Beta-Blocker Efficacy Shown in Patients with Myocardial Infarction

Researchers at the University of Miami Miller School of Medicine and other institutions have shown that drugs called beta-blockers improve survival for patients who have suffered a myocardial infarction (MI). Surprisingly, patients treated with approximately 25% of the target dose used in prior randomized clinical trials (beyond one year after an MI) may have enhanced survival compared to no beta-blocker and other beta-blocker doses. The landmark study was published in the Journal of the American Heart Association.

Jeffrey Goldberger, M.D.

“Beta-blockers have been around for a long time, and most of the studies showing their efficacy were done in the seventies and eighties,” said Jeffrey Goldberger, M.D., chief of the Division of Cardiology and first author on the paper. “At the time, it was shown to be a very effective therapy for MI
patients, but now we have a completely different therapeutic armamentarium. We have acute revascularization, statins, ACE inhibitors, even aspirin. We wanted to understand the benefits of beta-blockers on top of all those other, newer therapies.”

An electrophysiologist and expert in atrial fibrillation (a form of irregular heartbeat), Dr. Goldberger has been studying beta-blockers for nearly three decades.

Beta-blockers block the effect of adrenaline, lowering blood pressure and reducing patients’ heart rates. Dr. Goldberger notes that, initially, the drugs were almost certainly underused. Later, after the American Heart Association and other groups endorsed them and tracked utilization, usage increased from about 50% to greater than 90%. Still, the actual administered doses have varied widely. Though professional guidelines encourage beta-blockers, they do not delineate any specific doses.

“Because they’ve been around for so long, many people think beta-blockers are a settled issue,” said Dr. Goldberger. “But we don’t really know for sure what the right doses are, if it should be the same dose for everybody or how long patients should be treated. Particularly with the changing landscape of therapy for myocardial infarction, we just don’t know as much as we thought.”

To better pinpoint the most beneficial doses, the researchers used data from the Outcomes of Beta-Blocker Therapy After Myocardial Infarction (OBTAIN) study, a multi-center investigation that provided dose statuses for about 7,000 patients. In the original 2015 publication, the researchers were surprised to find that patients did better with lower
doses: approximately 25% of the doses used in earlier clinical trials that established their efficacy.

Jeffrey Goldberger, M.D., MBA, observes as patient Marvin Pickholz checks his pulse.

“Previous studies showed, for example, that 200 milligrams a day of metoprolol reduces mortality, but quite often people were only being put on 50 milligrams a day, and that kind of shocked me,” said Dr. Goldberger.

In the current OBTAIN sub-study, the authors evaluated whether beta-blockers offered any further benefit beyond one year after a myocardial infarction. The researchers found there is therapeutic benefit, but only for the group taking approximately 25% of the dose used in earlier trials.

Despite these results, the authors are cautious about recommending any specific dose or therapy duration. These results are not the final word and more work will need to be done to better understand which patients benefit most from beta-blockers, the appropriate doses and how long they should take them.
“The real answer, probably, is that it’s not the same for every myocardial infarction patient,” said Dr. Goldberger. “It probably depends on the type of MI, how extensive the damage is, patient comorbidities, duration of treatment and other factors.”

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