

# Homocysteine – *modest risk factor for deep vein thrombosis and pulmonary embolism*

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**H**igh levels of homocysteine are associated with an increased risk of deep vein thrombosis (DVT) and pulmonary embolism (PE). Elevated homocysteine levels can be easily treated with B vitamin supplementation (folic acid, vitamin B6, and vitamin B12). Daily use of folic acid gives a 25% reduction in homocysteine levels even at low doses of 0.5 mg. The question is whether lowering of homocysteine levels by use of B vitamin supplementation also lowers the risk for venous thrombosis.

The primary end-point in the Vitamins and Thrombosis (VITRO) study, was to investigate the effect of a combination preparation of 5 mg folic acid, 50 mg pyridoxine, and 0.4 mg cyanocobalamin versus placebo in the secondary prevention of DVT and PE in absence of major risk factors (major surgery, known malignant disease, pregnancy and puerperium, or immobility for 3 weeks), in patients with a first event of venous thrombosis and hyperhomocysteinemia in a randomized, double-

blind, and placebo-controlled setting. A secondary end-point was to study the effect of vitamin supplementation versus placebo in patients with a first event of venous thrombosis and a “normal” homocysteine concentration in an identical setting.

A number of 360 patients were randomized within the hyperhomocysteinemia group, respectively 341 patients in normohomocysteinemia group.

The hazard ratio associated with vitamin supplementation was 1.14 (95% CI, 0.65-1.98) in the hyperhomocysteinemia group and 0.58 (95% CI, 0.31-1.07) in the normohomocysteinemia group. The hazard ratio for men versus women was 1.6 (95% CI, 1.05-2.45). There was no significant effect for the other covariates.

This study shows that supplementation with B vitamins lowers homocysteine values, but it does not show a risk reduction in recurrent venous thrombosis. Homocysteine level at baseline is a modest risk factor for recurrent events. ◻

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*Comment on the paper:*

Heijer M, Willems HPJ, Blom HJ, et al – Homocysteine lowering by B vitamins and the secondary prevention of deep vein thrombosis and pulmonary embolism: a randomized, placebo-controlled, double-blind trial. *Blood* 2007; 109:139-144