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Diagnosis and Treatment of PTSD-Related Compulsive Checking Behaviors in Veterans of the Iraq War: The Influence of Military Context on the Expression of PTSD Symptoms

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This case study presents an overview of the conceptualization and treatment of two veterans of the Iraq War who presented for combat-related treatment at a Veterans Administration Medical Center. In addition to posttraumatic stress disorder (PTSD) symptoms of reexperiencing, arousal, and avoidance, the veterans exhibited compulsive checking behaviors that appear to be influenced by theater-specific combat duties and traumatic events. These cases represent what the authors believe to be an increasingly common expression of PTSD in veterans of the Iraq and Afghanistan wars. Both veterans were treated with prolonged exposure therapy, which includes imaginal and in vivo exposure to anxiety-provoking stimuli, processing of traumatic events, and self-assessment of anxiety. Treatment also included in vivo exposure with response prevention techniques borrowed from the literature on obsessive-compulsive disorder to address compulsive checking behaviors within the ecological context of each patient's symptom presentation. Measures related to PTSD and depression were obtained before, during, and after treatment. Treatment was associated with significant declines in symptom severity and improved functioning for both veterans. The unique nature of the conflict in the Middle East represents role challenges for soldiers that affect symptom presentation. Variations in symptom presentation can in turn complicate efforts to identify and appropriately address PTSD-related health concerns in this population. Thus, clinicians and researchers must remain cognizant of how theater-specific duties influence the manifestation and treatment of PTSD in order to provide optimal care to a new generation of veterans.

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Since 2001, more than 1.5 million U.S. troops have been deployed to Iraq or Afghanistan as part of Operations Iraqi Freedom and Enduring Freedom (OIF/OEF) (1). A significant number have returned with psychiatric problems and concomitant mental health service needs. A recent large-scale study of OIF/OEF Army and Marine personnel indicated that 10%–20% of personnel meet criteria for posttraumatic stress disorder (PTSD), depending on the stringency of the diagnostic standard used (2). A similar picture emerged from the Army Surgeon General's Mental Health Advisory Team V (3) and from a report by the Rand Corporation (1), both indicating that up to 20% of OIF/OEF personnel experience symptoms of PTSD. These data suggest that hundreds of thousands of individuals returning from Iraq and Afghanistan suffer from at least some posttraumatic stress symptoms.

Although such estimates of risk for PTSD may seem inflated, it is reasonable to expect that multiple deployments, the experiencing of numerous traumas, and the long periods of sustained threat associated with OIF/OEF deployment would increase the risk of developing PTSD. When the sheer scale of these military efforts is taken into account, even more modest estimates of risk translate into large numbers of individuals who may need mental health services. Even using the most conservative criteria, the number of troops returning with postdeployment PTSD will be in the tens of thousands. Such projected estimates raise public health concerns that may transcend the capacities of the Department of Defense and Department of Veterans Affairs (VA) health care systems. While efficacious cognitive-behavioral interventions for PTSD have been developed (4, 5), we need to improve methods for disseminating such treatments to community- and hospital-based clinics where mental health professionals provide day- to-day services to patients with PTSD. Although meeting the mental health needs of OIF/OEF personnel

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presents challenges, doing so provides new opportunities to refine our understanding of PTSD and continue to improve on methods of identification, engagement, and treatment of the disorder.

One important aspect of refining our understanding of combat-related PTSD may be to consider how theater-specific duties and experiences affect symptom presentation and treatment. Our clinical observation suggests that compulsive checking as a safety behavior may be a frequent component of OIF/OEF-related PTSD symptom presentation (25%–30% of OIF/OEF veterans diagnosed with PTSD who present to our clinic engage in compulsive checking); however, appropriate research has not been conducted to investigate this observation. The clinical sample that forms the basis of these observations is not ideal for establishing base rates for checking behaviors in PTSD patients in general or for investigating the correlates of PTSD-related checking behavior. Such data are also difficult to gather without objective measures in place to assess checking behaviors in a reliable and valid manner or otherwise establish objective criteria for distinguishing general hypervigilance from compulsive checking. Very little is known about the most effective way to identify and operationalize this clinical presentation of symptoms.

