Paper #55

Acute Kidney Injury After Total Hip and Knee Arthroplasty: What Is the Culprit?

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Introduction: Acute kidney injury (AKI) is associated with increased complications after total hip and knee arthroplasty (THA, TKA). The purpose of this study was to determine the risk factors of AKI after THA and TKA; and, to evaluate if preoperative antihypertensive drugs can play a role in predisposing patients to AKIs.

Methods: A retrospective review of 7,406 primary TKAs and THAs (4,532 hips and 2,874 knees) from 2013 to 2019 was performed. The following preoperative variables were obtained from medical records: medications, chemistry 7 panel, Elixhauser comorbidities, and demographic factors. AKI was defined as an increase in serum creatinine by 26.4 μmol·L−1. Multivariate analysis was performed to identify the risk factors.

Results: The overall incidence of postoperative AKI was 6.2% (n=459). Risk factors of postoperative AKI were found to be: chronic kidney disease [odds ratio (OR)=7.09; 95% Confidence interval (CI): 4.8-9.4], diabetes (OR:5.03; 95%CI: 2.8-6.06), multi antihypertensive drugs (3 or more) (OR:4.2; 95%CI: 2.1-6.2), preoperative angiotensin receptor blocker (ARBs) or angiotensin-converting enzyme inhibitor (ACEi) regimen (OR: 3.8; 95%CI: 2.2-5.9), use of perioperative vancomycin (OR:2.7; 95%CI: 1.8-4.6), and body mass index above 40 kg/m2 (OR:1.9; 95%CI: 1.3-3.06).

Conclusions: We have identified several modifiable risk factors that can be optimized prior to an elective THA or TKA. The use of certain antihypertensive agents namely ACEi, ARBs and multidrug antihypertensive regimens were found to significantly increase the risk of AKI. We strongly urge the orthopaedic community to consider changing these regimens with preoperative nephrology/medical consultations to decrease the risk of AKIs.

Notes