Research report

Predictors of acute stress disorder severity

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ABSTRACT

Background: The DSM-IV diagnosis of acute stress disorder (ASD) describes a posttraumatic reaction that occurs two to twenty-eight days following a trauma and involves symptoms of intrusion, avoidance, hyper-arousal and dissociation. A better understanding of ASD and its pathogenesis could lead to improved post-trauma health care interventions. The aim of this study was to determine prospectively whether a combination of clinical, cognitive and demographic variables were predictive of ASD severity in an acutely traumatized sample.
Methods: We assessed demographic (e.g. age, gender, education), clinical (e.g. sleep quality, trait anxiety, previous psychiatric diagnoses), and cognitive (e.g. negative cognitions following trauma) variables in a sample of 125 adult motor vehicle accident survivors (age: 32.26 ± 9.99; gender: 56.6% male) approximately 10 days after the accident. Univariate analyes and stepwise linear regression were performed to identify variables predictive of ASD severity.
Results: Although a number of factors were individually associated with ASD severity, in a regression model only 3 factors, trait anxiety, suicide risk and post-traumatic cognitions, emerged as predictive of the severity of the disorder.
Limitations: The cross-sectional nature of the study and use of self-report measures are important to bear in mind.
Conclusions: Higher levels of trait anxiety, risk for suicide and negative appraisals of the traumatic event were predictive of ASD severity. As these factors may help to identify those who may be at risk of more severe responses after a traumatic event, and who may benefit from secondary prevention strategies, they should be assessed for in acute trauma survivors.

0. Introduction

A wide range of emotional, cognitive, biological and behavioral symptoms can follow in the aftermath of a traumatic incident (Isserlin et al., 2008). Acute stress disorder (ASD) is one such posttraumatic stress reaction that occurs two days to four weeks following a trauma (APA, 2000). The DSM-IV diagnostic criteria for ASD include re-experiencing, avoidance, hyper-arousal and dissociation (Bryant and Harvey, 1997). Symptoms of dissociation include numbing, depersonalization, dissociative amnesia, and reduced awareness (APA, 2000).

The question of which factors are associated with ASD is key to understanding and treating this disorder (Fitzharris et al., 2006). Most research to date has examined predictors of PTSD or the relationship between ASD and PTSD (Bryant and Harvey, 1997; Classen et al.,

1993; Hamanaka et al., 2006; Harvey and Bryant, 1998a, 1999a; Holeva et al., 2001). Relatively few studies have examined clinical and cognitive factors that may be associated with ASD. Those that have done so have highlighted a number of variables.

One of these is disturbed sleep, which is a feature of both diagnoses of ASD and PTSD. Several studies have demonstrated that sleep may be severely disrupted following exposure to a traumatic event (see Pillar et al., 2000 for a review). While for most people, sleep disturbances are transient (Lavie, 2001), for others, they persist or worsen, typically occurring as a symptom manifestation of ASD and PTSD (Harvey et al., 2003). Severe stress has been noted to adversely affect sleep by decreasing its efficiency, length, and quality (Basta et al., 2007; Kim and Dimsdale, 2007), and a review of subjective sleep reports from patients with PTSD revealed disturbances in sleep-onset, sleep maintenance and the presence of nightmares (Harvey et al., 2003).

Negative cognitions or interpretations of the trauma and its impact deserve consideration as they have been observed to predict the development of post traumatic stress symptoms

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following trauma (Dunmore et al., 1999; Ehlers et al., 1998; Harvey and Bryant, 2002; Kaysen et al., 2005; Nixon et al., 2008; Peleg and Shalev, 2006). However, findings have been mixed regarding the association of negative cognitive appraisals and ASD. Some investigators (Elsesser et al., 2009) have found that individuals with ASD display negative cognitions about a range of concerns after trauma exposure, while others have found no association (Ehring et al., 2008; Kleim et al., 2007).

Temperamental characteristics may also be a risk factor for ASD. Trait anxiety is a relatively stable dispositional tendency to perceive stressful situations as dangerous or threatening, and to respond with short-term elevations in current anxiety (Spielberger, 1983). It may be a vulnerability factor for a wide range of anxiety disorders, including PTSD. Individuals with a diagnosis of PTSD generally have higher trait anxiety compared to non-PTSD controls (Orsillo et al., 1996; Casada and Roache, 2005), with some studies suggesting that trait anxiety is a stronger determinant of PTSD symptom severity than the nature of the traumatic event (Lonigan et al., 1994; Phipps et al., 2009).

Resilience' describes the ability to adapt in the face of adversity or to bounce back from challenges or setbacks, and is one of several factors that can influence how individuals respond to stress (Connor, 2006; Connor and Davidson, 2003; Yehuda, 2004). Resilience and aspects of resilience, such as perception of stress, have been identified as risk/protective factors against the development of PTSD (Bonanno, 2004; King et al., 1998).

