Impact of carvedilol on the serum lipid profile
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CRD summary
This review concluded that $\beta_1$-selective antagonists worsened the lipid profile compared to carvedilol and that it was unclear whether carvedilol independently made an improvement or had a neutral effect. The review had several methodological flaws and the authors' conclusions are not likely to be reliable.

Authors' objectives
To assess the impact of carvedilol on the serum lipid profile.

Searching
MEDLINE and International Pharmaceutical Abstracts were searched for published studies between 1966 and December 2007. Search terms were reported.

Study selection
Studies that evaluated the impact of carvedilol on the lipid profile were selected for inclusion. Studies of off-label use of carvedilol were excluded. Patients in included studies had hypertension or diabetes mellitus. Comparator treatments included $\beta_1$-selective antagonists or other antihypertensive medications. Most studies measured triglycerides, high-density lipoprotein cholesterol (HDL-C) and low-density lipoprotein cholesterol (LDL-C). All studies measured total cholesterol.

The authors stated neither how studies were selected for the review nor how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity, although they recorded presence of double-blinding and intention-to-treat analyses in a table.

Data extraction
The main results of each study were extracted; the authors stated neither how data were extracted for the review nor how many reviewers performed the extraction.

Methods of synthesis
A narrative synthesis was presented (grouped by comparator) with study details tabulated.

Results of the review
Twelve studies were included in the review: nine randomised trials (n=2,603) and three single-group studies (n=113).

In four studies carvedilol significantly improved the lipid profile independently and in three studies there was a non-significant neutral effect. In three of the four studies that compared carvedilol with other hypertensive medications, the other drugs worsened the lipid profile significantly; carvedilol significantly improved the lipid profile in the other study.

Authors' conclusions
It was clear that $\beta_1$-selective antagonists worsened the lipid profile compared to carvedilol, but it was unclear whether carvedilol independently made an improvement or had a neutral effect.

CRD commentary
The review question was clearly stated and supported with broad inclusion criteria. A very basic search (two databases only) was undertaken, possibly with language restrictions (the authors did not report on this issue), for published studies only, so it was possible relevant studies were missed. No details were provided on whether the authors used methods to
reduce risks of reviewer error and bias. Individual study details were provided, but these did not include the doses of the interventions used and no formal assessment of study quality was made, which made it difficult to assess the reliability of the data. A narrative synthesis was presented. Given the numerous limitations of this review the authors’ conclusions are not likely to be reliable.

**Implications of the review for practice and research**

**Practice**: The authors stated that carvedilol should be an important treatment consideration in patients with heart failure and/or hypertension with dyslipidemia.

**Research**: The authors suggested a need for head-to-head studies comparing carvedilol with metoprolol succinate and carvedilol with labetalol.

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