

Comparison of Calcium Channel Blockers After Myocardial Infarction

Gillman MW, Ross-Degnan D, McLaughlin TJ, Gao X, Spiegelman D, Hertzmark E, et al. Effects of long-acting versus short-acting calcium channel blockers among older survivors of acute myocardial infarction. *J Am Geriatr Soc* 1999;47:512-7.

Study Overview

Objective. To compare the occurrence of adverse outcomes among recipients of long-acting versus short-acting calcium channel blockers (CCBs); dihydropyridines (nifedipine, nicardipine) and nondihydropyridines (diltiazem, verapamil) were compared separately.

Design. Retrospective cohort study using linked Medicare and drug claims data.

Setting and participants. New Jersey residents aged 65 years and older who (1) had an acute myocardial infarction (MI) in 1989 and 1990 and survived for at least 30 days; (2) participated in both the U.S. Medicare program and the New Jersey program of Pharmaceutical Assistance for the Aged and Disabled (PAAD), a drug benefits program; and (3) were prescribed a single type of either a long-acting or a short-acting CCB within 90 days of the MI.

Main outcome measures. Rates of all-cause mortality and cardiac rehospitalization.

Main results. Of 833 patients eligible for analysis, 160 patients were prescribed long-acting CCBs, and 673 were prescribed short-acting CCBs. Clinical characteristics of both groups were comparable. Controlling for age, sex, race, and indicators of disease severity and comorbidity, the relative risk (RR) of dying for recipients of long-acting dihydropyridines was less than half that for recipients of short-acting dihydropyridines (RR = 0.42; 95% confidence interval [CI], 0.21 to 0.86). Similarly, recipients of long-acting dihydropyridines had an adjusted RR of 0.57 (95% CI, 0.34 to 0.94) for cardiac rehospitalization. Compared with recipients of short-acting nondihydropyridines, recipients of long-acting nondihydropyridines had an adjusted RR of 1.43 (95% CI, 0.88 to 2.32) for all-cause mortality and of 0.65 (95% CI, 0.40 to 1.05) for cardiac rehospitalization.

Conclusion

Use of long-acting dihydropyridine CCBs after acute MI was associated with significantly lower rates of death and cardiac rehospitalization compared with use of the short-acting formulations of these medications. Long-acting nondihydropyridines may be associated with lower rates of cardiac rehospitalization but higher rates of mortality than their short-acting counterparts.

Commentary

Previous studies have illustrated the potentially harmful effects of short-acting CCBs, especially the dihydropyridines, on cardiovascular outcomes in patients with coronary heart disease [1]. Others have argued that long-acting CCBs are safer [2,3], even though few outcomes data from randomized clinical trials exist. This carefully designed and implemented observational study adds to the literature on CCBs by illustrating the differences between long-acting and short-acting CCBs and between the 2 formulations of nondihydropyridines. The study's findings support the post-MI use of long-acting dihydropyridines, such as nifedipine, in appropriately selected patients but do not support the use of the long-acting nondihydropyridines, such as diltiazem and verapamil. In fact, the long-acting formulations of those medications may lead to even higher mortality risk than the short-acting versions.

Applications for Clinical Practice

Although this study provides useful information regarding the differences between the types of CCBs, it does not provide evidence to support altering the current role of CCB therapy in the care of post-MI patients. β Blockers and aspirin remain first-line therapy for secondary prevention following MI, as supported by numerous clinical trials [4].

References

1. Yusuf S, Held P, Furberg C. Update of effects of calcium antagonists in myocardial infarction or angina in light of the

