How Can We Optimize Care and Outcomes for Patients with Mild Cognitive Impairment and Acute Myocardial Infarction?

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In this issue of *Journal of General Internal Medicine*, Levine et al. present data on receipt of invasive and non-invasive treatments after acute myocardial infarction (AMI) in patients with mild cognitive impairment (MCI).[1] Among participants in the Health and Retirement Study, Levine and colleagues found that survivors of AMI with MCI were significantly less likely than those with normal cognition to receive cardiac catheterization and coronary revascularization, but not cardiac rehabilitation. This topic is timely because cognitive impairment frequently overlaps with and complicates the care of cardiovascular disease among older adults—a scenario that will become more common as the population ages.[2] A symptomatic intermediate stage between normal cognition and dementia, MCI has important implications for patients and families, adds complexity to treatment decisions, and poses a barrier to optimal recovery after AMI. The report by Levine et al. adds to the relatively sparse literature about physician practice patterns relating to patients with MCI and highlights the need for future research to improve the post-AMI care of patients with MCI and the way complex clinical decisions about AMI treatment are made by such patients, their families, and clinicians.

Several findings by Levine et al. deserve mention. The first is that coronary revascularization is associated with a significant survival benefit in patients with MCI. Together with previous research, which has shown that patients with MCI have similar quality of life 1 year after AMI as compared with cognitively normal patients,[3] this is important information to inform clinical decision-making for patients with MCI, their families, and clinicians caring for them. Decisions about major invasive medical interventions are complex for such patients because of the uncertain prognosis of MCI. Approximately one-third of patients with MCI will develop dementia within 5 years, though annual rates of progression vary widely and many patients with MCI will not progress to dementia even after 10 years.[4] Taken in the context of prior research, the findings by Levine et al. suggest that preexisting MCI, by itself, should not automatically dissuade clinicians from recommending invasive strategies after AMI.

A second noteworthy finding is the much higher mortality risk after AMI among patients with MCI. After adjustment for receipt of coronary revascularization, the risk of mortality associated with MCI decreased but remained significantly elevated (aHR, 2.14; 95% CI, 1.36–3.37). This finding illustrates the need to enhance post-AMI care for these patients. The authors note that the measure of MCI they used might have served as a proxy for other patient factors, including frailty and delirium. These conditions, if present, would certainly affect the mortality rate. While one small study found that the risk of post-operative cognitive dysfunction after coronary artery bypass grafting (CABG) did not differ significantly between MCI patients and non-MCI patients,[5] multiple other studies have shown that cognitive impairment is associated with increased risk of adverse outcomes after various types of surgery.[6] MCI complicated by delirium, in particular, is associated with numerous negative downstream effects, including longer length of stay, discharge to nursing facilities, and new impairments in cognitive functioning.[7] Elective left heart catheterization may be associated with long-term cognitive decline, particularly in patients with preexisting cognitive impairment.[8] After cardiac surgery, 40% of patients who develop post-operative delirium never return to their preoperative cognitive baseline, which may result in long-term functional impairment and prolonged institutional care.[9] These are important patient- and family-centered outcomes that are not typically discussed as part of the surgical consent process,[10] especially in the urgent and emergent setting. Knowing that a patient is at much higher risk of these outcomes may not change the decision of whether to go forward with invasive strategies after AMI, but the awareness may better prepare patients and families for the range of possible outcomes.

But how can we improve post-AMI care and outcomes for patients with MCI? There are numerous gaps in the literature, starting with how best to evaluate cognition in AMI patients. Brief bedside cognitive evaluation, including delirium assessment, after AMI would enable the targeting of interventions to optimize care for patients with MCI, though much more research is needed in this regard as well. Researchers, clinicians, and health systems interested in quality improvement

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should work to design and test such interventions. Being discharged from the hospital after AMI is overwhelming in the best of circumstances; having MCI magnifies the complexity. After AMI, patients are typically started on a handful of new medicines, given a list of post-discharge medical appointments, and instructed in a variety of self-management tasks (monitoring blood pressure, heart rate and weight, making dietary changes and recognizing cardiac symptoms that should trigger a call to the doctor). This information is delivered in the acute hospital setting, which is noisy, rushed, and ill-equipped to meet the needs of older patients with cognitive impairment and sensory deficits. Although patients with MCI are, by definition, able to perform basic activities of daily living independently, they may have impaired executive function and need help with challenging healthcare tasks once they return home.[11] Additional research is needed to understand how best to support patients with MCI after AMI, including how to communicate with them on discharge, especially for those who have few social connections and are at high risk of rehospitalization and loss of independence.[3]

Another important finding by Levine et al. is the low uptake of cardiac rehabilitation, both among patients with MCI (9%) and those with normal cognition (22%). This is in line with the lower cardiac rehabilitation participation rates among other groups with barriers to accessing care, such as patients who are low-income, speak limited English, or are members of an ethnic or racial minority.[12] Participation in cardiac rehabilitation involves as many as 36 sessions over 12 weeks. The vast majority of people with MCI are older adults with multiple chronic conditions; for such patients, who often rely on working family members for transportation, treatment burden and complexity are important obstacles to care.[13] Recent initiatives aim to increase participation in cardiac rehabilitation, such as a $6 million, 3-year effort by the Agency for Healthcare Research and Quality, but these efforts do not specifically address cognitive impairment.[12] Such initiatives should recognize that patients with MCI are a high-risk group and focus on identifying and addressing impediments to their participation. In addition, future research should investigate how cardiac rehabilitation may be tailored for older adults with MCI and multiple chronic conditions—both to make it more accessible and to maximize functional ability, reduce disability, and preserve independence for such patients.[2]

Finally, the findings by Levine and colleagues highlight the necessity of good communication and shared decision-making for all older adults with multiple chronic conditions who are facing the prospect of invasive cardiac procedures. The necessity is magnified by MCI. Hospitalization after AMI is an anxiety-provoking, confusing time; as a result, patients often feel like they have no choice in their treatment.[14] The disease-focused, guideline-based approach to clinical decision-making often takes precedence over one that is driven by patients' preferences, priorities, and health trajectory. While it is true that many older adults with MCI live for years with good quality of life, those with more advanced cognitive impairment, frailty, or serious chronic conditions may have an uncertain cognitive and functional prognosis over the next few years.[11] For some patients, spending less time in hospitals and avoiding further cognitive decline may be more important than life prolongation, and high intensity, invasive interventions such as CABG may not be the best way to help them achieve their goals. Because MCI may impede an individual's capacity to make complex medical decisions, additional research should investigate strategies to improve communication and foster shared decision-making between clinicians, patients with MCI and AMI, and their family members. Levine et al. found that most patients received cardiac catheterization and coronary revascularization within 1 week of their hospitalization, a time frame that makes shared decision-making challenging but should not preclude it. Increasingly, clinicians will need to be skilled at engaging older adults with MCI and their family members in meaningful discussion of the potential benefits and trade-offs of both invasive and non-invasive treatments.

Levine et al. have added a useful contribution to the literature on post-AMI therapies in patients with MCI, who are at risk of both underuse and overuse of healthcare. With the aging of the population and the growing complexity of available medical interventions, strategies are needed to optimize patient-centered care for these high-risk patients.

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