Cardiac surgery patients with a penicillin allergy history who underwent preoperative allergy evaluation were 27-fold more likely to receive first-line perioperative antibiotic prophylaxis, compared to those without allergy evaluation.

INTRODUCTION

Pre-operative penicillin allergy testing followed by amoxicillin skin testing decreased the likelihood of opioid administration during hospitalization for patients with a history of penicillin allergy.

METHODS

Study Design and Population

Retrospective cohort study of patients with a penicillin allergy history who underwent cardiac surgery at Massachusetts General Hospital (September 2015-December 2018).

Exposure

Preoperative penicillin allergy evaluation by an Allergy/Immunology provider.

Outcomes

The primary outcome was first-line perioperative prophylaxis (i.e. cefazolin use). The secondary outcomes were: (1) Hospital length of stay (LOS) (2) SSIs.

Covariates

Age, sex, race, body mass index (BMI), American Society of Anesthesiologist (ASA) class, surgery type, colonization with resistant organisms, cephalosporin allergy history, and surgery status (elective, urgent or emergent).

Statistical Analysis

Patient and procedure characteristics in patients with a penicillin allergy history who did and did not undergo preoperative allergy evaluation were compared using the T-test for continuous variables and chi-squared tests for binary/categorical variables.

A multivariate logistic regression model was used to evaluate the relation between penicillin allergy and first-line perioperative antibiotic use.

RESULTS

• Patients did and did not undergo penicillin allergy evaluation were similar (Table 1). Patients were more likely to have preoperative allergy evaluation if they had valve surgeries, elective surgeries, and allergy histories including urticaria and flushing. Patients were less likely to have preoperative allergy evaluation if they had CABG surgeries, urgent/emergent surgeries, or allergy histories including GI symptoms or unknown.

• Patients who underwent preoperative penicillin allergy evaluation were more likely to receive first-line perioperative antibiotics (92% vs 38%, p<0.001).

• Adjusting for age, BMI, gender, race, ASA class, surgery type, surgery status, resistant organism colonization, penicillin reaction, and cephalosporin allergy history, patients who underwent preoperative allergy evaluation had an increased odds of receiving first-line perioperative antibiotics (adjusted odds ratio 26.6 [12.8, 55.2]).

CONCLUSIONS

• This was a retrospective, observational study.

• We captured only Allergy/Immunology evaluations that occurred within our healthcare system; therefore, our findings may not be generalizable.

• We studied only one method of penicillin allergy evaluation (i.e. allergist performed penicillin skin testing).

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