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Q / Should patients with acute DVT limit activity?

Ambulation, along with compression of the affected extremity, appears to be safe for medically stable patients with DVT.

EVIDENCE-BASED ANSWER

A / **PROBABLY NOT.** Ambulation, combined with compression of the affected extremity, appears to be safe for medically stable patients with deep venous thromboses (DVT) (strength of recommendation [SOR]: **A**, consistent randomized controlled trials [RCTs]). Leg compression and ambulation, compared with bed rest without compression, can effectively decrease swelling and pain (SOR: **A**, consistent RCTs).

Only weak data exist to suggest that early ambulation can reduce mortality (SOR: **C**, cohort studies with historical controls).

Evidence summary

Patients with acute DVT have traditionally been treated with immobilization and bed rest, combined with anticoagulation, for days. This approach is motivated by fear of dislodging an unstable thrombus and causing a pulmonary embolism (PE) and by the belief that inactivity relieves local pain and swelling. On the other hand, bed rest promotes stasis, an element in Virchow's triad.

Early ambulation doesn't raise risk of PE

We performed a structured literature review, which found 6 RCTs and 3 cohort studies that address this problem. All 6 RCTs included patients with acute DVT but without life-threatening conditions.[1-6] They assessed various outcomes, including incidence of new PE, change in leg circumference, leg pain, patient well-being, and progression of DVT.

The studies consistently found that early ambulation, along with compression, is safe when compared with bed rest (**TABLE**). Although the sample size of all the RCTs was small, the RCTs showed consistent trends in favor of ambulation and compression.

A prospective cohort study of new PE in patients treated with ambulation and compression plus anticoagulation found that the incidence of PE was significantly lower than historical incidence rates in patients managed with bed rest.[7]

Another study using the RIETE registry, a Spanish registry of consecutively enrolled patients with objectively confirmed acute DVT or PE, found no significant difference in occurrence of new PE between immobilized and mobilized patients.[8] Patients with DVT who were immobilized were generally sicker, more likely to have PaO_2 <60, and more likely to have received lower doses of low-molecular-weight heparin (LMWH) compared with the group that walked (P<.005).

Does ambulation affect thrombus propagation?

A multicenter RCT showed that thrombus progression occurred more often in patients who were treated with bed rest compared with patients treated with ambulation and compression (P<.01).[2]

Another RCT revealed a similar trend, though the difference didn't reach statistical significance because of small sample size.[4] The clinical importance of these phlebographic studies isn't clear.

TABLE
Early ambulation and compression: What RCTs show

Subjects	Study groups	Results
129 patients with DVT, treated with LMWH[1]	Strict immobilization for 4 days Ambulation for ≥4 h/d, along with compression for 4 days or until swelling subsided	At 4 days: No difference in PE, leg pain, leg size, mortality At 3 months: No difference in PE, mortality
146 patients with DVT, all anti-coagulated[5]	Hospital treatment with 5 days of bed rest Home care with early walking and compression stockings	No difference in occurrence of new PE after 10 days
126 patients with DVT, treated with LMWH, compression[6]	Strict bed rest for 8 days with leg elevation Began full ambulation on day 2	No difference in PE
102 patients with DVT, treated with LMWH, compression[4]	Bed rest for 5 days Ambulation	No differences in PE, thrombus progression, serious adverse events, or leg pain Study didn't recruit expected number of patients Study showed a trend toward benefit from ambulation
53 patients with DVT[2,7]	Ambulation and use of firm, inelastic Unna boot bandages Ambulation and elastic compression stockings Strict bed rest for 9 days and no compression	No difference in quality of life or PE DVT-related symptoms, leg pain, and circumference improved in compression/ambulation groups No changes noted at 2 years
72 patients with DVT, treated with anticoagulation and compression[3]	Daily walking exercise and weekly group exercise Control group	No difference in DVT, PE, phlebography results, or calf circumference

DVT, deep vein thrombosis; LMWH, low-molecular-weight heparin; PE, pulmonary embolism.

Compression may be the key factor in reducing leg pain and swelling.

Is it the walking, or compression, that works?

RCTs have shown that ambulation with leg compression, compared with bed rest without compression, can effectively decrease leg swelling and pain[1,2,4] The difference was detectable 2 years after DVT.[7]

In contrast, RCTs in which both ambulating and resting patients received compression therapy showed no significant difference in leg circumference at 1 or 6 months.[3] This finding suggests that the benefit on local symptoms may result from compression rather than ambulation.

Reduced mortality? Evidence is weak

Estimates of the possible effect on mortality of ambulation compared with bed rest are based on cohort studies. A cohort study in which 691 patients were kept walking with compression therapy reported a mortality rate of 0.2%.[9] In another cohort, the mortality rate was also 0.2%, and all deaths occurred in patients older than 70 years.[10]

This rate is lower than rates reported in the historic literature, which typically are 1% among patients treated with unfractionated heparin and bed rest.[9,10] A retrospective, multicenter cohort of 1647 patients treated with unfractionated

heparin and bed rest in different German hospitals reported a rate of fatal PE of 2.33%.[11]

Data from the RIETE registry indicated that overall mortality was significantly higher in immobilized patients with a PE (3.6% vs 0.5% in mobile patients; *P*=.01).[8] Notably, immobilized patients with a PE were more likely to be hypoxic and also tended to receive lower doses of LMWH. No differences were found in outcomes for patients with DVT.

Recommendations

The American College of Chest Physicians (ACCP) doesn't recommend bed rest in its guidelines for treating acute venous thromboembolism, but rather ambulation as tolerated after starting anticoagulation. Patients who are not hemodynamically stable should be stabilized first.

The ACCP also recommends wearing an elastic compression stocking with a pressure of 30 to 40 mm Hg at the ankle for 2 years after an episode of DVT and a course of intermittent pneumatic compression for patients with severe edema of the leg resulting from postthrombotic syndrome.[12]

A joint guideline from the American College of Physicians and the American Academy of Family Physicians doesn't make recommendations about ambulation for therapy of DVT and PE.[13] JFP

Data on the effect of early ambulation on mortality are weak.

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