Myocardial Infarction and Risk of Suicide: Another Reason to Develop and Test Ways to Reduce Distress in Postmyocardial-Infarction Patients?

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Epidemiological research over the past two decades has shown that psychosocial distress, whether assessed by measures of depression, hostility, social isolation, lower socioeconomic status, or job stress, is associated with increased risk of developing coronary heart disease and poorer prognosis once clinical disease is present. (See also9–11) We now learn, based on the report by Larsen and colleagues9 appearing in this issue of Circulation, that patients with psychosocial distress are not only at increased risk of dying from cardiovascular-related causes following a myocardial infarction (MI), they also seem to be at higher risk of dying by their own hand. In a sophisticated population-based case-control study that takes advantage of the availability of 5 nationwide longitudinal data registers in Denmark, Larsen et al9 were able to identify 19,857 persons who died by suicide from 1981 to 2006 and 190,058 controls matched for sex, day of birth, and calendar time. Compared with those with no history of psychiatric illness and who had not had an MI, persons with a history of psychiatric illness were 64 times more likely to commit suicide during the month after an MI. Even those with no history of psychiatric illness were more than 3 times more likely to commit suicide during the month after their MI. The increased suicide risk continued over more than 5 years of follow-up, albeit at lower levels than the first month after the MI, was more pronounced in younger patients, and was similar in men and women.

Confidence in the importance of these findings comes from similar results in a study of a 14-country sample of 37,915 persons that found a broad range of the availability of chronic physical conditions, including MI/stroke, were associated with increased planned suicide attempts, regardless of whether persons had associated mental disorders.10 Additional support that suggests a role for post-MI stress reactions comes from 2 recently published studies that also used the Danish health registries and found that both acute stress reaction11 and its more severe counterpart, posttraumatic stress disorder,12 following an exceptional mental or physical stressor, are associated with a 10-fold higher rate of completed suicide compared with those without these diagnoses. Similar reasoning has led to the appreciation that the current “epidemic of suicide” in soldiers returning from war zones is being driven by the multitude of stressors they have experienced.13 Finally, among a sample of 886 cardiology patients screened for depression using the patient health questionnaire recommended by the American Heart Association (AHA) and American Psychiatric Association (APA) for all patients with coronary heart disease (CHD),14 12% expressed suicidal ideation, with 0.45% being hospitalized for suicidal intent.15

Larsen et al9 conclude that their results support the AHA/APA recommendations to screen all patients with MI for depression and suicidal ideation. Whether treating depression can also reduce cardiovascular risk remains poorly understood, however. Based on the evidence that depression and low social support predicted increased mortality in CHD patients, a large multicenter randomized controlled trial (RCT)–the Enhancing Recovery in Coronary Heart Disease (ENRICHD) study–was undertaken to determine whether cognitive behavioral therapy targeting depression and cognitive behavioral group training targeting depression and social isolation would be effective in reducing mortality and/or recurrent nonfatal MI in post-MI patients who were depressed and/or socially isolated. Patients in the intervention arm showed larger improvements in depression and social support than those randomized to usual care, but there were no significant differences in the cardiovascular end points between these groups.16 A post hoc analysis comparing the nonrandom subset of patients in both arms of ENRICHD who received treatment with selective serotonin reuptake inhibitors (SSRIs) with those who did not use SSRIs during the 29-month follow-up period revealed a significant reduction in death or recurrent MI in those receiving SSRIs.17 A similar post hoc analysis comparing the 356 ENRICHD patients in the nonrandom subset of the active treatment arm who were able to participate in the cognitive behavioral group training with the 781 patients in the active arm who received individual therapy only (due to logistic barriers to group participation) and the 1243 patients in the usual care arm also revealed a possible reduction in death or recurrent MI in those who participated in the group training intervention.18 While providing encouraging evidence that both pharmacological and behavioral interventions have the potential to reduce morbidity/mortality in distressed post-MI patients, results of these exploratory analyses require confirmation through appropriately designed trials.
Despite the encouraging evidence for the benefits of SSRI treatment and cognitive behavioral intervention from these post hoc analyses of the ENRICHD data and the recent consensus that all CHD patients should be screened for depression to identify those “who may require further assessment and treatment,” no adequately powered RCTs evaluating the effects of SSRIs and/or cognitive behavioral group training on cardiovascular morbidity/mortality have been conducted since ENRICHD in this large, at-risk population. Such interventions should be evaluated for their potential to reduce the increased mortality/morbidity in post-MI patients.

Thanks to the new report by Larsen et al in this issue of Circulation, we can now add another reason to mount RCTs testing effects of interventions to reduce depression and other indicators of stress in the post-MI patient population: in addition to reduced cardiovascular morbidity/mortality, these trials could have the added benefit of documenting that these interventions also reduce the risk of suicide.

In addition to reducing depression and increasing perceived social support, cognitive behavioral group training has other features that could make it particularly effective in reducing psychosocial distress in post-MI patients. Rather than being framed as therapy for a mental disorder, cognitive behavioral group interventions can normalize the experience and concerns associated with the MI within a social setting and enhance psychosocial coping skills. This positive framing reduces the stigma many post-MI patients associate with psychotherapy. A recent RCT in coronary bypass surgery patients evaluating psychosocial skills training showed that the training produced not only improvements in depression, anger, perceived stress, satisfaction with social support, and life satisfaction, but reduced blood pressure and heart rate at rest and during stress. Behavioral interventions that produce psychosocial and physiological improvements like these are promising candidates for reducing the increased risk of suicide found by Larsen et al in post-MI patients.

What should be the design of RCTs to evaluate interventions to reduce both cardiovascular morbidity and suicide in post-MI patients? The evidence reviewed above makes a strong case for a large trial testing SSRI treatment, cognitive behavioral interventions, and a combination of the 2 for their potential to reduce cardiovascular morbidity/mortality after MI. Rather than including only patients with increased psychosocial risk factors for cardiovascular morbidity/mortality and/or suicide, it would be better to include all post-MI patients regardless of psychosocial status, thereby ensuring that those patients without psychosocial distress when screened following their MI but will go on to develop distress over the following months may benefit. In the trial testing cognitive behavioral group training in coronary bypass surgery patients, all patients were eligible for inclusion, and those randomized to usual care showed increases in psychosocial risk factors during the follow-up period rather than the decreases observed in the active arm patients.

Cognitive behavioral group training also appears effective in reducing depression and other indicators of psychosocial distress that could be contributing to the increased suicide risk following an MI found by Larsen et al. If the RCTs testing effects of SSRI and cognitive behavioral interventions are successful in reducing cardiovascular morbidity/mortality, they could also enable us to detect a reduction in suicides.

To the well-documented increased cardiovascular morbidity/mortality in patients with psychosocial distress following an MI, we can now add increased risk of suicide—a finding that adds to the case already made for screening post-MI patients for depression. If the large trials that will be required are successful in showing that treating depression with pharmacotherapy, cognitive behavioral group training, or a combination reduces cardiovascular morbidity/mortality (and possibly suicide and even costs of medical care), the day will come when evidence-based medicine requires not only depression screening in CHD patients but also the use of interventions that have been shown to improve prognosis and well-being.

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**References**


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