

Review: PTCA is associated with less angina but more CABG in patients with nonacute CAD than is medical treatment

Bucher HC, Hengstler P, Schindler C, Guyatt GH. Percutaneous transluminal coronary angioplasty versus medical treatment for non-acute coronary heart disease: meta-analysis of randomised controlled trials. *BMJ*. 2000 Jul 8;321:73-7.

QUESTION

In patients with nonacute coronary artery disease (CAD), is percutaneous coronary angioplasty (PTCA) as effective as medical care for reducing angina, myocardial infarction (MI), death, and revascularization?

DATA SOURCES

Studies were identified by searching MEDLINE, EMBASE/Excerpta Medica, the Cochrane Library, and PASCAL for 1979 to 1998 with the terms transluminal percutaneous coronary angioplasty, cardiovascular agents, coronary disease, and random (with various endings). Bibliographies of review articles and studies were scanned.

STUDY SELECTION

Randomized controlled trials were selected if PTCA was compared with medical care and if the patients had nonacute CAD and had had no acute MI in the previous week.

DATA EXTRACTION

Data were extracted independently and in duplicate on study quality, clinical and angiographic inclusion criteria, number of vessels and proportion with successful

dilation, treatment and related complications, length of follow-up, comorbid conditions, mean ejection fraction, and outcomes (angina at the end of the study, MI, mortality, and need for repeat angioplasty or coronary artery bypass grafting [CABG]).

MAIN RESULTS

429 trials were assessed, and 6 met the inclusion criteria. 953 patients were in the PTCA groups, and 951 were in the medical-care groups. 3 studies included patients with multivessel disease or previous MI. Data were pooled by using a random-effects model. Fewer patients in the PTCA groups had angina at the end of the study than did patients in the medical-care groups; more patients in the PTCA groups needed CABG (Table). The groups did not differ

for rates of fatal or nonfatal MI (pooled relative risk [RR] 1.42, 95% CI 0.90 to 2.25), mortality (RR 1.32, CI 0.65 to 2.70), or need for repeated PTCA (RR 1.29, CI 0.71 to 3.36). However, few deaths (15 in the PTCA groups vs 11 in the medical-care groups) or MIs (41 in the PTCA groups vs 29 in the medical-care groups) occurred.

CONCLUSION

Percutaneous coronary angioplasty was associated with a lower rate of angina and a higher rate of coronary artery bypass grafting in patients with nonacute coronary artery disease.

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Percutaneous coronary angioplasty (PTCA) vs medical care for nonacute coronary artery disease*

Outcomes at 6 to 57 mo	Weighted event rates		RRR (95% CI)	NNT (CI)
	PTCA	Medical care		
Angina at the end of study	53%	70%	30% (2 to 50)	6 (3 to 637)
			RRI (CI)	NNH (CI)
Coronary artery bypass grafting	7.6%	4.1%	59% (9 to 132)	29 (19 to 66)

*Abbreviations defined in Glossary; NNT, NNH, and their CIs calculated from data in article.

COMMENTARY

Each year approximately 1 million PTCAs are done worldwide. It is amazing that only 1904 patients have been randomly assigned in trials that compare PTCA with medical care. None of the 6 trials evaluated the benefit of optimal PTCA (current equipment, stents, clopidogrel, and platelet glycoprotein IIb/IIIa antagonists) added to optimal medical therapy (aspirin, β -blockers, statins, angiotensin-converting enzyme inhibitors, diet, exercise, weight control, smoking cessation, and attainment of target goals for glucose and cholesterol levels and blood pressure).

The meta-analysis by Bucher and colleagues might better be described as a pooled analysis because of the large differences in clinical and angiographic variables among the studies and the different durations of follow-up. The reduction in the rate of angina with PTCA is underestimated because 3 of the trials enrolled patients without angina. The higher rate of CABG with PTCA is overestimated because revascularization was encouraged in the PTCA group and discouraged in the medical group until the end of the trials when some patients crossed over to revascularization. Other potential outcomes favoring PTCA, such as the reduction in the need for medication and increase in exercise time until symptoms appear, were not analyzed because of inconsistent reporting in some of the trials, 1 of

which has yet to be published.

Many patients in these trials did not meet American College of Cardiology–American Heart Association guidelines for PTCA, which include unsuccessful symptom control with medical therapy, significant proximal left anterior descending artery disease, or a moderate area of ischemic myocardium on stress testing. Such patients are now being enrolled in the 3300-patient Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation (COURAGE) trial (1). Patients are receiving maximal medical therapy, with half also receiving optimal PTCA therapy. The hypothesis is that PTCA will reduce the primary end point of death or MI at 3 years. Until the results are announced, PTCA remains an excellent treatment option in appropriate stable patients for relieving angina and improving quality of life.

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Reference

1. Blumenthal RS, Cohn G, Schulman SP. Medical therapy versus coronary angioplasty in stable coronary artery disease: a critical review of the literature. *J Am Coll Cardiol*. 2000;36:668-73.