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Patterns of peritraumatic threat perceptions in patients evaluated for suspected acute coronary syndrome according to prior and current posttraumatic stress symptoms

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ABSTRACT

Objective: Prior posttraumatic stress disorder (PTSD) and elevated threat perceptions predict posttraumatic psychopathology after evaluation for acute coronary syndrome (ACS), but most research has measured threat retrospectively. We investigated how threat perceptions during ACS evaluation in the emergency department (ED) and upon recall were associated with posttraumatic psychopathology burden due to prior trauma and the suspected ACS.

Methods: Perceived threat was assessed in the ED, and ED threat recall was assessed upon inpatient transfer/discharge, along with acute stress disorder (ASD) symptoms due to suspected ACS and PTSD symptoms due to prior trauma. The sample comprised 894 participants (mean age = 60.7 ± 13.1 years; 46.8% female; 56.3% Hispanic; 20.5% Black). One-way ANOVAs examined how those with consistent posttraumatic psychopathology (prior PTSD/ASD; 14.8%), prior posttraumatic psychopathology (prior PTSD/no ASD; 6.8%), new-onset posttraumatic psychopathology (no PTSD/ASD; 15.7%), or no posttraumatic psychopathology (no PTSD/no ASD; 62.8%) differed in threat perception, threat recall, and their discrepancy.

Results: Threat perception scores ranged from 6 to 24. Participants with consistent posttraumatic psychopathology had higher threat perceptions ($M = 14.01$) than those with prior posttraumatic psychopathology ($M = 12.02$) and new-onset posttraumatic psychopathology ($M = 12.21$) ($ps \leq 0.001$); the latter two did not differ significantly but had higher threat perceptions than those with no posttraumatic psychopathology ($M = 9.84$) ($p < .001$). Similar results were observed for threat recall ($p < .001$). The new-onset posttraumatic psychopathology group also had a greater increase in perceived threat versus the no posttraumatic psychopathology group ($p = .06$). Results were similar adjusting for potential confounders.

Conclusions: Assessing threat perceptions during ACS evaluation and hospitalization may help identify those at risk for emotional difficulties post-ACS.

1. Introduction

Presenting to the emergency department (ED) with suspected acute coronary syndrome (ACS) can be a very stressful and potentially traumatic experience. Patients with suspected ACS frequently report sensations of fear, vulnerability, and loss of control [1,2], and these potentially life-threatening medical events can trigger the development of posttraumatic stress disorder (PTSD). PTSD is characterized by symptoms such as re-experiencing the trauma even when in safe situations (e.g., having strong and unwanted thoughts or nightmares), avoiding places or people that are reminders of the trauma, having negative alterations in mood and cognition (e.g., feeling emotionally numb, thinking the world is a dangerous place), and feeling keyed up or on edge [3]. Meta-analytic evidence suggests that there is a 12% aggregated prevalence of clinically meaningful PTSD symptoms after an ACS event [4], and a growing body of research suggests that PTSD after acute cardiac events has long-term negative consequences for both cardiovascular health and psychosocial functioning (for a review, see [5]). Not only is ACS-induced PTSD associated with a two-fold increase in the risk of morbidity and mortality due to subsequent cardiovascular events [4], but it is also linked to lower quality of life, lower health-related quality of life, and less social activity [6–9]. As such, it has

Abbreviations: ACS, acute coronary syndrome; ANCOVA, analysis of covariance; ANOVA, analysis of variance; ASD, acute stress disorder; ASDS, Acute Stress Disorder Scale; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th edition; DSM-5, Diagnostic and Statistical Manual of Mental Disorders, 5th edition; ED, emergency department; GRACE, Global Registry of Acute Coronary Events; PCL-C, PTSD Checklist, Civilian version; PTSD, posttraumatic stress disorder; REACH, REactions to Acute Care and Hospitalization

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become important to understand predictors of posttraumatic psychopathology after being evaluated for ACS in an effort to identify those most vulnerable.

Research suggests that both prior and current reactions to trauma are important factors that can influence the development of posttraumatic stress in response to a current trauma such as a suspected ACS event [10]. For example, PTSD in response to prior non-cardiac traumas has been identified as a risk factor for developing posttraumatic psychopathology after an acute cardiac event [11–13]. Furthermore, aspects of the peri-traumatic experience also predict risk for posttraumatic psychopathology in response to a current trauma. Indeed, perceived threat during trauma is one of the most robust predictors of posttraumatic psychopathology (for a review, see [14]), including posttraumatic stress that develops after an acute cardiac event [15–17]. This body of work has led researchers to conclude that the extent to which individuals feel threatened as a traumatic event is unfolding may be an important factor for understanding who may go on to develop posttraumatic psychopathology in response to that event [14]. However, rather than assessing these threat perceptions as the traumatic event is happening, most studies have asked participants to recall after the fact how threatened they felt during the trauma. Indeed, most studies assessing perceived threat during an acute cardiac event have relied on retrospective recall after the event [16–20].