Studies that have examined the correlates of acute stress responses following traumatic events have found that pre-morbid psychological disorders (Barton et al., 1996; Harvey and Bryant, 1998b), including prior history of PTSD, and co-morbid depression (Harvey and Bryant, 1998a, 1999a), as well as demographic variables, such as age (Harvey and Bryant, 1998a) and gender (Kangas et al., 2002) were significant correlates of ASD.

If distinguishing clinical and cognitive factors for ASD can be identified, this may be useful in tailoring post-trauma interventions. A better understanding of ASD and the factors which are inherent to it might also prevent the disorder from ultimately developing into PTSD. Previous studies have tended to focus on factors that identify the presence/absence of ASD. The purpose of this study was to extend existing knowledge of clinical and cognitive factors involved in ASD severity. The primary aim of the study was to determine whether sleep, negative cognitions, trait anxiety, perceived stress and resilience/coping are predictive of ASD severity in an acutely traumatized sample, while accounting for other clinical and demographic variables. On the basis of available evidence we expected poorer sleep, lower resilience, and higher levels of trait anxiety, perceived stress and negative cognitions to be predictive of ASD severity.

1. Methods

Ethics approval for the study was obtained from the University of Stellenbosch Health Research Ethics Committee and the hospital departments where recruitment took place. Assessments were conducted by trained researchers approximately 10 days (mean $10.3+/-4.6$ days) after a motor vehicle accident (MVA). Written informed consent was obtained from all participants prior to inclusion in the study.

1.1. Participants

Participants included 125 adult MVA survivors who were recruited from emergency and orthopedic units at four Cape Town hospitals. The following inclusion criteria were used: (i) willing and able to provide written informed consent; (ii) between the

ages of 18 and 65 years; (iii) able to read and write in English at 5th grade level; medically well enough to undergo testing. Exclusion criteria included: (i) current or past history of schizophrenia, bipolar disorder or other psychotic disorder as defined by the MINI; (ii) any significant recent or previous head injury (defined as a loss of consciousness for over 30 min and/or posttraumatic amnesia) or mild traumatic brain injury (mTBI); (iii) use of any psychotropic medication at the initial assessment; (iv) serious physical injury at inclusion where injury sequelae would interfere with study participation.

1.2. Assessment

The following measures were administered to participants:

Demographic questionnaire: This captures participant characteristics such as, age, gender, level of education, marital status, living arrangements, employment, medical and psychiatric history, as well as prior and current medication use.

Abbreviated Injury Scale (AIS): This is an anatomical scoring system that provides a reasonably accurate way of ranking the severity of injury. Injuries are ranked on a scale of 1 to 6, with 1 being minor, 5 severe and 6 an un-survivable injury (AAAM, 1990).

Acute Stress Disorder Scale (ASDS): This self-report inventory, based on DSM-IV criteria for ASD, contains 19 items that relate to ASD symptoms, and provides a total score of ASD severity (ranging from 19–95). A score of 56 and above indicates probable ASD. The ASDS possesses good sensitivity (95%), and specificity (83%) relative to a diagnosis of ASD on the Acute Stress Disorder Interview (Bryant et al., 2000).

Connor-Davidson Resilience Scale (CD-RISC): This is a 25-item self-report measure with demonstrated reliability and validity that assesses stress-coping ability. Items including the ability to adapt to change or to bounce back from challenges and the extent of the individuals social network are measured on a 5-point scale ranging from 0 'not true at all' to 5 'true nearly all of the time'. The CD-RISC provides a total score that ranges from 0–100, with higher scores indicating greater resilience (Connor and Davidson, 2003).

MINI International Neuropsychiatric Interview (MINI): This is a clinician administered structured diagnostic interview based on DSM-IV diagnostic criteria that was used to assess for major psychiatric disorders. The MINI has been shown to have high validity and reliability scores when compared with results from the Structured Clinical Interview for DSM-III-R (SCID), the Composite International Diagnostic Interview (CIDI), the Diagnostic Interview Schedule (DIS) and the Present Status Examination (PSE) (Sheehan et al., 1998).

Perceived Stress Scale (PSS): This is the most widely used instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives (Cohen et al., 1983; Cohen and Williamson, 1988).

Pittsburg Sleep Quality Index (PSQI): This contains 19 self-rated questions and 5 rated by the bed-partner or room-mate if one is available (Buysse et al., 1989). Only the self-rated questions are used in the scoring. They are combined to form 7 component scores of 0–3 points each (0=no difficulty; 3=severe difficulty). The 7 component scores are then added to yield one global score with a range of 0-21 (difficulty; difficulty in all areas). A score of above 5 indicates a poor sleeper. High internal consistency, test–retest reliability, sensitivity and specificity have been found.

Post Traumatic Cognitions Inventory (PTCI): The PTCI is a 36 item measure that is used to assess trauma-related cognitions, using a