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Association between Preoperative Proton Pump Inhibitor Use and Postoperative Acute Kidney Injury in Patients Undergoing Major Surgery

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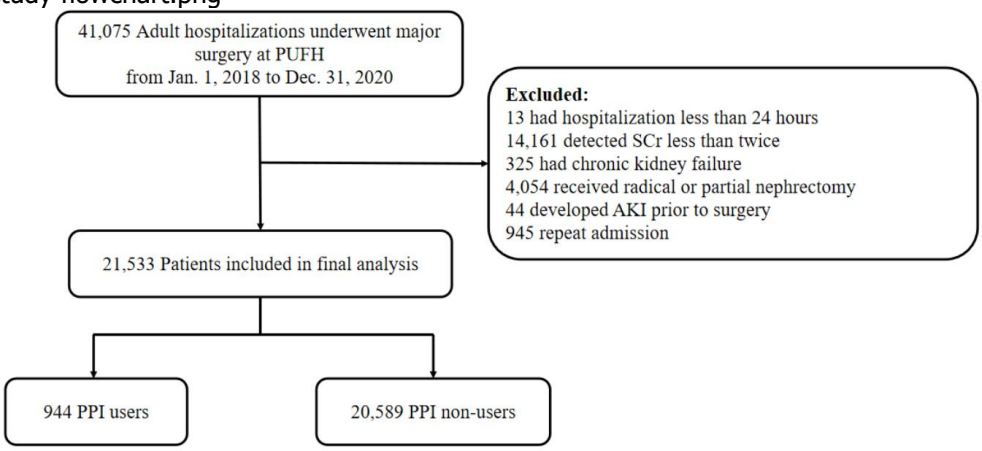
Objectives : To evaluate whether preoperative prophylaxis use of proton pump inhibitors (PPIs) is associated with higher risk of postoperative acute kidney injury (AKI) among patients undergoing major surgery.
Methods : This retrospective cohort study used electronic medical records from the clinical data warehouse of Peking University First Hospital to screen all adult hospitalizations undergoing major surgery between January 1, 2018 and December 31, 2020. Exposure was defined as PPI use within 7 days prior to major surgery. Patients were followed up to death, discharge, or 30 days after surgery, whichever came first. The primary outcome was postoperative AKI, defined as AKI occurring within 7 days after major surgery; secondary outcomes included in-hospital AKI and in-hospital mortality. Multivariable logistic regression adjusted for potential confounders, prespecified subgroup analyses, as well as sensitivity analyses were conducted.
Results : A total of 21,533 patients were included in the study, and 944 (4.4%) were prescribed PPI within 7 days before major surgery (PPI users). Preoperative PPI use was associated with higher risk of postoperative AKI (adjusted OR 1.476; 95% CI, 1.048-2.079), and in-hospital AKI (adjusted OR, 1.440; 95% CI, 1.052-1.971) after adjusting for potential confounders, respectively. Moreover, a significant positive interaction between PPIs and NSAIDs or diuretics on postoperative AKI was observed, and the risk of postoperative AKI was amplified with the concomitant use of NSAIDs and diuretics. Besides, no significant difference was observed in in-hospital mortality between two groups after fully adjusted for potential confounders (adjusted OR 1.659; 95% CI, 0.566-4.861).
Conclusions : Preoperative PPI use was associated with an increased risk of AKI in patients undergoing major surgery. Further, the risk of postoperative AKI was enhanced by concomitant therapy with NSAIDs and diuretics. Therefore, clinicians should weigh the pros and cons of initiating prophylaxis use of PPI before surgery to prevent postoperative AKI.

study flowchart.png



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