Our goal in this article is to discuss how to conceptualize and treat what we believe to be a common expression of PTSD in OIF/OEF veterans. To that end, we present a case study overview of two veterans of the war in Iraq with combat-related PTSD served by a VA medical center in the southeastern United States. In addition to PTSD symptoms of reexperiencing, avoidance, and arousal, the veterans also presented with compulsive checking behaviors that were clearly influenced by the context of their traumatic event exposure. The compulsive checking behaviors did not qualify these patients for a concomitant diagnosis of obsessive-compulsive disorder (OCD) because the criteria for OCD specify that compulsions cannot be restricted to the context of another axis I diagnosis—in this case, PTSD. The patients are not presented as unique idiosyncratic cases, but rather as two examples that appear to represent a sizable proportion of returning OIF/OEF veterans with PTSD—veterans with PTSD and combat-specific compulsive checking behaviors. We then discuss these case presentations within the broader context of OIF/OEF-related PTSD, particularly with regard to implications of compulsive checking behaviors for diagnostic considerations and treatment planning.

Case Presentations

Measures and Treatment

Three instruments for diagnostic assessment and ongoing treatment planning were used in both of the cases presented: the PTSD module of the Structured Clinical Interview for DSM-IV (SCID) (6); the PTSD Checklist–Military Version (7), and the Beck Depression Inventory–II (BDI) (8). Both patients were treated with prolonged exposure therapy (9), which included imaginal and in vivo exposure exercises, processing of traumatic events, and patient self-assessment using subjective units of distress (10). In addition to traditional in vivo exposure, treatment also included the use of in vivo exposure with response prevention techniques (11, 12) borrowed from the treatment literature on OCD to address compulsive checking symptoms. Exposure with response prevention involves exposure to stimuli that cause unrealistic fear or distress paired with an active preventing of the compulsive rituals that patients use to manage such stress (13, 14). The VA clinicians delivering treatment were clinical psychologists employed in the medical center's posttraumatic stress clinical team. Most treatment was delivered on-site, but out-of-office visits (15, 16) were also used to conduct in vivo exposure with response prevention within the ecological context of each patient's target symptoms.

Case 1

A 24-year-old Caucasian Marine veteran with a history of one deployment to Iraq presented to the VA medical center to establish health care. On intake to primary care, he screened positive for PTSD and was referred for specialty services to the posttraumatic stress clinical team. The patient reported that his primary combat duties included going from house to house and clearing rooms one at a time to secure neighborhoods. In the context of that duty he reported being exposed to multiple life-threatening situations and firefights, witnessing dead and mutilated bodies, making many split-second life-or-death decisions, and losing two of his friends to combat-related death. After returning to the United States he began to experience at least eight distinct intrusive memories and nightmares from these combat experiences. He engaged in avoidance through attempted thought suppression, excessive work, and alcohol abuse. He avoided crowds and social situations and dropped out of college because he felt unable to focus on his academic duties as a result of his symptoms. On presentation to the posttraumatic stress clinical team, he was diagnosed with PTSD according to the SCID, and he scored in the clinical range on the PTSD Checklist (a score of 69 out of a possible 85) and the BDI (a score of 30 out of a possible 63). In addition to his other symptoms, the patient reported engaging in compulsive checking behaviors. He reported checking his front door lock 10 to 30 times a day and peeking out of his window blinds 30 to 50 times per day. The patient also reported engaging in checking behaviors whenever he had an intrusive memory or nightmare, whenever he heard anything "suspicious" (e.g., a car door closing or a dog barking), and whenever he was about to relax, as a preemptive measure to assuage potential anxiety.

Treatment and progress

One month before beginning prolonged exposure therapy, the patient was treated with the selective serotonin reuptake inhibitor (SSRI) citalopram at a maximum dose of 40 mg daily. Although SSRIs have established efficacy for treating OCD (17) and PTSD, the patient continued to

have functionally impairing PTSD symptoms, including compulsive checking behaviors. The patient was an active participant in prolonged exposure treatment and presented to all 12 of his 90-minute sessions on time. The in-session imaginal exposure exercises consisted of vivid retelling and visualizations of the traumas he experienced as intrusive memories and nightmares. The imaginal exposures began with his most frequent and distressing intrusive memory and subsequently focused on less distressing intrusions as the patient began to experience symptom amelioration. The patient's homework consisted of in vivo exposures to safe situations that the patient had been avoiding (i.e., going to the post office to mail his bills or to the food court at the mall during a weekday). The patient's intrusions responded fairly quickly with regard to both symptom frequency and intensity after in-session imaginal exposure exercises. After five sessions, the patient scored a 40 on the PTSD Checklist and a 22 on the BDI, and he expressed having some relief from his intrusions. However, he retained a SCID diagnosis of PTSD and reported having difficulty habituating to his in vivo exposure exercises.

