Exposure Treatment for Veterans with Comorbid PTSD and OCD

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ABSTRACT

We present treatment outcomes of 10 cases of combat and terror related posttraumatic stress disorder (PTSD) referred to the Sheba Medical Center Trauma Unit due to trauma-related symptoms. After careful assessment, referred patients were diagnosed with comorbid obsessive-compulsive disorder (OCD) and PTSD. All patients had no prior diagnosis of OCD and all reported that OCD symptoms were preceded by severe combat and terror experiences. Treatment focus (OCD or PTSD) was determined based on the relative impact of either PTSD or OCD on patients' baseline functioning and quality of life. Treatment efficacy was assessed using Yale-Brown Obsessive Compulsive Scale (YBOCS) and Posttraumatic Symptom Scale Interview version (PSS-I). Cognitive behavioral treatment (CBT) for OCD was associated with marked improvement in OCD symptoms. Yet, PTSD symptoms did not improve. CBT for PTSD was associated with marked improvement in PTSD symptoms, but OCD symptoms did not improve. Our data support the potential clinical utility of OCD specifier i.e. post-traumatic OCD. More rigorous studies are needed in order to fine-tune the assessment and treatment for this comorbidity.

Keywords: Obsessive–compulsive disorder; Posttraumatic stress disorder; Co morbid obsessive-compulsive symptoms; Terror and combat induced trauma

INTRODUCTION

Posttraumatic stress disorder (PTSD) is a debilitating disorder following a traumatic event, defined by the coexistence of four symptom clusters- re-experiencing, avoidance, change in mood and cognition and hyperarousal that persist for at least 1 month after the traumatic event [1]. PTSD has been estimated to affect 5.6% of civilians who were exposed to traumatic events and as a whole, this disorder occurs in approximately 3.9% of the adult population [2]. The prevalence of posttraumatic stress disorder due to combat among US veterans ranges from 12% to 19% [3,4]. Traumatic life events yield and exacerbate other psychiatric disorders [5] such as obsessive-compulsive disorder (OCD) [6-10]. Traumatic life events may lead to the emergence of OCD. For

example, It has been acknowledged that traumatic events, in particular of a graphic or violent nature, may activate a disgust response and the development of contamination OCD, manifesting in a compulsion of excessive washing [11]

OCD is a neuropsychiatric disorder, with an estimated lifetime prevalence of 0.7 to 2.3% of the adult population [12]. It is characterized by obsessions and/or compulsions. Obsessions are recurrent and persistent thoughts, urges or images that are experienced, at some time during the disturbance, as intrusive, unwanted, and that in most individuals, cause marked anxiety or distress. Compulsions are repetitive behaviors (e.g., hand washing, ordering, checking) or mental acts (e.g., praying, counting, repeating words silently) that the individual feels driven to perform in response to an obsession or according to rules that must be applied rigidly. The obsessions and compulsions have a negative impact on patients' daily functioning and quality of life [13,14].

Moreover, the co-occurrence of OCD and PTSD following a traumatic event has been described in the literature [7,12,15,16,17]. The prevalence range from 19% to 41% lifetime comorbid of PTSD and OCD [9,12,18,19].

Research indicates that individuals with comorbid PTSD and OCD are likely to suffer from more severe OCD symptoms in comparison to those suffering from OCD preceding the onset of PTSD [20] and to those suffering from OCD without co-occurring PTSD [21]. However, the overall severity of PTSD was found to be similar [22]. When examining the prevalence of OCD among active-duty military or veteran populations, OCD has been examined only in smaller samples and a range of methodologies. In a systematic review by [23], OCD prevalence in the DOD and VA varied considerably across studies based on a number of methodological variables. OCD prevalence was found to be lower in data studies and self-questionnaires compared to studies in which a clinical assessment was performed, which indicates that there are a significant number of veterans and soldiers who suffer from OCD and are undiagnosed as well as untreated. Results of a study in Israel [9] that aimed to estimate the prevalence of OCD among veterans suffering from PTSD following traumatic exposure of combat and terrorism, has shown that 41% of PTSD patients developed OCD. Subjects underwent a clinical assessment by two psychiatrists who specialize in OCD and PTSD to prevent overlap of symptoms in the diagnosis of the two disorders. Subjects reported the simultaneous onset of the two disorders within the same year following the traumatic event. These data suggests that severe traumatic experiences may lead to OCD symptomatology in individuals who did not have an OCD diagnosis prior to the trauma. Posttraumatic OCD, especially among combat and terror-related posttraumatic patients, may be commonly underdiagnosed, thus highlighting the need for improved assessment and treatments for OCD with PTSD.

PTSD and OCD share numerous symptoms: (1) avoidance behavior aiming to reduce distress is a typical behavioral strategy in both disorders; (2) repeated distressing intrusive thoughts and images – in PTSD, the content is trauma related, whereas in OCD it does not necessarily relate directly to a traumatic event [24,25]. It seems that OC symptoms in Post Traumatic Obsession (PTO) patients may constitute a distinct form of symptomatology. As OCD emerges, the content of the obsessions may differ from the intrusive symptoms of PTSD and lead to a ritual compulsion pattern that is typical to OCD. For example, fear of being contaminated by germs and washing rituals [11,24,21]. Moreover, [26] found a distinctive pattern of neurocognitive dysfunction that sets apart OCD occurring simultaneously or after a traumatic event (post-traumatic OCD) from OCD occurring before a traumatic event (pre-traumatic OCD) and non-traumatic OCD.

