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Influence of Renal Function on the Usefulness of N-Terminal Pro-B-Type Natriuretic Peptide as a Prognostic Cardiac Risk Marker in Patients Undergoing Noncardiac Vascular Surgery

[Dustin Goej](#), MD, [Olaf Schouten](#), MD, [Eric Boersma](#), PhD, [Gijs M.J.M. Welten](#), MD, [Martin Dunkelgrun](#), MD, [Jan Lindemans](#), MD, [Yvette R.B.M. van Gestel](#), MSc, [Sanne E. Hoeks](#), MSc, [Jeroen J. Bax](#), MD, [Don Poldermans](#), MD, PhD 

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N-terminal pro-B-type natriuretic peptide (NT-pro-BNP) is related to stress-induced myocardial ischemia and/or volume overload, both common in patients with renal dysfunction. This might compromise the prognostic usefulness of NT-pro-BNP in patients with renal impairment before vascular surgery. We assessed the prognostic value of NT-pro-BNP in the entire strata of renal function. In 356 patients (median age 69 years, 77% men), cardiac history, glomerular filtration rate (GFR, ml/min/1.73 m²), and NT-pro-BNP level (pg/ml) were assessed preoperatively. Troponin T and electrocardiography were assessed postoperatively on days 1, 3, 7, and 30. The end point was the composite of cardiovascular death, Q-wave myocardial infarction, and troponin T release. Multivariate analysis was used to evaluate the interaction between GFR, NT-pro-BNP and their association with postoperative outcome. Median GFR was 78 ml/min/1.73 m² and the median concentration of NT-pro-BNP was 197 pg/ml. The end point was reached in 64 patients (18%); cardiac death occurred in 7 (2.0%), Q-wave myocardial infarction in 34 (9.6%), and non-Q-wave myocardial infarction in 23 (6.5%). After adjustment for confounders, NT-pro-BNP levels and GFR remained significantly associated with the end point (p = 0.005). The prognostic value of NT-pro-BNP was most pronounced in patients with GFR ≥90 (odds ratio [OR] 1.18, 95% confidence interval [CI] 0.80 to 1.76) compared with patients with GFR 60 to 89 (OR 1.04, 95% CI 1.002 to 1.07), and with GFR 30 to 59 (OR 1.12, 95% CI 1.03 to 1.21). In patients with GFR <30 ml/min/1.73 m², NT-pro-BNP levels have no prognostic value (OR 1.00, 95% CI 0.99 to 1.01). In conclusion, the discriminative value of NT-pro-BNP is most pronounced in patients with GFR ≥90 ml/min/1.73 m² and has no prognostic value in patients with GFR <30 ml/min/1.73 m².

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