

Veterans with co-morbid posttraumatic stress disorder and mild traumatic brain injury: the nurse practitioners role in facilitating treatment

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Abstract

Background: Many military veterans experience events during deployment that cause mild traumatic brain injury (mTBI) and symptoms of Posttraumatic Stress Disorder (PTSD). Due to the inconsistencies in treatment plans for patients with these co-morbid conditions, it is important that nurse practitioners and other mental health care providers are aware of the options available and facilitate appropriate treatment in order to improve outcomes for this patient population.

Purpose: To discuss standard evidence-based practice protocols to treat co-morbid PTSD and mTBI in veterans, evidenced by the review of a case study, and to highlight the importance of the role of the nurse practitioner in facilitating appropriate treatment.

Methods: A case study and article review of published literature related to treatment options for patients with co-morbid mTBI and PTSD will be discussed.

Conclusion: This paper will illustrate the findings and discuss implications for the nurse practitioner's role in facilitating appropriate treatment plans in order to improve outcomes for patients with co-morbid mTBI and PTSD.

Keywords: Veterans, Posttraumatic Stress Disorder, Mild Traumatic Brain Injury, Nurse Practitioners, Treatment

Introduction

PTSD can occur after someone experiences or witnesses a traumatic event in which their physical or emotional well-being is threatened. Many veterans experience traumatic events while deployed that cause symptoms of PTSD, ranging from combat related incidents, to training accidents or traffic collisions. Bogdanova and Verfaellie noted that among combat deployed troops, there is a relatively consistent prevalence of PTSD in the range of 10-17%.¹ Richardson et al. noted that recent studies have suggested combat related PTSD rates are between 4-17%. Among different nations, the rates vary, with the highest prevalence noted in the United States at approximately 17%, compared to a 12% prevalence in Australian and United Kingdom veterans, and 7.2% of Canadian veterans.² The highest rates of PTSD are reported among veterans who also have a history of mTBI at a prevalence of 33-39%,¹ although it is debatable as to whether the development of PTSD is related to the fact that the patient sustained a mTBI or if the condition would have also occurred in the absence of a mTBI.

Otis et al.³ describe the symptom profile of PTSD, which includes: 1) experiencing a traumatic event, 2) re-experiencing the event via recurrent thoughts, nightmares, or flashbacks, 3) avoidance of stimuli, thoughts or places associated with the traumatic event, and 4) emotional detachment and symptoms of hyper-arousal which cause increased startle reflex, problems with sleep, attention and concentration problems, hypervigilance, and the presence of irritability and anger.

Sripada et al.⁴ define a mTBI as a traumatically induced physiological disruption of brain function, as manifested by at least one of the following: 1) any period of loss of consciousness not exceeding 30 minutes, 2) any loss of memory for events immediately before or after the accident, 3) any alteration in mental state at the time of the accident such as feeling dazed, disoriented, or confused, and 4) focal neurological deficits that may or may not be transient such as weakness, loss of balance, and vision changes. The symptoms of mTBI can last days or weeks, but usually resolve before three months. When the symptoms last longer than three months,

the patient is considered to have post concussive syndrome (PCS).

Otis et al.³ cite The Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, 2000 and describe PCS as a clinical syndrome where at least three symptoms of concussion persist after the initial three months following a head injury. Symptoms of concussion include fatigue, difficulty sleeping, dizziness, persistent headaches, irritability, increased anxiety, depression, mood changes, and apathy.^{3,5}

Many of the symptoms of PTSD and mTBI overlap, namely problems with executive functioning, learning and memory, and attention. For this reason, it is often difficult to distinguish whether or not a patient's symptoms stem from PTSD, mTBI, or both. It is important that the patient is initially examined and a thorough work up is performed to rule out a more serious medical condition caused by the head injury during the traumatic event. Another factor to consider is that the patient may not seek the care of a mental health care provider within the first three months of their event. Identification of PTSD specific symptoms, such as hyper-arousal and avoidance, which are typically not seen in civilian mTBI, can be helpful for the differential diagnosis.¹ It is also important to consider the timeframe of the mTBI when implementing treatment plans. Residual symptoms of PCS may subside by one year after the injury, while symptoms of PTSD may persist, and the majority of cases are unlikely to resolve without proper treatment.