The co-occurrence of OCD and PTSD following a traumatic event is an interesting observation, which raises theoretical and therapeutics questions. Evidence-based treatments that include specific psychological interventions exist for patients with PTSD and for patients with OCD. Exposure and response prevention (ERP) is considered one of the most effective psychological treatments for OCD. Several studies have consistently demonstrated its efficacy in OCD patients [27,28]. As for the treatment of PTSD, different types of exposure and cognitive therapies have been shown to be efficacious [29,30]. Prolonged exposure therapy (PE) is a specific exposure therapy protocol developed by Foa and colleagues [31,32]. It is the most studied treatment for PTSD, and Its effectiveness has been demonstrated in numerous well-controlled studies [31,33]. PE has been shown to be effective across a wide range of trauma types and populations [29,34,35]. PE is a short-term treatment protocol which is comprised of four main components: psychoeducation (common reactions to trauma and the rationale for PE), relaxation, in vivo exposure, and imaginal exposure, followed by processing. Regarding pharmacotherapy, serotonin reuptake inhibitor is considered first line treatment for both disorders, although higher doses are required for OCD patients [36,37].

Only a few studies have addressed questions concerning the impact of OCD and PTSD comorbidity on treatment response. The majority of literature has examined the impact of PTSD on OCD treatment but not the other way around. Several case studies have demonstrated the challenges of treating co-occurring OCD and PTSD [38,39]. In 2002 [40] 15 patients with treatment resistance OCD received ERP treatment. Eight of these patients were diagnosed with comorbid PTSD. Although some patients with comorbid PTSD displayed improvement, others displayed no change, and some reported worsening of symptoms. In another article, [41] describe four case reports of ERP for comorbid OCD and PTSD. ERP treatment outcomes for these four patients revealed that OCD-PTSD patients did not improve. The initial decrease in OCD symptoms during ERP treatment was sometimes followed by intensification of trauma-related intrusive thoughts, flashbacks, and nightmares. In light of these data, [17] suggest that OCD symptoms may facilitate avoidance from posttraumatic intrusive recollections and trauma-related emotions, and that treatment for patients with both disorders should merge systematic treatment for PTSD with treatment for OCD. Similarly, [48] used a sample of 475 residential inpatients in an OCD and anxiety treatment program and compared patients with OCD-PTSD to OCD. Patients with OCD-PTSD experienced significantly less OCD symptom improvement compared to patients with OCD. Conversely, a study published by [11], with non-treatment resistant OCD patients, found that first line treatments for OCD (ERP or SSRIs) were even more effective with patients with comorbid PTSD-OCD. Patients with PTSD-OCD presented a greater magnitude of improvement when compared with OCD patients without PTSD. Hence, the presence of PTSD was not related to a poorer treatment response to ERP or SSRIs for OCD.

Interestingly, all existing studies focus on the effect of PTSD symptoms on the OCD treatment response in OCD-PTSD patients. To our knowledge, no study to date has examined the impact of comorbid OCD symptoms on the treatment response of PTSD patients to CBT for PTSD. In addition, Studies addressing this subject are limited and questions regarding guidelines for treatment of patients with comorbid OCD-PTSD remain a challenge for clinicians.

The primary aim of this article is to examine the efficacy of treatment protocol (ERP or PE) on patients with comorbid OCD-PTSD, and its impact on the untreated comorbid disorder. This case series assesses the response of 10 patients with comorbid OCD-PTSD induced by terror and combat trauma. Five patients received prolonged

exposure (PE) treatment [31] and five patients received ERP treatment [44]. We will first provide a detailed description of the assessment procedure, treatment process, and treatment outcomes of three patients and then we will present the data for all 10 cases.

METHOD

Participants and procedure

This case series includes 10 patients who were exposed to combat or terror. All were diagnosed with PTSD and were referred for treatment at the trauma unit in the Chaim Sheba Medical Center and Brill mental health center due to PTSD. Participants were interviewed by a senior psychiatrist (N.N.) using the Mini-International Neuropsychiatric Interview [45]. The assessment included specific OCD oriented questions. All participants fulfilled DSM-IV criteria for both PTSD and OCD with good insight for their OCD symptoms. Diagnosis of OCD was completed only when the content of the OCD symptoms was not related only to PTSD (e.g., checking the door handles due to obsessions about safety but not if it is related to specific fear of terrorists breaking into the house). It is interesting to note that the patients did not overtly report their OCD symptoms unless they were asked specifically and straightforwardly if they suffer from obsessions and compulsions as part of the inclusion criteria. The onset of OCD symptoms in all patients succeeded the traumatic event

Measures

A Master's level psychologist conducted independent assessments of PTSD and OCD symptom severity at pre- and post-treatment. Assessments were conducted, using the Yale-Brown Obsessive Compulsive Scale [46] and the Posttraumatic Diagnostic Scale (PSS-I, Posttraumatic Symptom Scale-Interview Version) [47].

The YBOCS is a semi-structured interview that measures the severity of OCD symptomatology. The scale is divided into two parts, comprised of five questions each, including the obsessions subscale and the compulsions subscale. In each subscale, the following five aspects of pathology are rated from 0 (no symptoms) to 4 (extreme symptoms): (1) time spent; (2) degree of interference; (3) distress; (4) resistance; and (5) perceived control over the symptom. A score of 16 or greater indicates clinically relevant OCD; a score below 11 indicates mild symptoms.

The YBOCS has excellent interrater reliability. Intra-class correlations range from .80 to .96. The scale demonstrated moderate to good internal consistency with alpha coefficients ranging from .69 to .91. The YBOCS appears to have good short-term test-retest reliability, and demonstrated good convergent validity with most other measures of OCD (Fisher & Wells, 2005(.

