Treatment of hyperlipoproteinemia with pantethine: a review and analysis of efficacy and tolerability
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CRD summary
This review assessed the effectiveness and tolerability of pantethine in the treatment of hyperlipoproteinaemia. The author concluded that pantethine is an effective and well-tolerated treatment. In view of the limited search, lack of description of review methods, and dependence on uncontrolled studies, the author's conclusions should not be considered robust.

Authors' objectives
To assess the effectiveness and tolerability of pantethine in the treatment of hyperlipoproteinaemia.

Searching
MEDLINE was searched from 1966 to December 2002; the search terms were reported and there were no language restrictions. The reference lists in identified studies were also checked. Studies were excluded if they were reported as abstracts.

Study selection
Study designs of evaluations included in the review
The inclusion criteria for study design were not specified.

Specific interventions included in the review
Studies of pantethine were eligible for inclusion. The median daily dose in the included studies was 900 mg (range: 600 to 1,200). The mean duration of the included studies was 12.7 weeks (range: 3 to 48).

Participants included in the review
Inclusion criteria for the participants were not stated, but all the included studies involved people with hyperlipoproteinaemia. In some included studies the participants also had diabetes, had suffered a stroke, or were on haemodialysis. The mean age of the participants in the included studies was 52.8 years.

Outcomes assessed in the review
Studies that measured serum lipids were eligible for inclusion. The review assessed adverse effects and changes from baseline for total cholesterol, low-density lipoprotein cholesterol (LDL-C), high-density lipoprotein cholesterol (HDL-C) and triacylglycerols at 1, 2, 3 and 4 months. Data were excluded when baseline values were less than 200 mg/dL for total cholesterol, 130 mg/dL for LDL-C and 150 (mg/dL) for triacylglycerols. There were no cut-off values for HDL-C.

How were decisions on the relevance of primary studies made?
The author did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The author did not state that they assessed validity. However, information on study design and withdrawals was extracted, and weaknesses in the design of the included studies were mentioned in the text.

Data extraction
The author did not state how the data were extracted for the review, or how many reviewers performed the data extraction. For each study, data were extracted for baseline and post-treatment total cholesterol, LDL-C, HDL-C and
triacylglycerols.

**Methods of synthesis**

How were the studies combined?
The average change from baseline (plus or minus standard deviation) was calculated for each outcome measure for each treatment period.

How were differences between studies investigated?
Differences between the studies were not investigated.

**Results of the review**

Twenty-eight studies (n=646) were included. Seven were randomised controlled trials but only data from the pantethine treatment arms were used in the review. The remaining studies appeared to be single-group comparisons with baseline.

The mean percentage decrease in total cholesterol from baseline was 8.7% after 1 month, 11.6% after 2 months, 12.6% after 3 months and 15.1% after 4 months.

The mean percentage decrease in LDL-C from baseline was 10.4% after 1 month, 15.2% after 2 months, 17.7% after 3 months and 20.1% after 4 months.

The mean percentage decrease in serum triacylglycerols was 14.2% after 1 month, 15.8% after 2 months, 23.7% after 3 months and 32.9% after 4 months.

The mean percentage increase in HDL-C from baseline was 6.1% after 1 month, 7.8% after 2 months, 10.7% after 3 months and 8.4% after 4 months.

The overall drop-out rate was 1.7% (11 out of 646). Seven studies did not explicitly state that there were no adverse effects. For studies reporting adverse effects, the overall rate was 3.6% (19 out of 526). The most common adverse effect was heartburn or epigastric discomfort (8 patients), followed by diarrhoea (3 patients), nausea and vomiting (3 patients) and generalised pruritus (2 patients).

**Authors' conclusions**
Pantethine was an effective and well-tolerated treatment for treating patients with total serum cholesterol greater than 200 mg/dL and/ or serum triacylglycerol levels greater than 150 mg/dL.

**CRD commentary**
The review question was clear only in terms of the intervention and outcomes. The review only included data from hyperlipidaemic patients, but it was unclear if the cut-off values used were mean values for the study sample or individual patient values. Only one database was searched and this might have resulted in the omission of other relevant studies. No attempt was made to locate unpublished studies, thus raising the possibility of missing relevant data and publication bias. The methods used to select studies and extract the data were not described, so it is not known whether any efforts were made to reduce errors and bias during the review process. Only changes from baseline to post-treatment values were considered and this, as the author acknowledged, can lead to biased results. There was no information on cointerventions, such as dietary restrictions, that might have impacted on the results. Average changes from baseline were calculated without weighting by sample size. Differences among the studies in terms of the baseline values and treatment effect were not explored. In view of all the limitations highlighted, the author's conclusions cannot be considered robust.

**Implications of the review for practice and research**
Practice: The author did not state any implications for practice.
Research: The author stated that there is a need for randomised, double-blind, placebo-controlled trials that last at least 6 months to assess the role of pantethine in hyperlipoproteinaemia.

Bibliographic details

Indexing Status
Subject indexing assigned by CRD

MeSH
Cholesterol /blood; Clinical Trials as Topic; Hyperlipidemias /blood /drug therapy; Hyperlipoproteinemia Type IV /blood /drug therapy; Lipoproteins /blood; Pantetheine /administration & dosage /adverse effects /analogs & derivatives /therapeutic use; Sulfhydryl Compounds /therapeutic use; Triglycerides /blood

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.