Treatment options for PTSD with mTBI

Traditionally, there have been specialised clinical teams who treat each of these disorders separately. Challenges have been identified by providers in regards to scheduling and engaging patients with co-occurring mTBI and PTSD in treatment, determining the aetiology of patients' presenting problems, coordinating services, and knowing whether or how to alter standard treatments.⁶ With the evolving role of the nurse practitioner, and the increased autonomy in practice, nurse practitioners are faced with treating some of these difficult cases. Although little has been established in terms of evidence-based practice guidelines for the treatment of these co-morbid conditions, nurse practitioners must use current research to guide their practice. Findings point to the need for further research on best practices to assess and treat mTBI/PTSD.⁶

The two primary non-pharmacologic treatments for PTSD are cognitive processing therapy (CPT) and prolonged exposure therapy (PE), both of which are

trauma focussed cognitive behavioural therapy-based treatments.⁷ CPT and PE are proven equally effective for treatment and have been established as the recommended protocols to reduce and eliminate symptoms of PTSD.⁷ In CPT, clinicians rely on cognitive processing techniques by working with patients to address inconsistencies between trauma generated thoughts and pre-existing belief systems. On the other end of the spectrum, PE relies on emotional processing through systematic exposure to memories or physical reminders of the trauma to reduce symptoms.⁷

Peterson et al.⁸ define CPT, which usually consists of approximately twelve 60 minute sessions, and includes psycho-education about PTSD, cognitive restructuring, and exposure. In the exposure component of CPT, the patient writes an account of the event to read aloud in therapy and at home. The cognitive therapy component begins with an impact statement in which the patient describes the impact of the event on his or her perspective of self, others, and the world, such as "it's all my fault". Throughout therapy, problematic cognitions are identified and challenged through Socratic questioning until more accurate beliefs replace any distorted thoughts. The last few sessions focus on cognitions that are troublesome in PTSD such as safety, trust, power, esteem, and intimacy.⁸

Peterson et al. also define PE, which usually consists of ten to twelve 90 minute sessions, and includes psycho-education, breathing retraining, imaginal exposure, and in vivo exposure. Patients are educated about the evolution and treatment of PTSD, are taught breathing techniques to promote relaxation, and practice imaginal and in vivo exposure to promote adaption to the feared trauma memory. PTSD patients usually avoid thoughts and situations that are reminders of the trauma, but PE requires the patient to confront the memories by repeatedly retelling the trauma story (imaginal exposure) and confront feared situations associated with the trauma (in vivo exposure).⁸ The major difference between the two therapies is that CPT teaches the patient cognitive restructuring techniques to allow them to realise their distorted thoughts and develop coping mechanisms, and PE forces the patient to directly confront their situation over and over in order to desensitise the patient to their fear.

Few studies have tested the effectiveness of these treatments for co-morbidity in mTBI and PTSD, although the little evidence found suggests that these cognitive behavioural based therapies are almost equally effective for PTSD with mTBI and PTSD alone. Davis et al.⁹ found that treatment adherence was greater than 61% in both groups. The

average attended sessions for the PTSD alone group was 9.6 and for the mTBI/PTSD group was 7.9. Although the study did not evaluate the end outcome of effectiveness, it was noted that the treatment was tolerable for both groups.

Sripada et al.⁴ investigated the utility of PE for individuals with and without a history of mTBI in a sample from a military hospital PTSD clinic. As hypothesised, PE was highly efficacious for individuals with PTSD, and there was no evidence to suggest that the presence of mTBI impacted the efficacy of PE. They compared their results to a study they found by Wolf and colleagues in 2012¹⁰ that demonstrated a 45% post-PE reduction in PTSD symptoms in 10 veterans with PTSD plus mTBI. As stated previously, some providers have voiced concerns that individuals with a history of mTBI are more likely to experience cognitive impairment and thus will not benefit from trauma-focussed treatment. This study challenges these concerns, stating that PE utilises processes that depend heavily on limbic and medial prefrontal circuits that are conserved across species, and there is little reason to believe that minor impacts on the brain would preclude them.^{4,10}

