated with SRIs alone and 6 (40%) of the 15 patients originally treated with an antidepressant plus EX/RP were not taking medication at the time of follow-up. In contrast, 22 (96%) of the 23 patients originally treated with EX/RP alone were not taking medications at follow-up. This difference was statistically significant ( $\chi^2 [2]=19.69$ ,  $P<.001$ ). Means and standard deviations for all outcome measures at follow-up were calculated separately for patients on and off medications in each of the three groups. They are presented in Table 4.

We conducted a one-way MANOVA on follow-up measures using data from the medication-free patients. This analysis revealed a significant effect of treatment group (based on Wilk's  $\lambda$ )  $F_{[12,50]}=2.00$ ,  $P<.05$ . Univariate ANOVA revealed a significant main effect of treatment on assessor-rated fear ( $F_{[2,33]}=6.61$ ,  $P<.005$ ), assessor-rated ritual ( $F_{[2,34]}=7.75$ ,  $P<.005$ ), and Y-BOCS compulsions ( $F_{[2,33]}=6.25$ ,  $P<.01$ ). A trend in the same direction was found for Y-BOCS obsessions ( $P<.09$ ). There were no differences in assessor-rated avoidance or HAM-D scores. Post hoc analyses using the Student-Newman-Keuls test indicated that for Y-BOCS compulsions and assessor-rated rituals, the EX/RP and EX/RP-plus-medication groups were rated as significantly less severe than the SRI-only group. In the case of assessor-rated fear, the EX/RP plus medication group was rated as less severe than either the EX/RP-alone or medication-alone groups, which did not differ from one another. ANOVA comparing follow-up scores of patients on medications (15 patients originally treated with an SRI alone and 9 treated with EX/RP plus medication) failed to demonstrate group differences.

### Percentage of Responders in Each Treatment Group

Consistent with previous outcome studies,<sup>18</sup> patients were categorized as treatment responders if the assessor ratings at follow-up indicated at least a 30% reduction in symptom severity relative to pretreatment levels. Fifty-six percent of drug-only patients, 60% of EX/RP-only patients, and 73% of EX/RP-plus-medication patients were classified as responders on assessor-rated fear. Sixty-eight percent of drug-only patients, 75% of EX/RP-only patients, and 77% of EX/RP-plus-medication patients were classified as responders on assessor-rated avoidance. Finally, 50% of drug-only patients, 67% of EX/RP-only patients, and 93% of EX/RP-plus-medication patients were classified as responders on assessor-rated rituals.

To examine differential rates of response among treatment groups, a 2 (responders/nonresponders) X 3 (treatment: drug, EX/RP, EX/RP plus medication)  $\chi^2$  tests was conducted for each measure. Results revealed significant differences for assessor-rated rituals only ( $\chi^2 [2]=7.1$ ,  $P<.03$ ). Three 2 X 2  $\chi^2$  tests were conducted to probe the sources of significance. A difference was found only between the drug and EX/RP-plus-medication groups ( $\chi^2 [1]=7.1$ ,  $P<.01$ ), with more patients in the latter group showing 30% or more reduction in rituals.

To examine the effect of medication withdrawals, separate  $\chi^2$  tests were performed for those participants on and off medications at follow-up. Among patients who were not taking medication at follow-up, the test revealed a difference in the proportion rated as treatment responders on fear ( $\chi^2 [2]=6.9$ ,  $P<.04$ ) and rituals ( $\chi^2 [2]=9.6$ ,  $P<.01$ ). An examination of the percentage of responders in each group suggested that a greater number of those who received EX/RP and EX/RP plus medication compared with those who only received drug were scored as responders. The

groups did not differ with respect to avoidance. The  $\chi^2$  tests for patients who were on medications at follow-up revealed no differences in percentage of responders between the drug and EX/RP-plus-medication groups. Over 75% of the patients on medication at follow-up were improved relative to pretreatment symptom levels.

**Effect of Ongoing Psychotherapy on Symptoms at Follow-up**

A second ANOVA series explored the possibility that psychotherapy at follow-up may have affected symptom status. At the time of assessment, 18 patients were actively in therapy (excluding those being monitored solely for medications) and 43 were not. Presence/absence of therapy was used as a two-level factor in a one-way ANOVA for each outcome measure. Results were insignificant for all measures of OCD symptoms. A significant difference in HAM-D scores ( $F_{(1,60)}=5.07, P<.03$ ) indicated that patients currently in psychotherapy were given higher ratings for depression than those not in treatment. However, neither group was

severely depressed; their mean HAM-D scores were 8.5 and 5.7, respectively.