The Posttraumatic Symptom Scale – Interview Version (PSS-I, [47] is a semi-structured interview for PTSD assessment and diagnosis. It consists of 17 items corresponding to the DSM-IV PTSD symptoms, including re-experiencing, avoidance and hyperarousal symptom clusters. Items are rated on 0-3 scales for combined frequency and severity, yielding one score per item. A score of 0 corresponds to "not at all"; 1 corresponds to "once per week or less/a little"; 2 corresponds to "2 to 4 times per week/somewhat"; 3 corresponds to "5 or more times per week/very much". A score of 23 or greater indicates clinically relevant PTSD; a score below XX indicates mild symptoms or partial PTSD.

The PSS-I demonstrated excellent psychometric properties. Inter-rater reliability for PTSD diagnosis (k = .91) and overall severity (r = .97) are more than satisfactory [47].

Treatment

Since evidence-based therapies exist for both disorders, ERP for OCD and PE for PTSD, treatment selection was determined based upon clinical judgment concerning the relative impact of each disorder on the particular patient's functioning and quality of life. Patients were given information about symptoms and common behaviors prevalent among individuals with of PTSD and OCD. Five patients were given information about PE treatment for PTSD, and five patients were given information about ERP treatment for OCD. Therapists were master and doctoral level clinicians who were highly experienced with both PE and ERP treatments. There was no difference in clinicians' level of experience with both treatments. The same therapists carried out treatment for patients in both groups.

Statistical analysis

We analyzed treatment response after 16 treatment sessions (about 16 weeks) for OCD and 12-15 sessions (about 15 weeks) for PTSD, as per treatment protocols, respectively. In order to examine participants' improvement in both OCD and PTSD symptoms, two different- measures were calculated for PSSI and YBOCS by subtracting the 'post' treatment from baseline score. A Pearson correlation was calculated in order to examine the association between the two improvement scores. In addition, to test the difference in symptom decrease between the two groups of participants on both PSSI and YBOCS, we calculated the percentage of improvement for each participant. The significance level was set at 0.05. The software used for the statistical analyses was the SPSS v.20 for Windows.

CASE REPORTS

Case 1: ERP for OCD

Mr. E, a 60-year old male, unemployed, married and father of three. Serving in the military during the Yom Kippur War (1973), he was exposed to multiple combat traumatic events during the war 40 years ago and was severely injured. In the hospital, he displayed symptoms of Acute Stress Disorder (ASD), and was later diagnosed with PTSD, which persisted to the time of this study. PTSD symptoms included, re-experiencing (e.g., intrusive image of soldiers' bodies as well as trauma-related flashbacks and nightmares), emotional and behavioral avoidance, hypervigilance, increased startle response, dissociative experiences, and both emotional and behavioral avoidance. Symptoms had a significant negative impact on his daily functioning, affecting his sleep, memory, concentration and emotional state.

Mr. E's OCD symptoms emerged in the hospital, just after he was evacuated from the battlefield, and were present at the time of assessment. Symptoms included obsessions concerning contamination, which were often associated with his traumatic experience, for example, extensive hand washing and daily bathing rituals owing to a constant feeling of being covered in blood. Mr. E also reported doubt and checking rituals (e.g., checking his car doors numerous times) and order and symmetry obsessions and compulsions. Symptoms caused profound distress and marital difficulties. Over the years, he received pharmacotherapy, but not CBT, with no improvement. At intake, Mr. E's total PSS-I severity score was 38 and his total YBOCS score was 26. Due to the severe impact of OCD symptoms on his daily functioning ERP was initiated.

Case 2: Treatment outcome

Mr. E received ERP for OCD 36 years after his traumatic war exposure. Adhering to the ERP treatment manual [44], an OCD-focused psychoeducation and treatment rational were provided. Following information gathering concerning obsessions, compulsions and avoidance behaviors, exposures were initiated. Mr. E and his therapist conducted 15 exposure and response prevention sessions.

At termination, Mr, E's OCD symptoms improved dramatically. His post-treatment YBOCS total score decreased from 26 to a total score of 6 (See Table1). However, his post-treatment PSS-I score remained 31, demonstrating no improvement or exacerbation of PTSD symptoms in reaction to ERP treatment. At one-year post-treatment follow-up, his improvement was sustained, with a YBOCS total score of 10.

Case 3: PE treatment for PTSD, after ERP for OCD

Mrs. H, a 38 years old, single mother, was pregnant and unemployed at the time of assessment. 15 years prior, she was a victim of a terrorist attack on a bus, during which she witnessed horrific scenes of wounded victims and corpses. Immediately after the terrorist attack, Mrs. H suffered from severe posttraumatic symptoms, including intrusive thoughts and nightmares. She avoided riding the bus, walking outside at night, and visiting crowded places. She suffered from severe sleep disturbance, was hypervigilant (e.g., sleeping on the sofa with lights on and with her face directed at the door), and experienced anger outbursts as well as emotional detachment. Symptoms had severely hindered her ability to function at work and she eventually lost her job.

Mrs. H developed OCD symptoms, immediately after the traumatic event. At first, she began washing her hands in reaction to intrusive images and flashbacks of blood. Progressively, obsessive fear of body fluids (urine, excrement, saliva, blood) emerged, along with a fear of contamination by HIV. She performed rituals of frequent and extensive hand washing, cleaning and avoidance behaviors. Mrs. H. also reported rituals aimed at preventing harm coming upon her family and herself (e.g., entering the room with her right leg, closing doors with her right hand). Pre-treatment PSS-I score was 39 and YBOCS score 37.

