Renal Function after Endovascular Abdominal Aortic Aneurysm Repair

Arnaud Kerzmann*, Nathalie Maes*, Jean-Marie Krzesinski*, Quentin Desiron*, Evelyne Boesmans*, Natzi Sakalihasan*, Jean-Olivier Defraigne

› Author Affiliations
› Further Information

Introduction: Acute kidney injury (AKI) is a common complication after endovascular abdominal aortic aneurysm repair (EVAR). Long-term renal function decreases after EVAR. AKI and long-term renal function decline after EVAR are associated with cardiovascular morbidity and mortality.

Our primary end point was to assess incidence of AKI and mid-term renal function decline after EVAR. Secondary end points were to look for factors predicting renal function deterioration and to evaluate effect of renal function decrease on survival.

Methods: We reviewed retrospectively EVAR performed in our University Hospital between January 2014 and June 2019. AKI occurrence was based on the Acute Kidney Injury Network (AKIN) and Risk, Injury, Failure, Loss, End-stage (RIFLE) staging systems. It was defined as increase in serum creatinine of at least 0,3 mg/dL within 48 hours. Based on CKD-EPI equation (Chronic Kidney Disease EPIdemiology collaboration), mid-term renal function decline was defined as loss of estimated glomerular filtration rate (eGFR) of at least 20%. 32 factors related to patients, procedure and follow up were screened.

For quantitative variables, data were summarized as mean and standard deviation (SD). Frequency tables (numbers and percentages) were used for categorical variables. Creatinine and eGFR evolution was analyzed using Student test for paired observations. Logistic regression models were used to identify predicting factors for AKI and for mid-term renal function decrease. Survival after EVAR has been described using Kaplan Meier curves and Cox regression models were used to examine the impact of AKI and of mid-term renal function decrease on survival. Results were considered significant at the 5% critical level ($p <0.05$). The analyses were performed using SAS (version 9.4) and R (version 3.6) softwares.

Results: 190 EVAR were realized. Mean follow up was 34 months. Incidence of AKI was 8%. Incidence of mid-term renal function decrease was 25%.

The only factor predicting AKI was preoperative chronic kidney disease. The only one predicting mid-term renal function decline was AKI occurrence.

At mid-term, renal function had no influence on the survival.

Conclusion: AKI and mid-term renal function decline are common after EVAR. Evaluation of eGFR before treatment and during follow up is required.

Potential new diagnostic markers, prevention modalities and therapeutic agents must be evaluated and validated in prospective studies.

Publication History