**DISCUSSION**

The results of the present study support the existing literature in suggesting that both EX/RP and SRIs are effective in long-term amelioration of OCD symptoms. There was no difference between the treatment groups in symptom severity when compared without regard for the patients' current medication status. In addition, over 50% of patients in the drug-only group and over 70% of patients in the EX/RP groups were categorized as treatment responders at follow-up. The percentage of responders in each treatment group differed on only one measure: more people in the EX/RP-plus-medication group were substantially improved in rituals compared with the drug-only group. These findings demonstrate that OCD patients do show long-term improvement following both EX/RP and medication treatment.

The long-term prognosis for OCD patients is complicated by the withdrawal of medications. Indeed, the present results revealed significant treatment-related differences among patients who were not taking medications at follow-up: patients who were treated with medications alone were rated as more symptomatic than those who received EX/RP on 4 out of 6 OCD severity measures. Furthermore, among those not taking medications at follow-up, the percentage of treatment responders was significantly higher in both groups that received EX/RP than in the drug-only group. It is particularly noteworthy that among patients who were not on medications at follow-up, those in the combined (EX/RP plus medication) treatment group appeared to be doing better than those treated with medication alone. In contrast, among patients who were taking medications at follow-up (nearly all of the medications were SRIs), those who received EX/RP plus drug were not more improved than those in the drug-only group.

One limitation of the present study is the small sample size. A relatively low percentage of patients were available for the follow-up assessment. Forty percent of the drug

**TABLE 3. MEANS AND STANDARD DEVIATIONS OF LONG-TERM OUTCOME MEASURES FOR THE THREE TREATMENT GROUPS**

Y-BOCS	Treatment Group		
	Medications (n=24)	EX/RP Alone (n=23)	EX/RP Plus Medication (n=15)
Obsessions	8.5(4.4)	7.0 (3.8)	6.8 (3.7)
Compulsions	9.5(5.0)	7.2 (4.8)	6.7 (3.4)
Total	18.1(8.9)	14.2 (8.3)	13.5 (6.4)
Mean fear	3.4(2.0)	3.2 (1.9)	2.1 (1.9)
Mean avoidance	2.8(2.3)	2.9 (2.4)	2.5 (2.5)
Mean ritual	3.2(2.3)	2.3 (2.0)	1.5 (1.4)
HAM-D	5.8(3.2)	7.1 (4.9)	7.4 (5.7)

Standard deviation presented in parentheses.

EX/RP=exposure and response (ritual) prevention; Y-BOCS=Yale-Brown Obsessive-Compulsive Scale; HAM-D=Hamilton Depression Rating Scale.

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**TABLE 4. MEANS AND STANDARD DEVIATIONS OF EACH OUTCOME MEASURE FOR PATIENTS ON AND OFF MEDICATION AT FOLLOW-UP**

Y-BOCS	Treatment Group					
	Med Alone		EX/RP Alone		EX/RP Plus Med	
	On Med (n=15)	Off Med (n=9)	On Med*	Off Med (n=22)	On Med (n=9)	Off Med (n=6)
Mean fear	2.8 (2.1)	4.4 (1.3)	—	3.1 (1.9)	2.7 (2.1)	1.1 (1.2)
Mean avoidance	2.3 (2.4)	4.0 (1.7)	—	3.0 (2.4)	3.2 (2.7)	1.4 (1.7)
Mean ritual	2.4 (2.1)	4.7 (2.0)	—	2.3 (2.0)	1.7 (1.4)	1.1 (1.4)
Obsessions	7.6 (4.1)	10.1 (4.7)	—	7.0 (3.9)	7.3 (4.3)	6.0 (2.7)
Compulsions	7.9 (5.2)	12.3 (3.4)	—	7.3 (4.9)	7.9 (3.4)	5.0 (2.8)
Total	15.5 (9.0)	22.4 (7.1)	—	14.2 (8.5)	15.2 (6.8)	11.0 (5.1)
HAM-D	4.6 (2.6)	7.9 (3.2)	—	7.0 (4.9)	7.8 (4.7)	7.0 (7.4)

Standard deviation presented in parentheses.

\*Means not presented because only one person was in this group.

Med=medication; EX/RP=exposure and response (ritual) prevention; Y-BOCS=Yale-Brown Obsessive-Compulsive Scale; HAM-D=Hamilton Depression Rating Scale.