Case 4: Treatment outcome

The severity of Mrs. H's OC symptoms warranted ERP therapy as a first line of treatment. A hierarchical list of in vivo exposures was developed, including Subjective Units of Distress (SUDS). For example, touching the door handle in the therapist's room (SUDs =70), walking barefoot at home (SUDs =40), entering an elevator with the left leg (SUDs = 70), using public restrooms (SUDs =100). Next, the therapist and Mrs. H conducted gradual in vivo exposures, such as touching door handles in the psychiatric clinic, dining in public places, and touching floors. Mrs. H was instructed to stop performing rituals (for example, to wash her hands only after using the toilet, and to take showers that lasted no longer than 10 minutes). By the end of treatment, her OCD symptoms had significantly improved, but her PTSD remained severe, as indicated at the time of baseline assessment. YBOCS final score dropped from 37 to 19 (moderate level of OCD) and PSSI score dropped to 32.

Later on, once done with the ERP treatment, Mrs. H underwent prolonged exposure (PE) therapy to address her PTSD symptoms. During PE treatment, in vivo exposures to trauma-related situations, objects and places were performed (e.g., visiting crowded places, sleeping in her bedroom in the dark). In addition, as per the PE therapy protocol, imaginal exposures to the traumatic memory were conducted followed by processing of the traumatic event. PSS-I total score dropped from 36 to 20 (moderate level of PTSD).

Case 9: PE treatment for PTSD.

Mr. D., a 35 years old, unemployed male, married, and father of two. Thirteen years prior to treatment, during his military service as a commander, Mr. D. was exposed to numerous traumatic events. One traumatic event occurred when he and his comrades were under heavy artillery, and Mr. D, risking his own life, crawled towards one of his soldiers in an attempt to help him. The soldier was then hit by a missile, and by the time Mr. D made his way to him, he was met only by the soldier's dismembered body. As a result of the crawling, Mr. D's hands were covered in blood and body parts. He described feeling emotionally detached. As soon as he finished cleaning the post, Mr. D took a shower to wash the blood off his body. While showering, he wept for the first time. Shortly after this traumatic incident, he became extremely agitated and experienced outbursts of rage, sleep disturbances, and increased startle response. Intrusive trauma-related images haunted him, and he felt overwhelming guilt and shame that led him to become increasingly detached and withdrawn. In the subsequent 13 years, PTSD symptoms exacerbated and included flashbacks of scorched scents and odors of blood, night terrors, and a dramatic incline in avoidance of public places. In addition to PTSD symptoms, Mr. D reported OCD symptoms including repeated hand washing and uncharacteristic, 20-minute long daily showers, in extremely hot water. He reportedly avoided touching door handles and using public restrooms and experienced order and accuracy obsessions and compulsions. Mr. D rulled out a familial OCD history. He remembered clearly that his washing compulsions began in response to his flashbacks, but have been generalized to times he felt his hands were dirty. In addition; he suffered from major depression. Symptoms caused enormous distress and strain on his marriage. Over the years, he was treated with psychotherapy and pharmacotherapy that had no effect on his symptoms. He was never treated with CBT. Based DSM-IV criteria, he was diagnosed with severe PTSD and OCD. At intake, total PSS-I severity score was 33 (indicating severe level of PTSD) and his total YBOCS score was 25 (indicating moderate to severe level of OCD). Due to the severe impact of PTSD symptoms on his daily functioning, PE treatment was selected as a first line treatment.

Treatment outcome

Thirteen and a half years after the trauma Mr. D received PE treatment. As per the PE treatment manual, his therapist spent the first session presenting the treatment overview and rational, which emphasizes the influence of cognitive, emotional and behavioral avoidance in PTSD. During the second session, the therapist discussed common reactions to trauma aimed at normalizing and validating symptoms and emotions. In session three, for the first time in 13 years, Mr. D wept over the soldier he witnessed killed. Gradually, listening to the audio recordings of his trauma narrative, he realized that he took brave actions, risking his own life, in an attempt to save the soldier. Simultaneous in vivo exposures gradually desensitized Mr. D's anxiety. By treatment completion, he successfully visited public places, such as crowded shopping malls and took trips with his wife and children, regaining his ability to experience joy and pleasure.

RESULTS

Patients in treatment groups did not differ in baseline measures of PTSD and OCD severity [$F_{(1,8)} = .26$, $P = .62$; $F_{(1,8)} = 1.27$, $P = .29$, respectively]. Table 1 shows the PSSI and YBOCS scores of each participant at two time-points: baseline and post-treatment.

Table 1: PSSI and YBOCS scores of the study's participants before and after treatment.

Participant	Treatment	PSSI		YBOCS	
		Baseline	Post – treatment	Baseline	Post - treatment
1	CBT for OCD	31	31	26	6
2	CBT for OCD	18	16	30	11
3	CBT for OCD	39	32	37	19
4	CBT for OCD	25	23	25	12
5	CBT for OCD	35	27	23	9
6	PE for PTSD	33	13	26	22
7	PE for PTSD	27	17	25	23
8	PE for PTSD	34	5	25	25
9	PE for PTSD	33	15	25	18
10	PE for PTSD	31	12	26	24

