Trandolapril did not reduce cardiovascular death or other events in stable coronary artery disease

Braunwald E, Domanski MJ, Fowler SE, et al. **Angiotensin-converting-enzyme inhibition in stable coronary artery disease.** N Engl J Med. 2004;351:2058-68.

QUESTION

In patients with stable coronary artery disease (CAD) and preserved left ventricular (LV) function, is trandolapril better than placebo for reducing the risk for cardiovascular (CV) death or other CV events?

METHODS

Design: Randomized placebo-controlled trial (Prevention of Events with Angiotensin Converting Enzyme Inhibition [PEACE] trial).

Allocation: Concealed.*

Blinding: Blinded (clinicians, patients, {data collectors, and outcome assessors}†).*

Follow-up period: Median 4.8 years.

Setting: 187 centers in the United States, Canada, and Italy.

Patients: 8290 patients (mean age 64 y, 82% men) who had documented CAD (≥ 1 of myocardial infarction [MI], coronary artery bypass grafting [CABG], or percutaneous coronary intervention [PCI] ≥ 3 mo before enrollment; or obstruction of ≥ 50% of the luminal diameter of ≥ 1 native vessel or coronary angiography); LV ejection fraction > 40% on ventriculography or echocardiography, a qualitatively normal left ventriculogram, or the absence of LV wall-motion abnormalities on echocardiography; tolerance and ≥ 80% compliance with the medication; and successful completion of the run-in phase. Exclusion criteria included current use or contraindication of angiotensin-converting enzyme (ACE) inhibitors, current use of angiotensin II–receptor antagonists, hospitalization for unstable angina within the previous 2 months, valvular heart disease requiring surgical intervention, and CABG or PCI within the previous 3 months.

Intervention: Trandolapril (2 mg/d increased to 4 mg/d after 6 mo, if tolerated) (n = 4158) or matching placebo (n = 4132).

Outcomes: Composite endpoint of death from CV causes, nonfatal MI, and coronary revascularization (CABG or PCI). Secondary outcomes included death from CV causes, nonfatal MI, and adverse effects.

Patient follow-up: 98% (intention-to-treat analysis).

MAIN RESULTS

The trandolapril and placebo groups did not differ for the primary outcome (Table). The groups did not differ for any of the secondary outcomes (hazard ratio range 0.95 to 0.98, 95% lower CI range 0.83 to 0.90, upper CI range 1.03 to 1.12). More patients who received trandolapril discontinued the study because of adverse effects than did those who received placebo (14.4% vs 6.5%, P < 0.001). Adverse effects included cough (39.1% vs 27.5%, P < 0.01) and syncope (4.8% vs 3.9%, P = 0.04).

CONCLUSION

In patients with stable coronary artery disease and preserved left ventricular function, trandolapril was not better than placebo for reducing cardiovascular (CV) death or other CV events.

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*See Glossary.

†Information provided by author.

Trandolapril vs placebo for coronary artery disease and preserved left ventricular function at median 4.8 years‡

Outcome	Trandolapril	Placebo	RRR (CI)	NNT
Cardiovascular death, nonfatal myocardial infarction, or coronary revascularization§	21.9%	22.5%	2.8% (–5 to 10)	Not significant

‡Abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article.

§Coronary revascularization = coronary artery bypass grafting or percutaneous coronary intervention.

COMMENTARY

The PEACE trial, the latest in a trifecta of trials evaluating ACE inhibitors for patients who have CV disease without heart failure, did not show a benefit of trandolopril in patients with CAD at low risk for complications. These results were surprising in light of the other trials, and the qualitatively different findings provide important information to clinicians. Possible explanations for the difference include the drug (including dose and compliance), the patient population, and chance. The authors carefully considered these possibilities and showed that compliance was only slightly lower than in other trials and that the drug and its dose (shown to be effective in the TRACE trial [1]) had a clear biological effect in PEACE.

Although the trial was well-powered to detect a clinically important treatment effect for the primary endpoint, the results included the possibility of up to a 17% relative risk reduction in the harder endpoints of CV death or nonfatal MI. The lack of significant difference may be because revascularization (especially with PCI) is not a sensitive enough endpoint to detect clinically important benefits in low-risk patients. The authors showed that the patients in PEACE had lower risk than those in HOPE, with only about half the annual event rate. This might be explained by the high rates of previous revascularization, use of statins, somewhat lower blood pressure, and less diabetes. Clinicians should recognize that many of their patients will be at higher risk than those enrolled in randomized clinical trials and should not extrapolate the results of the PEACE trial to the large proportion of high-risk patients with CAD.

Of interest, fewer patients on tradolopril developed diabetes during the course of the trial, adding support to the intriguing effect of ACE inhibitors and angiotensin-receptor blockers for preventing diabetes.

How should PEACE change practice? Low-risk patients with revascularized CAD, controlled blood pressure, and without complicated diabetes need not routinely be prescribed ACE inhibitors. However, in light of the overall evidence (including the HOPE and EUROPA trials [2, 3]), high-risk patients should receive ACE inhibitors, at doses shown to be effective in large clinical trials.

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References

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