Steroids for the prevention of restenosis in bare-metal stents: a systematic review and meta-analysis
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CRD summary
This review found that oral steroids administered within 72 hours of bare-metal stent implantation and continued after stent placement significantly reduced restenosis at six to 12 months. The conclusions reflect the evidence but with quality assessment results it is difficult to know the reliability of the evidence. The authors' advice to conduct larger studies with longer outcomes appears appropriate.

Authors' objectives
To evaluate the role of corticosteroids in reducing the rate of restenosis in patients after balloon angioplasty alone and after successful bare-metal stents implantation.

Searching
The authors searched PubMed, EMBASE and Cochrane Central Register of Controlled Trials (CENTRAL) for papers published between 1990 and 2011. There were no language restrictions. Reference lists of all identified studies, meta-analyses and reviews were examined.

Study selection
Eligible trials needed to include adults (≥18 years of age) who had received a recent angioplasty or placement of bare-metal stents. Participants had to have received corticosteroids within 72 hours before stent implantation up to seven days after stent placement. Randomised controlled trials (RCTs) were eligible and had to compare restenosis rates with and without steroids over a minimum follow-up of six months. The primary outcome was rate of restenosis at the end of at least six months of follow-up. Secondary outcomes were all-cause mortality and rates of target vessel revascularisation.

Across the trials timing of steroid administration varied from 48 hours beforehand to immediately after stent implantation. Two studies excluded patients with diabetes. One study included only patients with elevated C-reactive protein levels.

Two reviewers selected studies for the review. Disagreements were resolved by consensus.

Assessment of study quality
Study quality was assessed using methods detailed in the Cochrane Handbook of Systematic Reviews. Each study was assessed on randomisation, allocation concealment, blinding, use of intention-to-treat analysis, baseline comparisons, concomitant interventions and completeness of follow-up.

Two reviewers assessed study quality. Disagreements were resolved by consensus.

Data extraction
Relative risks (RR) and associated confidence intervals (CI) were extracted for restenosis, all-cause mortality and target vessel revascularisation.

Two reviewers extracted data. Disagreements were resolved by consensus.

Methods of synthesis
Studies were pooled in a series of meta-analyses using the random-effects model to produce overall estimates of risk with 95% confidence intervals (CI). Studies of angioplasty alone without stents were pooled separately. Heterogeneity was assessed using X² and I² statistics with I²<50% defined as low heterogeneity. Publication bias was estimated using funnel plots and Egger's test.
Results of the review
Five randomised controlled trials were included in the review (1,125 participants). Quality assessment results were not reported.

There was no statistically significant difference in restenosis rates between patients who received steroids and those who did not in trials of angioplasty alone (RR 1.02, 95% CI 0.84 to 1.23; Ι²=0; two trials). Steroid therapy before bare-metal stent insertion reduced the risk of restenosis when compared with no steroids (RR 0.60, 95% CI 0.37 to 0.97; moderate heterogeneity Ι²=54%; three trials). There were no statistically significant differences in mortality (RR 0.72, 95% CI 0.14 to 3.62; moderate heterogeneity Ι²=54%; three trials). Target vessel revascularisation was reduced significantly with steroids (RR 0.56, 95% CI 0.34 to 0.92; Ι²=42%; three trials).

There was no evidence of publication bias.

Authors' conclusions
Oral steroids administered within 72 hours of bare-metal stent implantation and continued after stent placement significantly reduced restenosis at six to 12 months.

CRD commentary
This review had well-defined inclusion criteria and was underpinned by a range of electronic and other resources. Two reviewers selected studies, extracted data and quality assessed the included studies. The results of quality assessment were not presented in full. Meta-analysis appeared to be appropriate.

The authors’ conclusions reflect the evidence presented but the lack of reporting of quality assessment results made it difficult to know the reliability of the evidence. The authors’ advice to conduct larger studies with longer outcomes appears appropriate.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated a need for larger randomised studies and measurement of long-term outcomes.

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