In order to examine the participants' improvement in both OCD and PTSD symptoms, two difference measures were calculated for PSSI and YBOCS by subtracting the 'post' from the 'pre' score. A Pearson correlation that assessed the linear association between the decrease in PSSI and in YBOCS yielded a strong and negative correlation (r = -.86, p < .005), meaning that treatment generalization was not evident in both groups. Figure 1 shows the scatter plot of this correlation.
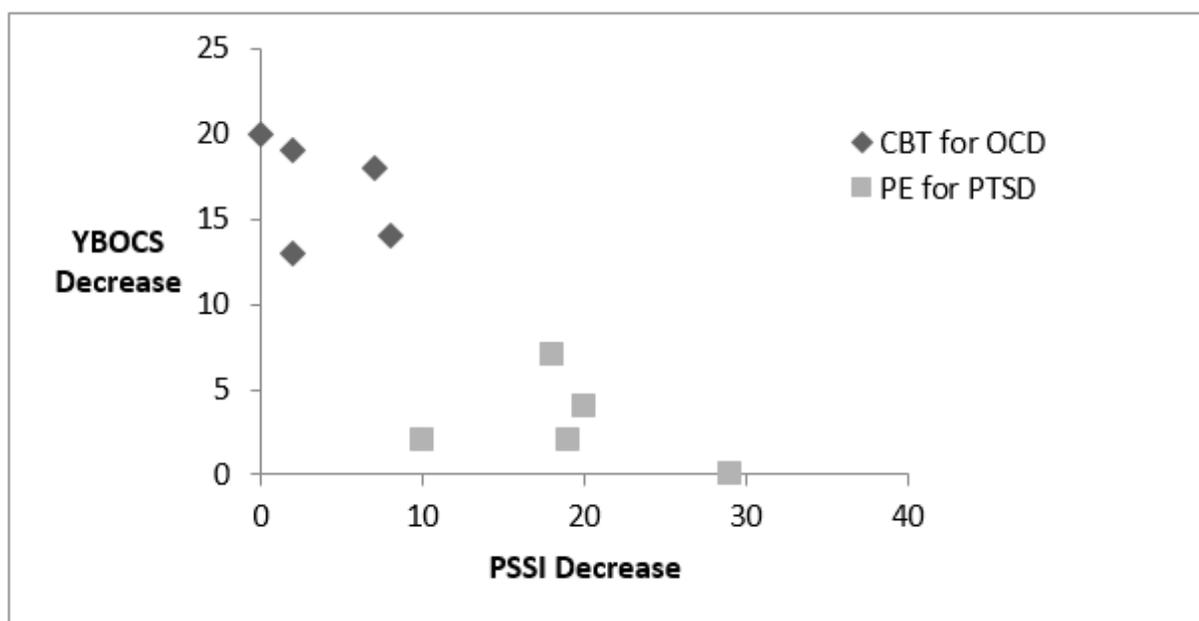

Figure 1: Participants' scores on the YBOCS and PSSI according to treatment.

In addition, to test the difference in symptom decrease between the two groups of participants on both PSSI and YBOCS, we calculated the proportion of the decrease from each participant's baseline measures. This created the proportion of improvement free of scaling differences between the measures. A Repeated Measure ANOVA tested whether the two groups differed in the proportion of decrease in the two measures (within-subject dependent variable) according to treatment group (independent variable). The analysis revealed a significant interaction between treatment group and measure [$F(1,8) = 53.70$, $p < .05$, $\eta p2 = .87$], suggesting that participants showed different patterns of improvement in PSSI and YBOCS measures depending on their treatment group. The main

effect for treatment was non-significant for both measures [$F_{(1,8)} = .001$, $p = $ n. s., $\eta p2 = .001$], that is the overall improvement of both treatments was comparable. As shown in Figure 2, the decrease proportion in symptoms of PTSD (PSSI) was greater in the PE treatment group and the decrease proportion in symptoms of OCD (YBOCS) was greater in the CBT for OCD treatment group. In addition, patients who received ERP treatment for OCD symptoms showed significant mild improvement in PTSD symptoms [$M = 12.0\%$; $t(5) = 3.02$, $p < .05$]. For the group who received PE treatment for PTSD symptoms, the improvement in OCD symptoms was marginally significant [$M = 11.8\%$; $t(5) = 2.50$, $p < .07$].
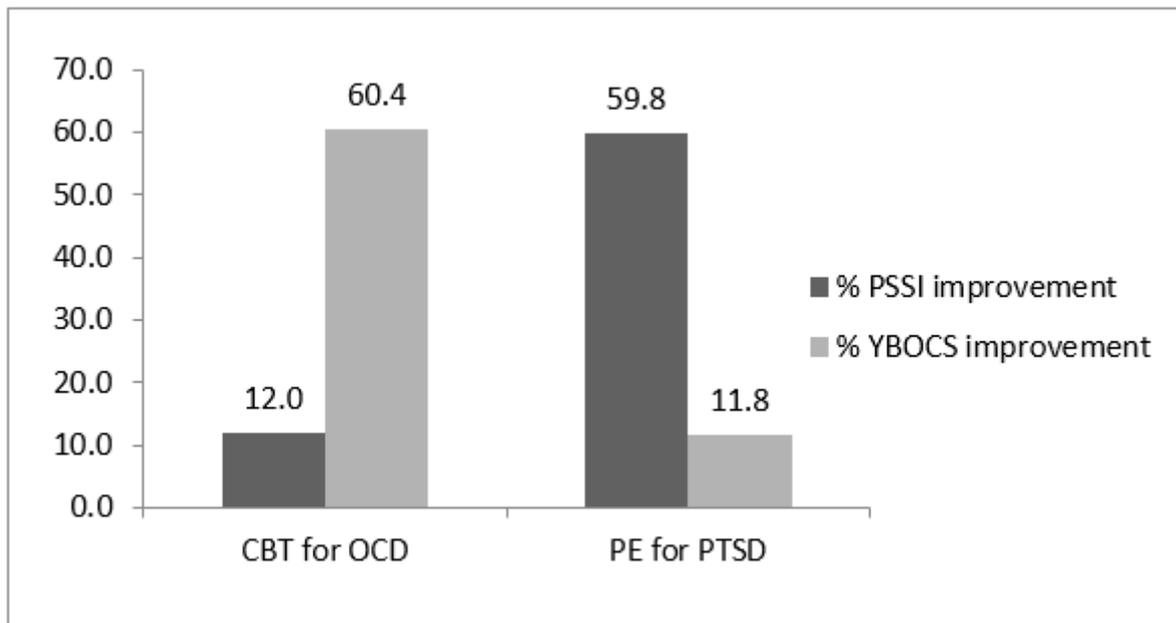

Figure 2: Percentage of improvement in YBOCS and PSSI according to treatment group.