During this period of treatment, the patient's compulsive door and window checking were reduced as a result of the amelioration of intrusions, which were often the impetus for his checking in the first place. However, the actual behavioral reinforcement of checking whenever he did feel anxious continued and remained clinically significant. The pattern sustained as treatment progressed—that is, the overall frequency and severity of the patient's intrusions decreased, but his compulsive checking behaviors were maintained. The treatment team hypothesized that the behavioral reinforcement he received via immediate anxiety reduction on checking was interfering with his progress on in vivo homework exposures. That is, the patient's self-reinforcing checking behaviors in response to anxiety at home made it more difficult for him to tolerate any anxiety long enough to experience success outside the home in regaining prepathological social functioning. Attempts to assign him in vivo homework not to check were unsuccessful. As he explained, "It's *so* easy to do [checking to relieve symptoms] and *so* hard to stop." Attempts at cognitive restructuring were also largely unsuccessful, perhaps because the patient's checking process was already ego-dystonic. As the patient explained, "Sitting here [in the clinic], I know that a bunch of Iraqi insurgents are not going to bust in my door, but at home when I'm amped up, I can't help myself, I'm up and I'm checking."

The eighth treatment meeting consisted of an in-home exposure session where response prevention was added to the in vivo exposure paradigm. The patient and therapist sat in the patient's living room and waited for naturally occurring sounds—car doors closing, dogs barking, trucks going over potholes, and the like—from the outside to induce anxiety. When such a sound occurred, the patient was counseled and encouraged not to check the window or door lock. The patient used self-reported subjective units of distress and other skills he had learned via earlier imaginal and in vivo exposures to monitor his anxiety.

Anxiety-inducing sounds occurred about every 4 minutes on average. The patient was able to refrain from checking behaviors and also was able to habituate to normal neighborhood sounds within the session. The treatment team hypothesized that the patient was able to experience such success because of the increased support and accountability resulting from the therapist being present in the ecological context of his symptoms. Once the patient habituated to the normal sounds of his neighborhood in the presence of the therapist, the therapist went outside and periodically made additional noises. The patient knew the therapist was going to do this and was instructed not to check the window. Although the patient knew the therapist was making the noise, he reported having a more difficult time not checking because the noise was "a little louder and closer." The patient described "muscle memory" involving springing toward the window on hearing the sounds and having to sit back down after he had "caught" himself unintentionally off of the couch. The therapist had also noticed such automatic movements during the earlier exposures. These movements may explain why cognitive restructuring, emotional processing of the patient's traumas, and assigned in vivo homework had not led to extinction of the checking behaviors; the patient's checking behaviors were ingrained enough to be "overlearned" and appeared to be operating, at least in part, independently of executive functioning. However, focused and repeated practice of in vivo exposure and response prevention led to within-session extinction of the urge to check. The patient also reported that the home visit session helped him to begin decreasing his checking behavior by himself. The remaining four sessions focused on consolidating treatment gains concerning the patient's intrusions, strengthening his ability to refrain from checking behaviors, and expanding his tolerance for participating in social and functional activities that involved crowds.

Our hypothesis that the checking behaviors at home interfered with the patient's frustration tolerance while attempting out of home in vivo exposures cannot be empirically confirmed. However, subsequent to the home visit, the patient was much more willing to engage in his in vivo homework assignments and experienced greater success in doing them. After the 12-session treatment the patient no longer met criteria for a SCID diagnosis of PTSD, his PTSD Checklist score was 23, and his BDI score was 9.

Case 2

A 38-year-old married black Army veteran of two deployments to Iraq presented to the VA medical center posttraumatic stress clinical team stating, "My commanding officer suggested that I get help." The patient's primary duties during both of his tours included providing security for truck convoys by patrolling alongside them in an armed Humvee. In the course of these duties he was exposed to multiple life-threatening situations, witnessed an improvised explosive device detonate during a convoy, witnessed dead and mutilated bodies, witnessed a motor vehicle run over a little girl, and was responsible for checking the convoy trucks and accompanying vehicles for bombs. At the time of intake he was experiencing more than 10 distinct intrusive memories. He engaged in avoidance through attempted thought suppression, doing his errands late at night to avoid people, and staying home as much as possible while not at work. On presentation to the posttraumatic stress clini-

cal team, he was diagnosed with PTSD according to SCID criteria and scored in the clinical range on the PTSD Checklist (a score of 68) and the BDI (a score of 31). The patient also engaged in compulsive checking behaviors. He checked under his car and under the hood of his car for bombs every time he needed to drive (two to eight times per day). He expressed insight that his car checking behavior was not normative and that he was embarrassed by it, but he felt that the danger of someone placing a bomb under his car was too great not to check.

