

Review: Elastic compression stockings prevent the postthrombotic syndrome in deep venous thrombosis

Kolbach DN, Sandbrink MW, Hamulyak K, Neumann HA, Prins MH. **Non-pharmaceutical measures for prevention of post-thrombotic syndrome.** *Cochrane Database Syst Rev.* 2004;(1):CD004174.

QUESTION

In patients with deep venous thrombosis (DVT), are nonpharmaceutical interventions effective and safe for preventing the post-thrombotic syndrome (PTS)?

DATA SOURCES

Studies were identified by searching the Cochrane Peripheral Vascular Diseases Specialized Trials Register (January 2003), which is based on searching MEDLINE and EMBASE/Excerpta Medica; the Cochrane Central Register of Controlled Trials (2002); hand searching *Scripta Phlebologica* (1993 to 2000), *J Thromb Haemost* (2003), and conference proceedings; scanning the citations of identified studies; and contacting experts in the field.

STUDY SELECTION AND ASSESSMENT

Studies were selected if they were randomized controlled trials (RCTs) or controlled clinical trials that compared medical elastic stockings (pressure 20 to 30 mm Hg or 30 to 40 mm Hg at the ankle) and compression bandages with bed rest, no intervention, or placebo stockings. Studies were assessed for validity and methods using a standard checklist.

OUTCOMES

Occurrence of PTS. Secondary outcomes included complications and adverse effects (pulmonary embolism within 2 wk of treatment, discomfort, pain, swelling, pressure sores, and recurrence of thrombosis).

MAIN RESULTS

4 RCTs (466 patients) met the selection criteria; 3 RCTs (421 patients) were included in the meta-analysis. Patients who received elastic compression stockings had greater reductions in the incidence of any or severe PTS than those who received the control intervention (Table). No information was available for complications or adverse effects in these studies. In 1 RCT not in the meta-analysis, patients who received a compression intervention had less pain and swelling

than those who received bed rest for 9 days without compression ($P < 0.05$). The groups did not differ for complications or adverse effects (occurrence of new pulmonary emboli and regression of thrombus diameter).

CONCLUSIONS

In patients with deep venous thrombosis, elastic compression stockings prevent the postthrombotic syndrome. Safety information was not available for the pooled studies, but 1 study found similar adverse effects between groups.

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Elastic compression stockings vs no intervention or placebo stockings (control) for deep venous thrombosis at 2 years*

Outcomes	Number of studies (number of patients)	Weighted event rates		RRR (95% CI)	NNT (CI)
		Stockings	Control		
Any PTS	3 (421)	20%	43%	54% (38 to 66)	5 (4 to 7)
Severe PTS	3 (421)	7%	15%	56% (20 to 75)	13 (8 to 34)

*PTS = postthrombotic syndrome. Other abbreviations defined in Glossary; weighted event rates, RRR, NNT, and CI calculated from data in article using a fixed-effects model.

COMMENTARY

PTS is a common, frequently overlooked, chronic complication of DVT (1). Within 1 to 2 years of symptomatic DVT, 20% to 50% of patients develop PTS, and 5% to 10% develop severe PTS (2, 3). Identifying effective means to prevent the development of PTS is an important goal, and currently available treatments for established PTS are limited (1).

The review by Kolbach and colleagues examined the effectiveness of elastic compression stockings in preventing PTS in patients with DVT. Their analysis showed that daily use of compression stockings reduced the relative risk for any and severe PTS by about 55%. However, this conclusion is uncertain for a few reasons. The lack of blinding in the 2 positive studies undermines confidence in the results, because the scales that were used to diagnose PTS and the assessment of its severity relied on subjective elements that were susceptible to reporting bias. In addition, of the 3 studies that assessed severe PTS, 1 included patients with asymptomatic DVT and initiated compression stockings only 1 year after DVT, and 1 study was unpublished.

If further studies confirm that compression stockings are effective for reducing the risk for PTS, additional questions need to be answered about how long stockings need to be worn and which compression

strength is optimal. Furthermore, although compression stockings are unlikely to cause harm, they are somewhat expensive and inconvenient.

A better understanding of which patients with DVT are prone to developing PTS would enable physicians to target compression stockings for those patients who are the most likely to benefit. It is not currently known whether certain patients (e.g., those with extensive DVT) derive greater benefit than others. Pending further studies, a reasonable approach would be to provide stockings to patients who have residual leg pain or swelling after DVT and continue use for as long as they derive symptomatic benefit.

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