DISCUSSION

This case series describes 10 veterans who were diagnosed with both PTSD and OCD following combat and terror trauma, with no prior personal or family history of OCD. Since evidence-based therapies exist for each one of these disorders, the decision regarding treatment approach was based on clinical judgment concerning the impact on the patient's functioning and quality of life. Accordingly, five patients received ERP therapy for their OCD and five patients received PE treatment. Treatment outcomes were assessed using pre- and post-treatment YBOCS and PSSI questionnaires. Following ERP all patients demonstrated marked improvement in OCD symptoms, and a minor reduction in PTSD symptoms. Likewise, the five patients who received PE treatment responded with marked improvement in PTSD symptoms and with minor reduction in OCD symptoms. Furthermore, the comorbid disorder that was not the primary focus of treatment did not impose a negative impact on treatment's efficacy in both groups. To our knowledge, this is the first case series presentation demonstrating (1) the effectiveness of PE treatment on patients with comorbid PTSD and OCD and, (2) clinical implementation of two evidence-based treatments with a sample of clinically comorbid OCD and PTSD patient population.

The salient limitation of the present study is our considerably small sample size. A larger sample size with comorbid PTSD and OCD patients will extend our knowledge concerning the effect of patients' characteristics on

response to treatment. Further studies include advanced imagining techniques and neuro-cognitive tests will assist in establishing clinical guidelines for the treatment of comorbid PTSD-OCD patients. Such findings may provide much-needed answers concerning the primary focus and course of treatment in comorbid OCD-PTSD patient populations. Specifically, which should be treated first, PTSD or OCD?

Our findings are in accordance with [43] who reported that PTSD did not inflict negatively on patients' responses to ERP treatment for OCD. Our findings are also in line with several cases that reported the links between severe traumatic experiences and the genesis of OCD [8,24,44]. As in these case reports, all of our patients reported that traumatic experiences preceded the onset of OCD. Furthermore, our findings support the idea that not only the severity, but also the nature and content of the traumatic event, determine OCD symptoms in each individual case. This finding is well reflected in Case 1, describing Mr E., a war veteran, whose compulsive bathing rituals emerged immediately following his traumatic exposure, and were reportedly associated with an intrusive image of being covered in blood, while as the disorder progressed, washing was no longer directly associated with traumatic memories and cues. Therefore, one can argue that post traumatic OCD symptoms become autonomous, taking on an independent course. Similar associations, between OCD symptoms and traumatic content, have been previously reported in the literature [24].

Our findings are incongruent with those reported by [42] who found ERP treatment for OCD is less effective with patients diagnosed with comorbid PTSD and OCD, hence concluding that PTSD may hinder behavioral treatment for OCD [40,41]. Several factors may elucidate the divergence in findings. For one, our decision regarding treatment focus was guided by careful evaluation of the symptoms causing the greatest level of distress and dysfunction. Second, we believe that patients' characteristics may explain dissimilarities in findings. In the [40], participants suffer from treatment-resistant OCD whereas our participants were undiagnosed for years and never received OCD treatment. Moreover, a portion of Gershuny's study participants suffered from severe major depressive disorder as reflected in high BDI scores and eating disorders. Finally, the current study focused on war-related trauma whereas Gershuny focused mostly on trauma of a sexual nature.

Our findings support the assumption of a co-existing post-traumatic OCD construct, distinct from PTSD alone. Current findings do not support the concept of a symptom overlap, as was suggested by [49]. Following Huppert's assumption about a symptom overlap, we would not expect ERP to reduce only specific symptoms related to OCD. [40,41,50], citing [24], also postulate a common trajectory for OCD and PTSD, similarly arguing that by neglecting treatment of traumatic reactions, patients are likely to resist OCD treatment or to replace OCD symptoms with maladaptive trauma-related coping strategies. In addition, adhering to Gershuny's assumption that OCD symptoms serve a coping function against trauma-related symptoms, hence therefore, we would expect PTSD symptoms to aggravate in response to ERP. However, in contrast to these assumptions, PTSD symptoms in our study remained still during and following ERP. The same is true with our patients who underwent PE, as PE did not reduce nor aggravated OCD symptoms. These findings support our previously mentioned conclusion, that comorbid OCD-PTSD follows a distinct trajectory to that of PTSD alone. This conclusion and findings are in line with the DSM 5 [51] which supports the separation of OCD and PTSD, yet recognizes an emerging understanding of the relationship between these discrete disorder as evidenced by their sequential placement [37]. Several clinical implications may be recommended based upon our results. We recommend that clinicians routinely inquire about traumatic events when assessing patients with OCD and enquire about OCD symptoms

when assessing patients with PTSD. We suggest that clinicians acquire knowledge about treatments for both disorders including evidence-based treatments, and trans-diagnostic models for the treatment of both disorders concurrently or separately, depending on the relative severity of the disorders. Finally, our findings support identifying the most salient cause for patient distress, and determining initial treatment approach based upon this important differential diagnosis. As demonstrated in the case of Mrs. H, who following the completion of ERP and recovery from OCD, underwent a successful PE treatment, treatment should be sequential; once the disorder causing greatest distress is treated, treatment can focus on the secondary disorder.

REFERENCES

1. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (5th ed.) Washington, DC: Author. 2013.

2. Koenen KC, Ratanatharathorn A, Ng L, McLaughlin KA, Bromet EJ, Stein DJ, et al. Posttraumatic stress disorder in the world mental health surveys. Psychol Med. 2017;47(13):2260-2274.