Aside from the cognitive behavioural approach, there are also medications that are prescribed to treat PTSD. Pharmacologic interventions that are frequently prescribed include antidepressants, antipsychotics, and sedative hypnotics. Some of the prescribing trends are not supported by guidelines developed for the treatment of PTSD. In fact, there is suggestion that benzodiazepines may interfere with psychotherapy treatments that are first-line PTSD recommendations. The release of the updated Clinical Practice Guideline(CPG) highlight the need to investigate prescribing trends among veterans with PTSD to document changes in patterns, identify gaps between recommendations and practice, and determine areas for clinical intervention.^{11,12} The CPG recommends a combination of cognitive behavioural therapy, and a selective serotonin re-uptake inhibitor(SSRI), specifically sertraline or paroxetine, as first line interventions for combat related PTSD treated in specialty clinical settings.^{8,11}

Case Study

Mr. A is a 23 year old single Caucasian male, previously in the U.S. Marine Corp, who was deployed to Afghanistan during his enlistment. He received a general discharge after experiencing a primary blast injury which caused a mTBI. He was experiencing symptoms of PTSD which included 1) involvement in a traumatic event that caused physical harm, namely, being thrown from a tank when the rear

was hit with an explosive missile, 2) the event was re-experienced via nightmares and memories when he witnessed or heard about violent acts, such as news stories, violent television, or heard loud noises, 3) he avoided turning on the television or radio, 4) he became less social and was detached from friends that he was close with prior to deployment, 5) he had trouble sleeping, difficulty concentrating, and reported irritability, 6) he had been experiencing these symptoms for approximately 4 months after he returned home from deployment. He also experienced residual effects from his mTBI which included anxiety, dizziness, and frequent headaches almost every day. His symptoms of troubled sleep, irritability, and difficulty concentrating are overlapping symptoms that could have been caused by either diagnosis mentioned above.

Mr. A presented to the outpatient clinic stating "I can't take it anymore, I just want to be normal again". He stated that ever since the incident he had been unable to maintain a normal lifestyle. As stated above, all of his symptoms were preventing him from getting a job, seeing friends and family, and doing things that he used to do on a daily basis. He was living at home with his parents and younger sister, who were also very concerned for his well-being. He then decided to seek treatment and presented to an outpatient mental health clinic for treatment. His parents accompanied him for emotional support.

Prior to his traumatic event, Mr. A was a healthy young male with no medical problems. He had never been on any medications. He had no history of childhood illnesses, seizures, head trauma, or surgeries. He denied use of nicotine, caffeine, or herbal medications. He was taking ibuprofen to relieve his headaches. He denied use of any illicit substances in the past or present. He was a social drinker, having 3-4 beers on Saturday nights when he was out with his military buddies. He stated that he was never a big drinker, but that he would find himself having 5-6 beers a night since he returned home because he felt it numbed him and helped him sleep better. He stated he had a great childhood, with loving family and many friends in high school and in the military. He was always interested in school and was an above average student. Since his return home after discharge, he found himself wanting to be alone, and had difficulty concentrating. He denied any suicidal ideation or suicide attempts. His psychiatric review of systems was negative for hallucinations, delusions, mania, or depressed mood. His family history was negative for any serious medical problems, substance abuse, or psychiatric history. After his initial injury, he was evaluated by military medical specialists, before

he was discharged. His blood work was normal, which included complete blood counts, chemistries, thyroid studies, urinalysis, and drug screen. He had a computed tomography (CT) scan and magnetic resonance imaging (MRI) that showed normal brain images with no evidence of injury, which is typical for mTBI.

Upon initial presentation to the psychiatric outpatient clinic, he was evaluated by a psychiatric mental health nurse practitioner. The patient was started on sertraline 25mg at bedtime for his PTSD symptoms. The dose was titrated up to 100mg by the third week. He was also prescribed prazosin 1mg at bedtime for insomnia and nightmares, which was titrated up to 5mg by the third week. He attended 12 weekly sessions of prolonged exposure therapy in which he was initially educated about the development and treatment of PTSD. He was then taught breathing retraining, which he was instructed to use any time he felt anxious or when he was confronted with a situation that reminded him of his traumatic experience. Imaginal exposure was initiated, where he had to re-tell the event at each session, and utilise his breathing exercises to reduce his anxiety. He was also confronted with in vivo exposure, in which he engaged in watching devastating news stories, scenes from movies that had violent war scenes, and was exposed to startling loud noises.

