Plasma total homocysteine and hemodialysis access thrombosis: a prospective study.

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Mild hyperhomocysteinemia, a putative risk factor for atherothrombotic cardiovascular disease morbidity and mortality, may contribute to the excess incidence of atherothrombotic outcomes in the dialysis-dependent end-stage renal disease population. Hemodialysis access (fistula or graft) thrombosis is an unfortunately common and costly morbidity in this patient population. In this study, using a prospective design, the potential relationship between baseline nonfasting, predialysis plasma total homocysteine (tHcy) levels and vascular access-related morbidity was examined in a cohort of 84 hemodialysis patients with a fistula or prosthetic graft as their primary hemodialysis access. Vascular access thrombotic episodes were recorded over a subsequent 18-mo follow-up period. Forty-seven patients (56% of the total) had at least one access thrombosis during the 18-mo follow-up period (median follow-up, 13 mo; rate, 0.6 events per patient-year of follow-up). Proportional hazards modeling revealed that each 1 microM/L increase in the tHcy level was associated with a 4.0% increase in the risk of access thrombosis (95% confidence interval, 1.0 to 6.0%, P = 0.008). This association persisted after adjustment for type of access (fistula versus graft), age, gender, time on dialysis, diabetes, smoking, hypertension, nutritional status, urea reduction ratio, dyslipidemia, and the presence of previous vascular disease. Elevated tHcy levels appear to confer a graded, independent increased risk for hemodialysis access thrombosis. A randomized, controlled trial examining the effect of tHcy-lowering intervention on hemodialysis access thrombosis appears to be justified.