3. Hoge CW, Riviere LA, Wilk JE, Herrell RK, Weathers FW. The prevalence of post-traumatic stress disorder (PTSD) in US combat soldiers: a head-to-head comparison of DSM-5 versus DSM-IV-TR symptom criteria with the PTSD checklist. Lancet Psychiatry. 2014;1(4):269-277.

4. Müller J, Ganeshamoorthy S, Myers J. Risk factors associated with posttraumatic stress disorder in US veterans: A cohort study. PLoS One. 2017;12(7):e0181647.

5. Spitzer C, Vogel M, Barnow S, Freyberger HJ, Grabe HJ. Psychopathology and alexithymia in severe mental illness: The impact of trauma and posttraumatic stress symptoms. Eur Arch Psychiatry Clin Neurosci. 2007;257(4):191-196.

6. Gershuny BS, Baer L, Radomsky AS, Wilson KA, Jenike MA. Connections among symptoms of obsessive–compulsive disorder and posttraumatic stress disorder: a case series. Behav Res Ther. 2003;41(9):1029-1041.

7. Forray A, Focseneanu M, Pittman B, McDougle CJ, Epperson CN. Onset and exacerbation of obsessive-compulsive disorder in pregnancy and the postpartum period. J Clin Psychiatry. 2010;71(8):1061-1068.

8. Fostick L, Nacasch N, Zohar J. Acute obsessive compulsive disorder (OCD) in veterans with posttraumatic stress disorder (PTSD). World J Biol Psychiatry. 2012;13(4):312-315.

9. Murray CJ, Lopez AD. Evidence-based health policy-lessons from the Global Burden of Disease Study. Science. 1996;274(5288):740-743.

10. Pitman RK. Posttraumatic obsessive-compulsive disorder: A case study. Compr Psychiatry. 1993;34(2):102-107.

11. Sasson Y, Dekel S, Nacasch N, Chopra M, Zinger Y, Amital D, Zohar J. Posttraumatic obsessive–compulsive disorder: A case series. Psychiatry Res. 2005;135(2):145-152.

12. Badour CL, Bown S, Adams TG, Bunaciu L, Feldner MT. Specificity of fear and disgust experienced during traumatic interpersonal victimization in predicting posttraumatic stress and contamination-based obsessive–compulsive symptoms. J Anxiety Disord. 2012;26(5):590-598.

13. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry. 2005;62(6):593-602.

14. Murray CJ, Lopez AD. Evidence-based health policy-lessons from the Global Burden of Disease Study. Science. 1996;274(5288):740-743.

15. de Silva P, Marks M. Traumatic experiences, post-traumatic stress disorder and obsessive-compulsive disorder. International Review of Psychiatry. 2001;13(3):72-180.

16. Fletcher TL, Van Kirk N, Hundt N. Obsessive-compulsive disorder and comorbid posttraumatic stress disorder. In Advanced casebook of obsessive-compulsive and related disorders. 2020;105-121.

17. Gershuny BS, Baer L, Radomsky AS, Wilson KA, Jenike MA. Connections among symptoms of obsessive–compulsive disorder and posttraumatic stress disorder: a case series. Behav Res Ther. 2003;41(9):1029-1041.

18. T A Brown, L A Campbell, C L Lehman, J R Grisham, R B Mancill. Current and lifetime comorbidity of the DSM-IV anxiety and mood disorders in a large clinical sample. J Abnorm Psychol . 2001;110(4):585-99.

19. Ruscio AM, Stein DJ, Chiu WT, Kessler RC. The epidemiology of obsessive- compulsive disorder in the National Comorbidity Survey Replication. Mol Psychiatry. 2010;15(1):53-63.

20. Fontenelle LF, Cocchi L, Harrison BJ, Shavitt RG, do Rosário MC, Ferrão YA, et al. Towards a post-traumatic subtype of obsessive–compulsive disorder. J Anxiety Disord. 2012;26(2):377-383.

21. Ojserkis R, Boisseau CL, Reddy MK, Mancebo MC, Eisen JL, Rasmussen SA. The impact of lifetime PTSD on the seven-year course and clinical characteristics of OCD. Psychiatry Res. 2017;258:78-82.

22. Pinciotti CM, Orcutt HK. Common symptom presentations in individuals with probable comorbid obsessive-compulsive disorder and posttraumatic stress disorder. J Nerv Ment Dis. 2020;208(10):777-784.

23. McIngvale E, Van Kirk N, Amspoker AB, Stanley MA, Fletcher TL. Prevalence and treatment of obsessive-compulsive disorder in veterans and active-duty service members: A systematic review. J Cogn Psychother. 2019;33(1):11-22.

24. de Silva P, Marks M. The role of traumatic experiences in the genesis of obsessive–compulsive disorder. Behav Res Therapy. 1999;37(10):941-951.

25. Zohar J, Fostick L, Juven-Wetzler E. Obsessive compulsive disorder. In Gelder, M., Andreasen, N., Lopez-Ibor, J., Geddes, J. (Eds). New Oxford Textbook of Psychiatry, Second Edition (pp. 765-773). Oxford University Press: New York. 2009.

26. Borges MC, Braga DT, Iêgo S, D'Alcante CC, Sidrim I, Machado MC, et al. Cognitive dysfunction in post-traumatic obsessive–compulsive disorder. Aust N Z J Psychiatry. 2011;45(1):76-85.

27. Franklin ME, Abramowitz JS, Kozak MJ, Levitt JT, Foa EB. Effectiveness of exposure and ritual prevention for obsessive-compulsive disorder: randomized compared with nonrandomized samples. J Consult Clin Psychol. 2000;68(4):594-602.

