COCHRANE REVIEW UPDATE

Combined Intermittent Pneumatic Leg Compression and Pharmacological Prophylaxis for Prevention of Venous Thrombo-Embolism in High-Risk Patients

S.K. Kakkos*,1, J.A. Caprini2, G. Geroulakos3, A.N. Nicolaides4, G.P. Stansby5, D.J. Reddy1

1 Division of Vascular Surgery, Department of Surgery, Detroit, USA
2 Department of Surgery, Evanston Northwestern Healthcare, Evanston, USA
3 Vascular Unit and Department of Vascular Surgery, Ealing Hospital and Imperial College, London, Southall, UK
4 Vascular Screening and Diagnostic Centre, and Cyprus University, Nicosia, Cyprus
5 Department of Surgery, University of Newcastle upon Tyne, Newcastle upon Tyne, UK

Submitted 21 October 2008; accepted 18 November 2008
Available online 21 January 2009

KEYWORDS
DVT;
PE;
VTE

Abstract  Background: It has been suggested that combined modalities (methods of treatment) are more effective than single modalities in preventing venous thrombo-embolism (defined as deep vein thrombosis and pulmonary embolism, or both) in high-risk patients.
Objectives: To assess the efficacy of intermittent pneumatic leg compression combined with pharmacological prophylaxis versus single modalities in preventing venous thrombo-embolism in high-risk patients.
Search strategy: The Cochrane Peripheral Vascular Diseases (PVD) Group searched the reference lists of their Specialised Register (last searched 17 July 2007) and the Cochrane Central Register of Controlled Trials (CENTRAL) (last searched The Cochrane Library 2008, issue 3) for relevant articles to identify additional trials.
Selection criteria: Randomised controlled trials (RCTs) or controlled clinical trials (CCTs) of combined intermittent pneumatic leg compression and pharmacological interventions used to prevent venous thrombo-embolism in high-risk patients.
Data collection and analysis: Data extraction was undertaken independently by two review authors using data extraction sheets.

In this review, 11 studies, six of them randomised controlled trials (RCTs), were identified. The trials included
a total of 7431 patients. As compared to compression alone, the use of combined modalities significantly reduced the incidence of both symptomatic pulmonary embolism (PE) (from about 3% to 1%; odds ratio (OR) 0.39, 95% confidence interval (CI): 0.25–0.63) and deep vein thrombosis (DVT) (from about 4% to 1%; OR 0.43, 95% CI: 0.24–0.76). When compared with pharmacological prophylaxis alone, the use of combined modalities significantly reduced the incidence of DVT (from 4.21% to 0.65%; OR 0.16, 95% CI: 0.07–0.34) but the included studies were underpowered with regard to PE. The comparison of compression and pharmacological prophylaxis together with a combination of compression and aspirin showed an insignificant reduction in PE and DVT in favour of the former group. Repeat analysis restricted to the RCTs confirmed the above findings.

Conclusions

When compared with compression alone, combined prophylactic modalities decrease the incidence of venous thrombo-embolism significantly. As compared to pharmacological prophylaxis alone, combined modalities reduce the incidence of DVT significantly, but the effect on PE is unknown. The results of the current review support, especially in high-risk patients, the use of combined modalities. More studies on their role in PE prevention, compared with pharmacological prophylaxis alone, are urgently needed.

Conflict of Interest/Funding

None.