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The Association of Posttraumatic Stress Disorder and Quality of Life During the First Year after Acute Coronary Syndrome

LT Wasson[1], **J Shaffer**[2], **C Alcántara**[3], **JE Schwartz**[4], and **D Edmondson**[5]

[1]Center for Behavioral Cardiovascular Health, Columbia University Medical Center, New York, New York

[2]Center for Behavioral Cardiovascular Health, Columbia University Medical Center, New York, New York

[3]Center for Behavioral Cardiovascular Health, Columbia University Medical Center, New York, New York

[4]Center for Behavioral Cardiovascular Health, Columbia University Medical Center, New York, New York

[5]Center for Behavioral Cardiovascular Health, Columbia University Medical Center, New York, New York

Keywords

Acute coronary syndrome [ACS, including unstable angina (UA) or myocardial infarction (MI)] events can be psychologically traumatic experiences for patients given their unpredictable, sudden onset and life-threatening nature.[1] Although posttraumatic stress disorder (PTSD) is commonly associated with index events of war or assault, PTSD is also associated with life-threatening illness and in particular ACS with approximately 12% of patients developing PTSD.[1, 2]

PTSD due to ACS has a multitude of consequences, including increased risk of ACS recurrence and mortality[3, 4] in addition to PTSD itself being a debilitating psychiatric condition. Sufferers of PTSD are burdened by symptoms that include re-experiencing the traumatic event via intrusive thoughts, flashbacks, or nightmares; avoiding reminders of the index event; persistent negative alterations in cognition and mood; or physiologic hyperarousal. As such, ACS-induced PTSD is likely associated with substantial detriment in quality of life (QOL).However, few studies have measured this association, and no study has investigated it among a general ACS population or longitudinally. Rather, prior studies were comprised of ACS patients only in intensive care units(ICUs) or among armed-services veterans[5,6, 7] or are notable for limitations such as cross-sectional designs.[5, 8]

Corresponding Author: Lauren Taggart Wasson: LSTWasson@gmail.com, 212-342-1275.

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This study investigates the longitudinal QOL burden of PTSD due to ACS in order to determine 1) whether ACS-induced PTSD affects post-ACS QOL at multiple, discrete time points during the one year following the index event; and 2) whether PTSD is associated with change in QOL over time.

Patients were enrolled in the Prescription Use, Lifestyle, Stress Evaluation (PULSE) observational, prospective cohort study of ACS patients between February 2009 and October 2012 at Columbia University Medical Center. The subset of 345 PULSE patients with available PTSD symptom data was selected. All participants gave written informed consent. The Institutional Review Board of Columbia University Medical Center provided ethics approval for this study.

PTSD symptoms were assessed at 1 month by self-report using the Impact of Events Scale-Revised (IES-R), with PTSD considered present if the scale total was at least 24.[9] Quality of life was assessed in hospital and at 1, 6, and 12 months post-ACS by the Medical Outcomes Study 12-item Short-Form Health Survey (SF-12), from which a mental composite score (MCS) and a physical composite score(PCS) – from 0 to 100, with higher scores indicating better QOL – were derived.

QOL among patients with versus without PTSD was analyzed via multi-level repeated measures analyses of variance (ANOVAs), allowing for inclusion of subjects who have incomplete series of repeated QOL measures without relying on data imputation. QOL data was missing for 5 (1.4%) patients at baseline, 66 (19.1%) at 1 month, 81 (23.5%) at 6 months, and 42 (12.2%) at 12 months. Covariates were selected a priori: baseline QOL, age, sex, race, ethnicity, prior history of MI, GRACE risk score, Charlson co-morbidity index, left ventricular ejection fraction (LVEF) greater than or equal to 40%, and baseline/in hospital depression (Beck Depression Inventory (BDI) with a cutoff of 10 or greater to categorize depression).

Baseline characteristics are presented in the Table. Twenty-five (7.2%) patients were categorized as having PTSD. Participants with PTSD were more likely to have a history of prior MI and were more likely to have depression at baseline.

Patients with ACS-induced PTSD reported significantly worse mental QOL both in-hospital and 1 month post-ACS in the fully adjusted multivariable models with mean score differences of 5.9 (95% CI 1.9–9.9, p = 0.0039) and 9.0 (95%%CI 4.9–13.1, p = <0.0001), respectively (see Figure).The unadjusted mental QOL difference associated with PTSD persisted at 6 and 12 months but was not statistically significant after adjusting for all covariates (mean score differences 7.8 (95%CI 3.2–12.4, p = 0.0009 and 5.1 (95%CI 0.6–9.6, p = 0.03), respectively).

