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REVIEW ARTICLE

Physical activity in patients with deep venous thrombosis: A systematic review ☆

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Training

Abstract

Objectives: We performed a systematic review to assess the benefits or risks of physical activity in patients with an acute or previous DVT of the leg.
Data sources: PubMed, EMBASE and Science Citation Index were searched without language restrictions up to July 2007. Bibliographies of retrieved articles and personal files were also searched.
Review methods: Randomized trials and prospective cohort studies that included patients with acute or previous DVT, described an exercise intervention or exercise exposure, and described any related clinical outcome were selected. Data were independently extracted by 2 investigators.
Results: Seven randomized trials and two prospective observational studies were included. Early exercise, compared with bed rest, was associated with a similar short-term risk of pulmonary embolism in patients with acute DVT and led to more rapid resolution of limb pain. In patients with acute DVT, a 6 month daily walking program led to similar degrees of vein recanalization and improvement in quality of life as controls. In patients with previous DVT, 30 min of vigorous treadmill exercise did not worsen venous symptoms and improved calf muscle flexibility; a 6 month exercise training program improved calf muscle strength and pump function; and high levels of physical activity at one month tended to be associated with reduced severity of postthrombotic symptoms during the subsequent 3 months.

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Conclusions: Early walking exercise is safe in patients with acute DVT and may help to reduce acute symptoms. Exercise training does not increase leg symptoms acutely in patients with a previous DVT and may help to prevent or improve the postthrombotic syndrome.

Contents

Introduction

Deep venous thrombosis of the leg is a common clinical problem that affects more than 250,000 people in the U.S. and 25,000 people in Canada each year [1]. Despite receiving optimal anticoagulant treatment, symptoms of acute deep venous thrombosis such as leg swelling or pain can take weeks to subside [2–5]. Subsequently, up to 40% of patients with deep venous thrombosis develop the postthrombotic syndrome [6]. Symptoms of postthrombotic syndrome include chronic pain, heaviness, swelling and cramping in the leg which are often aggravated by standing and are lessened by leg elevation or lying down [6].

There is clear evidence that regular physical activity contributes to the primary and secondary prevention of several chronic diseases such as cardiovascular disease, diabetes and osteoporosis, is associated with a reduced risk of premature death and improves quality of life [7]. In addition, many patients with deep venous thrombosis or postthrombotic syndrome are eager to resume physical activity and seek information about when an exercise program can be restarted and at what intensity.

In order to evaluate the clinical effects of exercise in patients with venous thrombosis, we performed a systematic review of studies that have reported on the benefits or risks of physical activity in patients with lower extremity deep venous thrombosis.

Methods

We prospectively developed a protocol that defined objectives of this review, a search strategy for study identification, criteria for study selection, how data would be extracted, study outcomes, and statistical methodology.

Data sources and searches

We performed a computerized search of English-language publications listed in the electronic databases PubMed, EMBASE and Science Citation Index up to July 2007 using the following text and key words in combination both as MeSH terms and text words: ["thromboembolism", "venous thrombosis", "pulmonary embolism", "deep vein thrombosis", "deep-vein thrombosis", "postthrombotic syndrome", "post-thrombotic syndrome", "postphlebitic syndrome", "post-phlebitic syndrome", "venous insufficiency"] and ["physical activity", "walk", "jog", "run", "exercise"] and ["randomized controlled trial", "cohort studies", "prospective studies", "clinical trial"]. We also hand searched bibliographies of retrieved articles and our own files to identify additional potentially relevant articles.

Study selection

Two investigators (SK, IS) assessed articles for eligibility. If the title and the abstract were judged to be potentially eligible,