COMT-Val158Met-polymorphism is not a risk factor for acute kidney injury after cardiac surgery.

Abstract:
Cardiac surgery-associated acute kidney injury (CSA-AKI) depicts a major complication after cardiac surgery using cardiopulmonary bypass (CPB). CSA-AKI has clearly been linked to increased perioperative morbidity and mortality. Dysregulations of vasomotor tone are assumed to be causal for CSA-AKI. While catechol-O-methyltransferase (COMT) is involved in metabolizing catecholamines, a single-nucleotide polymorphism (SNP) in the COMT gene leads to different enzyme activities according to genotype. Pilot studies found associations between those COMT genotypes and CSA-AKI. We prospectively included 1741 patients undergoing elective cardiac surgery using cardiopulmonary bypass (CPB). Patients were genotyped for COMT-Val158Met-(G/A) polymorphism (rs4680). Demographic characteristics and procedural data revealed no significant differences between genotypes. No association between COMT genotypes and the RIFLE criteria could be detected. A multiple linear regression analysis for postoperative creatinine increase revealed highly significant associations for aortic cross-clamp time (P<0.001). Based on our results, we can rule out an association between the COMT-Val158Met-(G/A) polymorphism and the appearance of CSA-AKI.