Review: long-term β-blocker use reduces mortality after myocardial infarction


QUESTION: In patients with myocardial infarction (MI), do β-blockers reduce all-cause mortality and recurrent MI without adverse effects?

Data sources
Studies were identified by searching databases from their inception to 1997 (Medline, EMBASE/Excerpta Medica, Biosis, Sigle, HealthStar, IHTA, Conference Papers Index, Derwent Drug File, Dissertation Abstracts, International Pharmaceutical Abstracts, Pascal, and Science Citation Index). Bibliographies of relevant studies and reviews were also checked.

Study selection
Randomised controlled trials were selected if treatment lasted ≥1 day, patients had had an MI, and β-blockers were compared with placebo or other treatments.

Data extraction
Data were extracted on patient numbers and characteristics; type, route, and dose of treatments; duration of treatment and follow-up; loss to follow-up; blinding; concealment of randomisation; study inclusion and exclusion criteria; and outcomes (deaths, recurrent MI, and withdrawals).

Main results
82 trials met the inclusion criteria (54 234 patients). Short-term (treatment duration <6 wks from onset of pain) studies (n = 51) had an overall mortality rate of 10.5%. In these studies, β-blockers did not reduce mortality (odds ratio [OR] for random-effects model 0.96, 95% CI 0.85 to 1.08); subgroup analyses did not differ in mortality for individual drugs.

Long-term (treatment duration 6 to 48 mo) studies (n = 31) had a mortality rate of 9.7%. Mortality was reduced for all β-blockers combined (OR 0.77, CI 0.69 to 0.85) and also for metoprolol (OR 0.80, CI 0.66 to 0.96, 7 studies), propranolol (OR 0.71, CI 0.59 to 0.77, 7 studies), and timolol (OR 0.59, CI 0.46 to 0.77, 2 studies). Drugs with cardioselectivity showed no reduction in mortality (OR 1.10, CI 0.89 to 1.39). Drugs with intrinsic sympathomimetic activity showed a trend toward increased mortality (OR 1.19, CI 0.96 to 1.47). Data on re-infarction showed similar trends for a reduction with long-term β-blocker use. No additional benefit was shown if the initial treatment started with an intravenous dose (OR 0.87, CI 0.61 to 1.22). Subgroup analyses did not differ in reductions in mortality over time. Withdrawal rates ranged from 10% to 30% and were similar in the treatment and control groups.

Conclusion
Long-term treatment (6 to 48 mo) with β-blockers reduces mortality in patients who have had a myocardial infarction.