Treatment and progress

The patient was treated with citalopram, at a maximum dose of 40 mg, for 7 weeks before beginning prolonged exposure therapy but continued to have a significant PTSD symptom burden, including compulsive behaviors. The patient was an active participant in prolonged exposure therapy and arrived on time to 15 sessions. Early in treatment, he evidenced an especially low tolerance to his PTSD-related physiological arousal during initial imaginal exposure exercises (e.g., speeding heart, shortness of breath, and tingling in his hands). Accordingly, treatment incorporated interoceptive exposure (18) exercises to help desensitize the patient to these specific physiological symptoms. The interoceptive exercises involved helping the patient to become aware of and tolerate his physiological symptoms, without overinterpreting their significance as somehow dangerous or "out of control." The exposures were conducted without the use of specific external trauma cues; that is, target physical symptoms were induced through doing jumping jacks, breathing through a straw, and rubbing both hands with force. Thus, the patient learned to sit with and tolerate the simulated feeling of his activated sympathetic nervous system. The interoceptive exercises were completed by both the patient and the clinician, improving rapport, encouraging levity in the treatment process, and instilling a sense of teamwork. Additionally, as suggested by earlier work investigating augmentation of PTSD-oriented exposure therapy with other cognitive-behavioral techniques (19), the interoceptive exposures were done in addition to imaginal and in vivo exposures. That is, overall treatment time was expanded to accommodate the added component of the interoceptive exposures without encroaching on time devoted to imaginal and in vivo exposures. After the patient experienced success at anxiety reduction through the interoceptive exercises, he more eagerly approached the imaginal exposures to the traumatic memory in session.

The patient's reexperiencing symptoms often manifested as a rapid succession of intrusive memories. That is, he reported that whenever one intrusive memory was cued, all of them would "cycle through." Because the intrusive memories seemed related and were experienced with high levels of distress at the same time, it would often take the patient 2 or 3 weeks to realize that he had not experienced a distinct intrusive memory subsequent to exposure and processing. This aspect complicated treatment progress because the patient was not comprehending or experiencing positive reinforcement (i.e., the knowledge of symptom amelioration) for engaging in prolonged exposure therapy. Nonetheless, the patient and therapist maintained good rapport, and the patient began to realize significant decreases in intrusive memories by the ninth session (PTSD Checklist score=45, BDI score=19). At the same time, however, the patient was making little progress in limiting his car checking behaviors or in successfully habituating to, or completing, in vivo exposure activities.

The 10th treatment session consisted of in-home in vivo exposure and response prevention exercises. The patient and therapist practiced leaving the patient's home and getting into his car without checking under the car or the car hood for bombs. Much like the first patient described above, this patient also exhibited an overlearned "muscle memory" for the checking behavior evidenced by a quick jerky hand movement toward the hood release latch while opening the car door. After 30 consecutive trials of getting into the car and getting out of the car without checking, the patient was able to get into his car and start the engine without experiencing distress. The patient's behavior logs over the next 5 weeks indicated a successive decrease in car checking behavior, going 7 days in a row without checking by the last week of treatment. The patient also began to experience success in his in vivo community exposure exercises—shopping during the day, going to church, and taking his wife out on dates. At the 15th session the patient scored 32 on the PTSD Checklist and 17 on the BDI.