He was tolerating his medications with minimal side effects, and was progressing at a steady pace each week during his therapy sessions. By the end of the twelve weeks, he was able to talk about his traumatic experience with very little anxiety. He had also begun to watch television at home without worrying about seeing something that would cause panic. He started to see his friends again and enjoy activities that he used to enjoy with them like fishing and golfing. He had also stopped using alcohol as an escape at night to decrease his anxiety, although he admitted to social drinking on the weekends with his friends. He very rarely experienced irritability and his concentration improved. He also noticed that his headaches decreased from nearly every day to once or twice a week. He was no longer experiencing nightmares related to his traumatic event.

This case of Mr. A shows a patient who had severe symptoms of PTSD after a mTBI from a traumatic event he experienced during military deployment. As shown in the research, CBT along with proper medication management improved and helped to alleviate his symptoms of PTSD. At the end of his therapy sessions, Mr. A was approximately eight months post injury. His residual effects from his mTBI such as irritability, decreased concentration, and headaches were also subsiding. Since these

are also symptoms of PTSD, it is difficult to assess whether the medications and therapy improved these symptoms, or if adequate time to recover from the mTBI had an effect. Overall, this case shows a similar outcome when compared to results from studies that used CBT for treatment of PTSD along with co-morbid mTBI.

When a patient presents with history of mTBI sustained during a traumatic event, the nurse practitioner should follow specific protocols to ensure that the patient is receiving adequate treatment. A treatment algorithm can be followed, which consists of a thorough medical workup including lab work, CT scan, and MRI. A comprehensive history and physical examination, including psychiatric background, should be performed in an initial interview with the patient. The nurse practitioner or psychiatrist should initiate approved medications. The FDA has approved the SSRI's paroxetine and sertraline for the treatment of PTSD. Sleep related complaints in PTSD have been poorly investigated, but prazosin has been approved for the treatment of PTSD related nightmares, and has shown promising results.⁽¹³⁾ For treatment resistant patients, antipsychotic medications such as risperidone can be used off label for treating PTSD. As stated previously, avoid medications such as benzodiazepines and other sedative hypnotics because they may interfere with the efficacy of therapy and other medications.¹¹ The nurse practitioner should refer the patient to a therapist who specialises in CBT programs that are trauma focussed and include CPT or PE. Assessment and management of medications should be performed by the nurse practitioner every two weeks in the beginning stages of treatment, and should then follow the patient monthly after the first six weeks until the patient is stable. At the point where the patient is finishing therapy and has stabilised, three month follow ups are adequate. When the patient has completed the recommended course of therapy, and has been stable on their medications for one year, a plan to titrate down medications can be discussed between the patient and the nurse practitioner.

Implications for the Nurse Practitioner and other Mental Health Care Providers

Psychiatric mental health nursing is a specialty area that is dedicated to promoting the mental health of patients. The American Psychiatric Nurses Association has developed standards of practice that relate to assessment and treatment for all areas of nursing practice. The standards of practice for nurses are followed when treating patients with PTSD and mTBI, taking into account that the prevalence rates of these co-morbid conditions is high. There are six

standards of practice, which include assessment, diagnosis, outcomes identification, planning, implementation, and evaluation.¹⁴ All of equal importance, it is of particular interest to consider the implementation phase when treating a patient with co-morbid PTSD and mTBI. Although there is very little evidence to support treatment of these co-existing diagnoses as one, the few studies that have been completed show that PTSD symptoms can be equally reduced with or without the presence of mTBI. The Beck Institute for Cognitive Behavior Therapy in Philadelphia, Pennsylvania recognises the high incidence of PTSD in returning veterans, and offers a three day workshop for advanced practice nurses where the participants learn in depth cognitive behaviour techniques related to CPT and PE.¹⁵ Using techniques from this workshop and other educational programs, protocols must be established based on

positive results that include standard treatment plans for PTSD with mTBI. Proper documentation and reporting of results can be used to support the evidence-based practice data that currently exist. Nurse practitioners currently provide medication management for PTSD. They must encourage other practitioners to implement the use of approved CBT programs to reduce and eliminate PTSD symptoms, regardless of whether they have sustained a mTBI or not. By recognising the efficacy and facilitating the use of these approved treatments, patients who have experienced a mTBI and suffer from PTSD have a significantly higher chance of recovering and living more functional lives.

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