EDITORIAL COMMENT

Management of Patients With Acute Myocardial Infarction and End-Stage Renal Disease*

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I suppose most physicians, particularly cardiologists, are aware of the malignant nature of the combination of severe end-stage renal disease (ESRD) and symptomatic coronary artery disease. The term “end-stage renal disease” is often used rather casually in patients whose renal function is not normal. In my view, ESRD should include only long-term dialysis patients who are candidates for renal transplantation or who have undergone renal transplantation. I suspect that those who have undergone renal transplantation have a better prognosis than those patients who remain with long-term dialysis treatment.

In a Medline search, I was able to find three articles published in peer-reviewed journals dealing with the subject of acute myocardial infarction (AMI) and renal dysfunction.

The first article is by Wright et al. (1) and is entitled “Acute Myocardial Infarction and Renal Dysfunction: A High-Risk Combination.” These investigators compared outcomes after AMI in patients with varying levels of renal disease and in patients without renal failure. They studied 3,106 patients in a retrospective fashion. They divided their patients into ESRD, severe renal insufficiency, moderate renal dysfunction, mild chronic renal insufficiency, or no renal disease. They defined these subsets on the basis of creatinine clearance. The mortality was as one might predict. Death rates were 2% in patients with normal renal function, 6% in those with mild renal failure, 14% in those with moderate renal failure, 21% in those with severe renal failure, and 30% in those with ESRD. Similar trends were noted after discharge from hospital.

These investigators also pointed out that patients with renal failure received adjunctive and reperfusion therapies less frequently than those with normal renal function, despite the fact that therapies such as acute reperfusion therapy, aspirin, and beta-blockers decreased mortality in patients receiving these therapies.

The second paper by Shlipak et al. (2) is entitled “Association of Renal Insufficiency With Treatment and Outcomes After Myocardial Infarction in Elderly Patients.” This was a large cohort study consisting of 130,099 elderly patients with myocardial infarction (MI) hospitalized between April 1994 and July 1995. The investigators wished to determine how patients with renal insufficiency are treated during hospitalization for MI and to determine the association of renal insufficiency with survival after MI. Patients were classified into subsets of no renal insufficiency, mild renal insufficiency, or moderate renal insufficiency. None of these patients was considered to have ESRD. Results indicated that one-year mortality was 24% in patients with no renal insufficiency, 46% in patients with mild renal insufficiency, and 66% in patients with moderate renal insufficiency. Interestingly, patients with moderate renal insufficiency were less likely to receive aspirin, beta-blockers, or thrombolytic therapy.

The third publication by McCullough et al. (3) is entitled “Benefits of Aspirin and Beta-Blockade After Myocardial Infarction in Patients With Chronic Kidney Disease.” These investigators indicated that until that point there had been no randomized trials of cardioprotective therapy after AMI in patients with chronic kidney disease, who should be largely eligible for aspirin and beta-blockers as a base of therapy. They analyzed a coronary care unit registry of 1,724 patients with ST-segment elevation MI and found that usage of aspirin and beta-blockers in these patients was 52.3%, beta-blockers alone 19%, aspirin alone 15.2%, and no aspirin or beta-blockers 13.5%. The main reasons for absence of aspirin and beta-blockers were heart failure upon admission, left bundle branch block, atrial and ventricular arrhythmias, and shock. The corrected creatinine clearance values also influenced the use of aspirin in beta-blockers. In this observational study, if the creatinine clearance was >81, 63.9% were given aspirin and beta-blockers; if the creatinine clearance was 81 to 63, 55.5% received aspirin and beta-blockers; if the creatinine clearance was 63.1 to 46.2, 48.2% received aspirin and beta-blockers; and if the creatinine clearance was <46.2 ml/min, only 35% of patients received aspirin and beta-blockers.

Aspirin and beta-blockers were used in 40.4% of patients receiving dialysis. These investigators concluded that aspirin and beta-blockers were underused in patients with AMI who have underlying kidney disease.

In this issue of the Journal, Berger et al. (4) report on the use of aspirin and beta-blocker therapy in patients with ESRD and AMI. This is an observational study based on a retrospective chart analysis of data collected between 1994 and 1996, which the authors contend provides the first comprehensive analysis of AMI therapies among patients with ESRD and in turn provides a baseline measure of medical therapy delay. The message that the authors want to convey is that ESRD patients are less likely to be treated with aspirin and beta-blockers for their AMI than patients who do not have ESRD. They further contend that lower usage of beta-blockers and particularly aspirin may contribute to the increased mortality in patients with AMI who...
have ESRD. In this study, data were obtained from 145,740 patients without ESRD and 1,025 with ESRD. The authors also point out that patients with ESRD have not been represented in randomized AMI trials. This, of course, is one of the limitations of all randomized trials that tend to exclude patients with severe disease of systems other than the heart.

The patient cohort was derived from the Cooperative Cardiovascular Project national sample and was restricted to patients age 65 years and older. Diagnosis of MI was made by traditional means but did not include the cardiac marker troponin. If this study is ever repeated, obviously troponin T or I will be an important marker for AMI.

Although beta-blockers and aspirin were not used as commonly in the ESRD patients as they were in patients without ESRD, the benefits of beta-blocker use were not statistically different between the dialysis and non-dialysis groups. However, beta-blocker use was associated with 13% absolute reduction in mortality in both the dialysis and non-dialysis groups.

The authors wish to have their data serve as a stimulus to more aggressive therapies for ESRD patients who are having an AMI. I share that goal.

The combination of cardiovascular disease and renal disease in the same patient is something that cardiologists do not particularly like. However, it is an important area, and the article by Berger and colleagues may help improve our care of these complex patients. These patients are extremely high risk and probably deserve to be treated with aspirin and beta-blockers more than patients who do not have ESRD.

Obviously, those of us who are taking care of patients with AMI, with or without ESRD, do not consider aspirin and beta-blockers as sole therapies for these patients. All of these high-risk patients need to be considered for statin therapy and angiotensin-converting enzyme inhibition as well as beta-blockers and aspirin. This observational study heightens the level of awareness about the seriousness of the combination of MI and renal disease and reminds us that we must be aggressive in the management of patients with ESRD.

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REFERENCES