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"Psychological Contributors to Cardiovascular Disease Risk in ED Patients"

Chest pain is the second most common reason for emergency care visits and approximately one-third of these patients can be classified as having "low-risk" chest pain with associated persistent anxiety or depression. Untreated anxiety and depression are known to be independent risk factors for the development of cardiovascular disorders, including coronary artery disease (CAD). Evidence suggests that psychological interventions aimed at reducing depression prevent cardiovascular disease progression when started early. However, Emergency providers typically avoid addressing these psychological contributors in presentations such as chest pain. This is due, in part, to lack of a validated methodology to identify anxiety or depression, as well as the lack of evidence for the efficacy of treatments for anxiety inpatients with multiple low-value ED visits for chest pain. Thus, there is a critical need to identify individuals who are at risk for CAD secondary to anxiety and depression in the ED and define the interplay between the two disease states, so effective interventions aimed at reducing CAD development can be implemented. It has been shown that anxiety and depression symptoms are linked to nitric oxide (NO)mediated, endothelial cell-vascular smooth muscle (EC-VSM) hypo-responsiveness to shear stress. Decoupling of EC-VSM-mediated vasodilation accelerates development of cardiovascular pathology including CAD. Similarly, circulating biomarker levels of systemic inflammation [interleukin-6 (IL-6) and high sensitivity C-reactive protein (hsCRP)], which contribute to the pathophysiology of CAD, are often elevated in patients with EC-VSM dysfunction, as well as those with anxiety and depression disorders. Therefore, the overall objectives are 1) to assess the prevalence of severe anxiety and depression among ED patients presenting with chest pain; and 2) to define the relationship between EC-VSM function and markers of systemic inflammation in low-risk chest pain subjects with severe anxiety or depression. We hypothesize that individuals who present to the ED with low risk chest pain secondary to anxiety or depression, particularly severe anxiety or depression, will exhibit abnormal EC-VSM function and systemic inflammation, which put them at higher risk for the development of CAD.