

Preoperative SGLT-2 Inhibitor Use and Postoperative Outcomes in Cardiac Surgery: A Causal Inference Analysis

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INTRODUCTION & AIM

- Sodium-glucose cotransporter-2 inhibitors (SGLT-2i) with protective effects in patients with type 2 diabetes, heart failure, and chronic kidney disease.
- Evidence on their impact in the perioperative setting remains scarce
- Evaluate the association between preoperative SGLT-2i use and postoperative outcomes in patients undergoing major cardiac surgical procedures.

METHOD

- Retrospective, single-center study at the Department of Cardiac Surgery, Medical University of Graz
- Adult patients with SGLT-2i therapy, who underwent cardiac surgery between 2020 and 2024
- Exposure was defined as documented SGLT-2i use within 14 days before surgery
- The primary endpoint was postoperative acute kidney injury (AKI) defined according to KDIGO criteria
- Secondary endpoints included need for kidney replacement therapy, ICU length of stay, and 30-day mortality
- A causal inference framework employing inverse probability of treatment weighting was applied to estimate the effect of SGLT-2i therapy

RESULTS & DISCUSSION

- The study included 1257 patients (211 (16.8%) female)
- Four-hundred-eighty-two (38.3%) patients were SGLT-2i users and 775 (61.7%) nonusers
- Users had a EuroSCORE II (median 2.5 [1.4–4.9] vs. 1.5 [0.9–2.6], $p < 0.001$) and more frequent chronic kidney disease and heart failure
- Baseline creatinine was higher among users, while preoperative hemoglobin was lower
- Thirty-day survival did not differ significantly between groups (97.0% vs. 98.3%, $p = 0.253$)

CONCLUSION

SGLT-2i users with distinct baseline characteristics including higher comorbidity burden.

Mortality did not differ

Causal inference framework will allow for robust estimation of the therapy's effect on postoperative AKI risk

FUTURE WORK / REFERENCES

These findings contribute to the growing body of evidence on the potential perioperative benefits of SGLT-2i and support the need for prospective validation.