Discussion

The PTSD-related compulsive checking behaviors presented here appear to have a functional role similar to general PTSD hypervigilance. Both behaviors are negatively reinforced as a means of anxiety control, and the impetus for both can be explained by a failure to completely process traumatic experiences. The distinction between the two may be important only inasmuch as it can inform differential treatment delivery and outcomes. In theory, in vivo exposure (to address hypervigilance) and exposure with response prevention (to address compulsive checking) differ only in that the latter focuses on preventing a patient's specific compulsive response(s) to anxiety-provoking stimuli. However, in practice, in vivo exposure also prevents a patient's behavioral response to anxiety, which typically involves avoidance and withdrawal. Furthermore, working from the basic principles of nonavoidance and anxiety tolerance to objectively safe stimuli, any experienced exposure therapist would encourage his or her patients with PTSD not to repeatedly check locks or check cars for bombs. However, one potentially important distinction for treatment is that there is a robust OCD literature and history concerning the benefits of conducting in vivo exposure and response prevention within the ecological context of the symptoms by using out-of-office therapist-assisted sessions (14, 15).

Although in vivo exposure, by definition, emphasizes the need to address symptoms within the context in which they occur, the technique is usually assigned to patients as "homework," to be done without the direct presence and support of a therapist. Often patients excel at completing and habituating to their homework assignments, especially if the in vivo exposure hierarchies are graded appropriately (10). However, many patients who, like those

presented in these two case studies, have more severe symptoms and less intrinsic coping skills have a difficult time tolerating anxiety by themselves long enough to succeed at or even sincerely attempt in vivo homework assignments. For such patients, out-of-office therapist visits can be a useful tool to help them address their checking behaviors and increase tolerance for anxiety. Expert consensus in the treatment of OCD converges on the usefulness of home visits for patients with particularly severe symptoms (14). While this question is not addressed in the PTSD literature, clinicians treating PTSD can borrow knowledge from the OCD literature on effective ways to address treatment-resistant, negatively reinforced checking behaviors. Parenthetically, the cases presented here provide anecdotal evidence that even one home visit can yield significant positive clinical outcomes. The adaptation of compulsive checking measures, such as the Yale-Brown Obsessive Compulsive Scale (20), for use in PTSD populations may give researchers a useful tool for assessing the impact of home visits on compulsive checking behaviors.

The cases presented, and the observed frequency of such cases in OIF/OEF veterans in general, are also of interest from the perspective of historical context. The patient described in the first case took part in multiple forceful home intrusions as part of his military duties, and these experiences subsequently had an impact on his sense of safety at home. Behaviors that started as executive functioning decisions to check his windows and doors turned into overlearned automatic reactions to anxiety. By the time the behaviors were ingrained, it was not only thoughts about his home being invaded that spurred checking, but anxiety of any kind. Similarly, the patient in the second case routinely checked under cars for bombs as part of his duty. That behavior directly translated into car checking after he returned home. The military context, the rigid following of procedures and orders that the military ingrains and relies upon for the survival of its troops, may also play a role in symptom presentation and maintenance. Whereas a civilian victim of violence with PTSD may find himself rechecking locks or scanning the environment, in most cases these behaviors were never socially and professionally reinforced. Multiple, repetitive, and sustained manifestations of hypervigilance are rewarded in many OIF/OEF combat situations, by both superiors and peers. This reward structure may operate as a parallel process to PTSD which encourages the manifestation of PTSD symptoms as repetitive checking behaviors and socially ingrains those behaviors so as to make extinction more difficult.

Conclusions

We presented these cases to stimulate discussion on what we believe to be an increasingly common expression of combat-related PTSD (i.e., PTSD with combat-specific compulsive checking behaviors). It will be important for clinicians and researchers to remain mindful of how OIF/OEF veterans present with symptoms and how they subsequently respond to traditional treatments for the disorder. As noted in the case presentations, the inclusion of response prevention within the ecological context of each patient's symptoms appears to have resulted in significant treatment gains that may not have occurred otherwise. Furthermore, the manifestation of specific compulsive checking behaviors is of interest from a broader historical perspective. Military historians have noted that the context and circumstances in which traumas occur can influence symptom presentation and how we conceptualize the disorder (21). That is, while combat exposure can obviously cause significant distress and pathology, there is reason to believe that specific reactions to combat are to some degree mediated by historical context and military culture. Historical reviews indicate that the prevalence of combat-related PTSD and particular symptoms can change over time within a population, and these changes are only partly explained by improvements in diagnostic procedures (21–24). The nature of the conflicts in Iraq and Afghanistan creates unique role challenges for our veterans that will likely shape symptom presentation and clinical outcomes. Variations in symptom presentation can in turn complicate mental health efforts to identify and appropriately address PTSD-related public health concerns. We encourage ongoing consideration of the cases and issues presented here in order to ensure that OIF/OEF veterans receive mental health services that are appropriately tailored to their needs.

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