28. Song Y, Li D, Zhan, S, Jin Z, Zhen Y, Su Y, et al. The effect of exposure and response prevention therapy on obsessive-compulsive disorder: A systematic review and meta-analysis. Psychiatry Res. 2022;317:114861.

29. McLean CP, Levy HC, Miller ML, Tolin DF. Exposure therapy for PTSD: A meta-analysis. Clin Psychol Rev. 2022;91:102115.

30. Miller MW, Fogler JM, Wolf EJ, Kaloupek DG, Keane TM. The internalizing and externalizing structure of psychiatric comorbidity in combat veterans. J Traumatic Stress. 2008;21(1):58-65.

31. Foa E, Hembree EA, Rothbaum BO, Rauch S. Prolonged Exposure Therapy for PTSD: Emotional Processing of Traumatic Experiences-Therapist Guide. 2019.

32. Schnurr PP, Friedman MJ, Engel CC, Foa EB, Shea MT, Chow BK, et al. Cognitive behavioral therapy for posttraumatic stress disorder in women: A randomized controlled trial. JAMA. 2007;297(8):820-830.

33. Pinciotti CM, Orcutt HK. Common symptom presentations in individuals with probable comorbid obsessive-compulsive disorder and posttraumatic stress disorder. J Nerv Ment Dis. 2020;208(10):777-784.

34. Lewis C, Roberts NP, Andrew M, Starling E, Bisson JI. Psychological therapies for post-traumatic stress disorder in adults: Systematic review and meta-analysis. Eur J Psychotraumatol. 2020;11(1):1729633.

35. Karen Cusack, Daniel E Jonas, Catherine A Forneris, Candi Wines, Jeffrey Sonis, Jennifer Cook Middleton, et al. Psychological treatments for adults with posttraumatic stress disorder: A systematic review and meta-analysis. Clin Psychol Rev. 2016:43:128-41.

36. Antonio Del Casale, Serena Sorice, Alessio Padovano, Maurizio Simmaco, Stefano Ferracuti, Dorian A Lamis, et al. Psychopharmacological treatment of obsessive-compulsive disorder (OCD). Curr Neuropharmacol. 2019;17(8):710-736.

37. Stein DJ, Seedat S, van der Linden GJ, Zungu-Dirwayi N. Selective serotonin reuptake inhibitors in the treatment of post-traumatic stress disorder: a metaanalysis of randomized controlled trials. Int Clin Psychopharmacol. 2000;15:S31-S39.

38. Pinciotti CM, Van Kirk N, Horvath G, Storch EA, Mancebo MC, Abramowitz JS, et al. Co-occurring PTSD in intensive OCD treatment: Impact on treatment trajectory vs. response. J Affect Disord. 2024;353:109-116.

39. Van Kirk N, Fletcher TL, Wanner JL, Hundt N, Teng EJ. Implications of comorbid OCD on PTSD treatment: A case study. Bull Menninger Clin. 2018 Fall;82(4):344-359.

40. Gershuny BS, Baer L, Jenike MA, Minichiello WE, Wilhelm S. Comorbid posttraumatic stress disorder: Impact on treatment outcome for obsessive-compulsive disorder. Am J Psychiatry. 2002;159(5):852-854.

41. Rothbaum BO, Meadows E, Resick P, Foy DW. Cognitive-behavioral therapy. In: Foa, E.B., Keane, T.M., Friedman, M.J., (Eds.), Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies (pp. 60-83). New York, N.Y. Guilford Press. 2000.

42. Pinciotti CM, Riemann BC, Wetterneck CT. Differences in intolerance of uncertainty in OCD and comorbid PTSD underlying attenuated treatment response. Ann Psychiatry Ment Health. 2020;8(1), 1142.

43. Shavitt RG, Valério C, Fossaluza V, Da Silva EM, Cordeiro Q, Diniz JB, et al. The impact of trauma and post-traumatic stress disorder on the treatment response of patients with obsessive-compulsive disorder. Eur Arch Psychiatry Clin Neurosci. 2010;260(2):91-9.

44. Foa EB, Yadin E, Lichner TK. Exposure and response (ritual) prevention for obsessive-compulsive disorder: Therapist guide. Oxford University Press.2012 .

45. Pinninti NR, Madison H, Musser E, Rissmiller D. MINI International Neuropsychiatric Schedule: clinical utility and patient acceptance. Eur Psychiatry. 2003;18(7):361-364.

46. Goodman WK, Price LH, Rasmussen SA, Mazure C, Fleischmann RL, Hill CL, et al. The Yale-Brown obsessive compulsive scale: I. Development, use, and reliability. Arch Gen Psychiatry. 1989;46(11): 1006-1011.

47. Foa EB, Riggs DS, Dancu CV, Rothbaum BO. Reliability and validity of a brief instrument for assessing post-traumatic stress disorder. Journal of traumatic stress. 1993;6(4):459-473.

48. Pinciotti CM, Riemann BC, Wetterneck CT. Differences in intolerance of uncertainty in OCD and comorbid PTSD underlying attenuated treatment response. Ann Psychiatry Ment Health. 2020;8(1), 1142.

49. Huppert JD, Moser JS, Gershuny BS, Riggs DS, Spokas M, Filip J, et al. The relationship between obsessive–compulsive and posttraumatic stress symptoms in clinical and non-clinical samples. J Anxiety Disord. 2005;19(1):127-136.

50. Dykshoorn KL. Trauma-related obsessive–compulsive disorder: a review. Health Psychol Behav Med. 2014;2(1):517-528.

51. Fisher PL, Wells A. How effective are cognitive and behavioral treatments for obsessive–compulsive disorder? A clinical significance analysis. Behav Res Ther. 2005;43(12):1543-1558.