Venous compression for prevention of postthrombotic syndrome: a meta-analysis
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CRD summary
This review concluded that venous compression reduced the incidence of post-thrombotic syndrome, particularly that of severe post-thrombotic syndrome in patients with deep vein thrombosis. Whilst this conclusion clearly reflected the results of the review, it should be interpreted with some caution due to the limited literature search, the uncertain quality of and clinical differences between the included trials.

Authors' objectives
To assess the effectiveness of venous compression stockings or compression bandages on the reduction of post-thrombotic syndrome in patients with deep venous thrombosis.

Searching
PubMed was searched up to June 2009 for published studies reported in any language. Search terms were reported. References of identified studies and review articles were also checked.

Study selection
Randomised controlled trials (RCTs) that compared venous compression stockings or compression bandages with no compression treatment in patients diagnosed with deep venous thrombosis (diagnosed using objective criteria) were eligible for inclusion. Trials were required to use the same anticoagulation therapy in both trials arms and present sufficient data to permit calculation of the incidence of post-thrombotic syndrome.

Most of the patients in the compression treatment groups of the included trials were treated with below-knee stockings; the rest were treated with thigh-length stockings or thigh bandages. Intervals between diagnosis and compression ranged from immediate treatment to one year. Duration of treatment ranged from 1.4 to 3.2 years. Mean ages of included patients ranged from 40 to 64; most trials included approximately equal numbers of men and women.

Three of the included trials used the Villalta scoring system to determine the severity of post-thrombotic syndrome (with scores of 5 to 14 indicating mild-to-moderate syndrome and 15 or above indicating severe post-thrombotic syndrome). One trial used the Clinical-Etiology-Anatomic-Pathophysiologic (CEAP) scoring system (with C4 indicating mild-to-moderate syndrome and C5 or C6 severe post-thrombotic syndrome). The remaining trial did not quantify severity.

At least two reviewers independently assessed the studies for inclusion in the review.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Data were extracted to calculate relative risks (RRs) with 95% confidence intervals (CIs) for mild-to-moderate, severe, and any post-thrombotic syndrome.

The authors did not state how many reviewers performed the data extraction.

Methods of synthesis
Both fixed-effect and random-effects model meta-analyses were used to calculate pooled relative risks with 95% confidence intervals. It appeared that statistical heterogeneity was assessed using the $X^2$ statistic.

Sensitivity analyses without individual trials were carried out.
Results of the review

Five RCTs were included in the review (n=662 patients). Sample size ranged from 37 to 194 patients.

There was a statistically significant reduction in mild-to-moderate post-thrombotic syndrome in patients treated with venous compression compared with control (22% versus 37%; RR 0.52, 95% CI 0.40 to 0.67; four RCTs). The reduction in severe post-thrombotic syndrome was also statistically significant (5% versus 12%; RR 0.38, 95% CI 0.22 to 0.68; four RCTs).

There was no statistically significant difference in the small numbers of patients with open lesions between treatment groups.

The overall incidence of any post-thrombotic syndrome was 26% in patients treated with compression compared with 46% in control groups (RR 0.54, 95% CI 0.44 to 0.67; five RCTs).

There was no evidence of statistically significant heterogeneity in the analyses and sensitivity analyses did not significantly alter the results.

Authors' conclusions

Venous compression reduced the incidence of post-thrombotic syndrome, particularly that of severe post-thrombotic syndrome.

CRD commentary

The review question and inclusion criteria were clear. Only one database was searched, which substantially increased the chances that relevant studies were omitted from the review. Restrictions on publications status also increased the chances of selection bias. The authors reported that they used methods designed to reduce reviewer bias and error in the selection of studies but not for the extraction of data.

The authors did not report assessing the quality of the included studies, which made it difficult to determine the strength of the evidence included in the review. The use of meta-analysis appeared reasonable despite the level of clinical heterogeneity, which the authors acknowledged.

The authors' conclusions clearly reflected the results of the review, but should be interpreted with some caution due to the limited search, the uncertain quality of the evidence and the level of clinical heterogeneity.

Implications of the review for practice and research

Practice: The authors stated that venous compression is indicated in patients with deep venous thrombosis.

Research: The authors stated that, in view of the clinical heterogeneity in the included trials, the results of the ongoing SOX trial (n=800 patients) will be of importance, but that additional research is also required.

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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.