Mental QOL in the PTSD group increased substantially with a significant trend in overall change during the 12-month post-ACS follow-up in the fully adjusted model(3.3 (95%CI 1.2–5.3),p = 0.002). The trend in change in mental QOL was not significant among ACS patients without PTSD. The trend in change was significantly different between the two groups(3.8 (95%CI 1.6–5.9), p = 0.0006).

With regard to changes in mental QOL scores between specific time points, mental QOL improved more from 1 to 6 months and from 1 to 12 months among ACS patients with PTSD than among those without PTSD in the fully adjusted models (mean difference change = 5.1 (95%CI 0.7–9.6, p = 0.0005 and mean difference change = 7.6 (95%CI 3.4–11.9, p = 0.0005, respectively).

Therefore, in this small sample of ACS patients, those who develop significant PTSD symptoms endure a significantly greater detriment in QOL compared to those without PTSD. During the subsequent year, however, post-ACS QOL improves among patients with PTSD significantly more than it does among those without PTSD, such that by 6 to 12 months post-ACS the QOL among patients who developed PTSD is indistinguishable from that among patients who did not develop PTSD.

Our study is the first to show that the QOL detriment associated with post-ACS PTSD may be short-lived; other studies noted PTSD due to ACS was associated with poorer QOL for as many as 8 years.[6] However, many trauma-related PTSD patients develop symptoms that are marked at 1 month post-event but resolve spontaneously over moderate time periods,[10] which could in turn influence resolution of poorer QOL. Because of our small sample size and single assessment of PTSD symptoms, identifying trajectories of PTSD and QOL in our sample was not possible. An additional explanation for our results could be that other studies on ACS-induced PTSD and QOL examined ICU patients exclusively, and stressful ICU-related events may result in more persistent PTSD symptoms.

Regardless, even if the QOL impact of PTSD is relatively short-lived, the mean mental QOL score at 1 month post-ACS for participants with PTSD was more than 2.5 standard errors below that of patients who did not develop PTSD. It is possible that targeting factors that predispose patients to developing PTSD in the setting of ACS may improve both cardiovascular and QOL outcomes.

Acknowledgments

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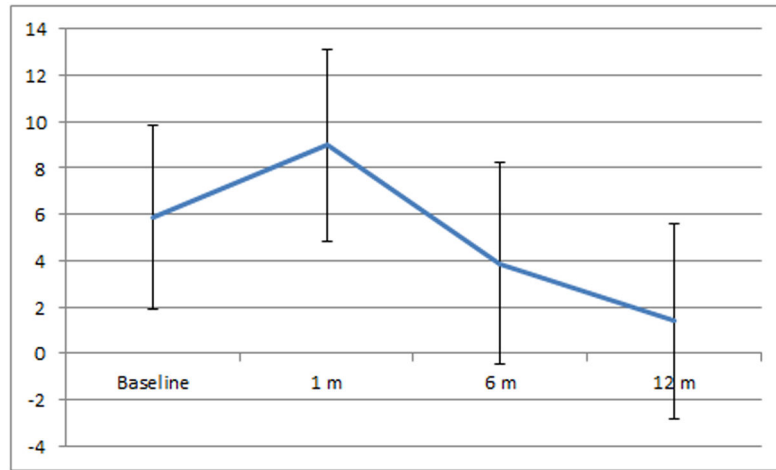
Figure.
Differences in mental quality of life in the one year post-ACS, according to SF-12 MCS, among patients with versus without PTSD due to ACS. [see separate file]

Table

Patient characteristics at baseline by ACS-induced PTSD status

Characteristics	No PTSD (n = 320)	PTSD (n = 25)	P value
Age (years)	63.4	60.9	0.301
Sex (female)	101 (31.5%)	11 (44%)	0.266
Race			0.501
-White	197 (61.6%)	12 (48.0%)	
-Black	70 (21.9%)	10 (40.0%)	
-Asian	5 (0.2%)	1 (0.04%)	
Ethnicity (Hispanic)	126 (39.4%)	11 (44%)	0.675
Prior history of MI			0.024[*]
-No	225 (70.3%)	11 (44%)	
-Yes	89 (27.8%)	13 (52%)	
-Maybe	6 (0.2%)	1 (0.04%)	
GRACE	91.0	85.6	0.376
Charlson	1.6	1.5	0.864
LVEF 40%	274 (85.6%)	19 (76%)	0.240
Baseline depression (BDI score 10)	99 (30.9%)	17 (68%)	<0.001[*]

Abbreviations: QOL, quality of life; SF-12, Medical Outcomes Study 12-item Short-Form Health Survey; MCS, mental component summary; PCS, physical component summary; MI, myocardial infarction; BDI, Beck Depression Inventory

[*] P-value < 0.05