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treatment patients and 31% of the EX/RP patients were unavailable for follow-up for various reasons. Many of the patients who received EX/RP at the Center for the Treatment and Study of Anxiety came from across the United States. They often moved and did not consent to extensive use of tracking technologies to assist in long-term follow-up studies of this kind. Other patients (11%) simply refused to participate in the follow-up study. Although the 65% response rate raises questions about the generalization of the results, the present findings of long-term maintenance of gains following EX/RP are consistent with those reported in the literature,<sup>9</sup> as is the rate of relapse after medication withdrawal.<sup>24</sup> Another limitation is that follow-up evaluations were conducted via telephone. While this was done to minimize time demands on patients and to enable the inclusion of patients who lived a far distance from the Center for the Treatment and Study of Anxiety, not having face-to-face contact may have influenced patient responses and/or evaluator ratings. However, all patients had been evaluated multiple times by the Center for the Treatment and Study of Anxiety clinicians with essentially the same assessment interviews, so the patients were experienced in responding to questions about their symptoms. The evaluators were also quite experienced in administering interviews with OCD patients.

It is important to remember that in the present study patients were not randomly assigned to the various treatments, but rather selected their own. The bias inherent in such self-selection limits the conclusions that can be drawn from the data. It is possible that patients who chose intensive EX/RP did so because they were more highly motivated or more tolerant of anxiety than patients in the drug group. Or, patients in the EX/RP group may have had strong reservations about taking medications. Likewise, patients may have chosen medication treatment because they hoped that a new experimental medication would turn out to be the definitive treatment, or because of low confidence in their ability to stop ritualizing. We did not collect information about patients' reasons for treatment choice, and therefore the impact of this variable on outcome cannot be assessed. Furthermore, we do not have reliable information about patients' reasons for discontinuing medication in the aftermath of acute treatment. Neither do we know why patients sought additional medication or psychotherapy and how these factors affected the final outcome.

Despite these limitations, we think that the systematic examination of long-term outcome does provide valuable information about how patients fare after they have been discharged from treatment protocols. So, with the above caveats, several inferences may be drawn from the data. First, serotonergic medications seem to produce long-term benefits equivalent to those of EX/RP, as long as patients stay on the medication. Consistent with the findings of Ravizza and colleagues,<sup>10</sup> the patients treated with medication alone tended to have more severe symptoms at follow-up if they were no longer taking medications. The need for continued treatment with SRIs appears to be recognized by

the patients or their physicians, as patients initially treated with an SRI (regardless of whether they also received EX/RP) tended to continue to take medication, whereas patients treated with EX/RP alone were generally not taking medication at follow-up. Of the patients who received treatment by medication alone, 63% continued to receive drugs. In contrast, of the 23 patients who received EX/RP alone, only 1 was on medication at follow-up.

Notably, the EX/RP-plus-medication treatment group consistently had the lowest OCD severity ratings, although not significantly lower than the EX/RP-only group. Perhaps the combination of serotonergic medication and EX/RP is the optimal treatment for many OCD patients. In the long-term, patients who received combined treatment were doing very well whether or not they continued to take medications. This was especially true with regard to rituals: 14 out of 15 patients in the EX/RP-plus-medication group were categorized as treatment responders on assessor-rated rituals.

Remembering that these patients elected to enter EX/RP treatment because they were in some way dissatisfied with already initiated pharmacologic treatment (ie, they were likely partial responders or nonresponders), we must be cautious when generalizing these findings. However, in clinical practice, it is common for OCD patients to be treated initially with SRIs, and the present results support the potential value of augmenting SRI treatment with EX/RP. The addition of EX/RP to existing SRI treatments may allow patients to discontinue medication treatment without experiencing a significant return of symptoms. There is no evidence from the present study that the initiation of medication prior to EX/RP enhances or lessens outcome. Thus, with regard to long-term outcome, the present results indicate that EX/RP is a reasonable treatment option for OCD patients regardless of prior treatment with SRIs and other medications. Finally, the present results suggest that OCD patients who have been treated with SRIs and express a desire to stop taking the medication may wish to consider a trial of EX/RP prior to withdrawal. The addition of EX/RP might assure the persistence of treatment gains when the medication is withdrawn.

### CONCLUSION

With the exception of the potential biases introduced by nonrandom assignment to treatment, many of the threats to the generalization of the present results cannot be avoided in any long-term study of treatment outcome. Clearly though, randomized controlled studies that compare long-term outcomes of patients treated with effective medications, EX/RP, and their combination need to be conducted. In the absence of such controlled trials, results from quasi-experiments such as this one are useful for informing clinical practice and future studies. **CNS**

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