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Title

Post-operative Acute Kidney Injury among Patients Admitted from the Emergency Room for Major Surgery

Authors

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This study describes the association of post-operative acute kidney injury (AKI) with mortality and length of stay among patients who were admitted from the emergency room (ER) and underwent major surgery.

Patients admitted from the ER to a quaternary teaching hospital in 2012-2013 with a major surgery as the principal procedure (AHRQ procedure class 3 or 4) within 1 day of admission were included. Patients <18 years, undergoing nephrectomy, and with preexisting AKI or stage 5 chronic kidney disease (CKD) prior to the principal procedure were excluded. AKI was defined as an increase in SCr by >=0.3 mg/dL or >=50% over a 72-hour interval, and AKI severity was staged per Kidney Disease Improving Global Disease Outcomes guidelines.

Among 11,975 adults admitted from the ER, 1,090 (9%) required major surgery within 24 hours and were included. Patients were 50% male, 60% white, and 44% aged ≥65. Post-operative AKI was detected in 16% (n=178). Of AKI cases, 81% (n=144) were stage 1, 13% (n=23) were stage 2, and 6% (n=11) were stage 3. In-hospital death occurred in 2.2% (n=24). The average length of stay was 5.8 days (SD 5.9). Baseline CKD (per ICD-9 codes) was present in 6% (n=65) and was associated with AKI (54% CKD vs. 14% no CKD, P<0.001). In-hospital death occurred in 7% (12 of 178) of patients with AKI and 1% (12 of 912) of patients without AKI (Unadjusted RR=5.1, 95%CI 2.4 to 11.2). Incidence of in-hospital mortality increased with AKI severity (1% no AKI, 5% stage 1, 9% stage 2, and 27% stage 3; P<0.001). Post-operative AKI was associated with 5.6 days of increased length of stay (10.5 days AKI vs. 4.9 days no AKI, P<0.001). Urgent interventions with the most cases of AKI were hip fracture/dislocation (19%, 19 of 98), PTCA (15%, 22 of 145), and cholecystectomy (13%, 16 of 123).

Post-operative AKI occurred in 16% of patients admitted from the ER and undergoing major surgery. AKI was associated with a 5-day increase in length of stay and a 5-fold increase in mortality. Modifiable risk factors of AKI should be identified and reduced to prevent AKI in this population.