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C-reactive protein as a predictor of posttraumatic stress induced by acute myocardial infarction

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Abstract: **BACKGROUND:** Acute coronary syndrome (ACS) may cause clinically relevant posttraumatic stress disorder symptoms (PTSS). An inflammatory state might be one mechanism linking PTSS with poor prognosis after ACS. We tested the hypothesis that a change in C-reactive protein (CRP) between hospital admission and 3-month follow-up is an independent predictor of ACS-triggered PTSS. **METHODS:** We assessed 183 patients (median age 59 years; 84% men) with verified myocardial infarction (MI) within 48 h of an acute coronary intervention and three months post-MI for self-rated PTSS. 14 (7.7%) patients fulfilled definition criteria for PTSS caseness. CRP values were categorized according to the predicted risk of cardiovascular disease (CVD) at hospital admission (acute inflammatory response): 0 to <5 mg/L, 5 to <10 mg/L, 10 to <20 mg/L, and ≥ 20 mg/L; and at 3-month follow-up (low-grade inflammation): 0 to <1 mg/L, 1 to <3 mg/L, and ≥ 3 mg/L. Additionally, in a subsample of 84 patients with CRP levels below 20 mg/L at admission, CRP values were log-transformed. **RESULTS:** After adjustment for covariates, less of a reduction or an increase of log CRP values between admission and 3-month follow-up predicted PTSS caseness (OR 6.25, 95% CI 1.25, 31.38), and continuous PTSS (unstandardized B = 0.21, 95% CI 0.07, 4.19; p = 0.043). Less reduction in CRP risk categories predicted both PTSS caseness (OR 4.14, 95% CI 1.89, 9.06) and continuous PTSS (B = 1.80, 95% CI 1.09, 2.51; p < 0.001). **CONCLUSIONS:** Persistently heightened inflammation seems to be predictive for the development of PTSS three months after ACS, so interventions to lower inflammation might be warranted.

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Table 3: Predicting PTSS caseness by change across CRP risk categories

| Variables | Odds ratio (95 % confidence interval) |
|---|--|
| Male gender | 2.32 (0.29-18.27) |
| Age | 0.96 (0.85-1.09) |
| Education | 0.16 (0.03-0.81)* |
| Body mass index | 1.07 (0.88-1.31) |
| Smoking | 1.41 (0.50-3.97) |
| Alcohol intake | 1.26 (0.42-3.97) |
| Physical activity | 1.69 (0.68-4.18) |
| ST-elevation myocardial infarction | 3.00 (0.31-28.89) |
| Global Registry of Acute Coronary Events risk score | 1.02 (0.97-1.08) |
| Left ventricular ejection fraction | 0.96 (0.88-1.04) |
| Troponin T | 1.00 (0.99-1.01) |
| White blood cell count | 0.87 (0.59-1.27) |
| Social support | 1.05 (0.85-1.31) |
| Acute stress disorder symptoms | 1.14 (1.04-1.25)** |
| Antidepressants | 0.24 (0.04-1.46) |
| Counseling intervention | 2.01 (0.41-9.89) |
| ΔCRP risk category | 4.69 (1.92-11.45)*** |

CRP, C-reactive protein; PTSS, posttraumatic stress symptoms

Notes: Confidence intervals not including 1.00 indicate significant odds ratios displayed in

bold: * $p < .05$, ** $p < .01$, *** $p < .001$.