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Titel des Beitrags:
Natriuretic peptide system gene variants are associated with ventricular dysfunction after coronary artery bypass grafting.

Abstract:
BACKGROUND: Ventricular dysfunction (VnD) after primary coronary artery bypass grafting is associated with increased hospital stay and mortality. Natriuretic peptides have compensatory vasodilatory, natriuretic, and paracrine influences on myocardial failure and ischemia. The authors hypothesized that natriuretic peptide system gene variants independently predict risk of VnD after primary coronary artery bypass grafting. METHODS: A total of 1,164 patients undergoing primary coronary artery bypass grafting with cardiopulmonary bypass at two institutions were prospectively enrolled. After prospectively defined exclusions, 697 patients of European descent (76 with VnD) were analyzed. VnD was defined as need for at least 2 new inotropes and/or new mechanical ventricular support after coronary artery bypass grafting. A total of 139 haplotype-tagging single nucleotide polymorphisms (SNPs) within 7 genes (NPPA, NPPB, NPPC, NPR1, NPR2, NPR3, CORIN) were genotyped. SNPs univariately associated with VnD were entered into logistic regression models adjusting for clinical covariates predictive of VnD. To control for multiple comparisons, permutation analyses were conducted for all SNP associations. RESULTS: After adjusting for clinical covariates and
multiple comparisons within each gene, seven NPPA/NPPB SNPs (rs632793, rs6668352, rs549596, rs198388, rs198389, rs6676300, rs1009592) were associated with decreased risk of postoperative VnD (additive model; odds ratios 0.44-0.55; P = 0.010-0.036) and four NPR3 SNPs (rs700923, rs16890196, rs765199, rs700926) were associated with increased risk of postoperative VnD (recessive model; odds ratios 3.89-4.28; P = 0.007-0.034). CONCLUSIONS: Genetic variation within the NPPA/NPPB and NPR3 genes is associated with risk of VnD after primary coronary artery bypass grafting. Knowledge of such genotypic predictors may result in better understanding of the molecular mechanisms underlying postoperative VnD.