Very few studies have assessed threat perceptions during the cardiac index trauma (i.e., truly peri-traumatic threat perceptions), and even fewer have assessed threat perceptions at multiple points in time following an acute cardiac trauma. Such reliance on retrospective, rather than real-time, assessments is subject to recall biases and may not accurately reflect individuals' peri-traumatic experience. For example, participants who did (versus did not) develop posttraumatic psychopathology may be more likely to recall having felt threatened during the traumatic event even though they may not have differed on these perceptions during the event. In other words, the presence of posttraumatic psychopathology may color individuals' recollections of how threatening the trauma was [14,21]. Research that directly compares peri-traumatic threat perceptions and recalled threat perceptions is needed to improve our understanding of threat perceptions both during and after being evaluated for a suspected cardiac event and how they relate to manifestations of posttraumatic psychopathology.

Although no studies to date have assessed threat perceptions during acute cardiac events, the closest is the study by Marke and Bennett [22], which measured perceived threat multiple times (in hospital and at 1- and 6-month follow-up assessments) in a sample of 150 patients experiencing their first ACS event. Perceived threat increased over the three assessments, and in-hospital perceived threat was positively correlated with PTSD symptoms at 1- and 6-month follow-up. However, it is not clear how change in these perceived threat measures over time related to ACS-induced PTSD symptoms in this study. Furthermore, these participants had no prior history of psychopathology; current diagnosis of psychopathology was one of the exclusion criteria. Thus, it is uncertain how previous manifestations of posttraumatic stress might have influenced threat perceptions in response to the ACS event. These limitations, along with those in the broader literature, make it difficult to thoroughly understand the relationship between threat perceptions and posttraumatic stress after a suspected ACS event.

In the current study, we addressed these existing limitations by examining how prior and current manifestations of posttraumatic psychopathology (i.e., posttraumatic psychopathology burden) were associated with threat perceptions in a large cohort of patients recruited during evaluation for suspected ACS in the emergency department (ED). We defined prior posttraumatic psychopathology as probable PTSD status due to a prior trauma and current posttraumatic psychopathology as probable acute stress disorder (ASD) status in response to the suspected ACS event. We examined four levels of posttraumatic psychopathology burden: those with consistent posttraumatic psychopathology (prior PTSD/ASD), those with prior posttraumatic psychopathology (prior PTSD/no ASD), those with new-onset posttraumatic psychopathology (no PTSD/ASD), and those with no posttraumatic psychopathology (no PTSD/no ASD). Furthermore, we considered three indicators of threat perceptions: 1) perceived threat in the ED during ACS evaluation (i.e., peri-traumatic threat), 2) threat recall upon inpatient transfer or discharge, and 3) threat discrepancy (i.e., the difference in the two threat perception measures). We hypothesized that a greater posttraumatic psychopathology burden would be associated with greater elevations in threat perceptions.

2. Methods

2.1. Participants and procedure

English- or Spanish-speaking patients were enrolled in the REactions to Acute Care and Hospitalization (REACH) study during evaluation for ACS in the ED from November 2013 to February 2016. The REACH study is an ongoing observational cohort study of ED predictors of medical and psychological outcomes after evaluation for suspected ACS [23–25]. Patients provisionally diagnosed with probable ACS by the treating ED physician at the New York-Presbyterian Hospital-Columbia University Medical Center were eligible. Exclusion criteria included patients that required emergency transfer for cardiac catheterization, as recruitment in the ED is not possible. In addition, patients were excluded from participation if they were deemed unable to follow the protocol by the attending physician or the research coordinator due to mental impairment or active substance abuse. A total of 1000 patients (61% of those eligible) were enrolled from November 2013 to February 2016. All participants provided written informed consent. The study was approved by the Institutional Review Board at the Columbia University Medical Center.

In the ED, patients reported on demographics and completed measures of their ED experience, including current perceived life threat and vulnerability during evaluation for suspected ACS. During inpatient stay or by phone after discharge, a second assessment was conducted (median of 3 days post-enrollment, 75% within 8 days). This interview assessment queried recall of threat perceptions during evaluation for suspected ACS, ASD symptoms that developed in response to evaluation for ACS, lifetime trauma exposure, and other psychopathology (PTSD in response to prior trauma and depression). Hospital discharge diagnosis was determined by medical record review conducted by a research nurse and confirmed by a board-certified cardiologist.

2.2. Measures

2.2.1. Threat perception in the ED, threat recall, and threat discrepancy

We assessed participants' threat perceptions in response to evaluation for suspected ACS in the ED and threat recall upon inpatient admission or after discharge with the same 6 items (i.e., “I am afraid,” “I am worried I am going to die,” “I feel helpless,” “I feel vulnerable,” “I worry I am not in control of my situation,” “I believe this event will have a big impact on my life”) based on Ozer et al. [14]. Patients rated the extent to which these statements reflected their experience in the ED on a 4-point Likert scale ranging from 1 (“Not at all”) to 4 (“Extremely”); responses were summed to create a total threat score (range = 6–24). Responses to these items had good internal consistency (Cronbach's $\alpha = 0.79$ for ED threat perceptions and $\alpha = 0.81$ for threat recall). Threat discrepancy was calculated by subtracting the in-ED threat perception score from the threat recall score (i.e., positive discrepancy scores indicated an increase in threat perceptions over time).

2.2.2. ASD symptoms in response to evaluation for suspected ACS

Participants reported ASD symptoms (i.e., early posttraumatic stress symptoms: re-experiencing and/or avoiding reminders of the trauma, hyperarousal) in response to the event that brought them to the ED using 14 items from the Acute Stress Disorder Scale (ASDS; 26). Items