Assessment of beta-lactam allergies as rationale for receipt of vancomycin for surgical prophylaxis

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INTRODUCTION

- β-lactams are first line agents for antimicrobial prophylaxis for surgical procedures[1,2]
- Vancomycin is an alternative for reported β-lactam allergies[1,2]
- Alternatives may increase risk of surgical site infection[4]
- Cross-reactivity between β-lactams is low[3]

OBJECTIVE

Identify inappropriate use of vancomycin surgical prophylaxis among patients with reported β-lactam allergies.

METHODS

Retrospective observational study

- Adult inpatients that received vancomycin for surgical prophylaxis with a documented penicillin and/or cephalosporin allergy were evaluated at Oregon Health & Science University
- Evaluation period: August 1, 2017 – July 30, 2018
- Data were extracted from the electronic medical record using a research data repository and manual review

Primary endpoint: Potential for receipt of β-lactam prophylaxis

Secondary endpoints:

- Allergy history
- Potential for penicillin allergy testing

RESULTS

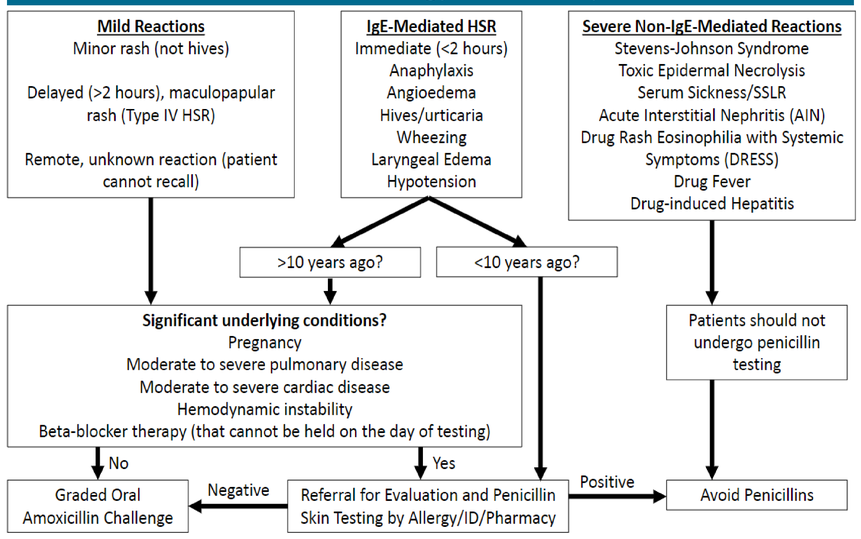
Table 3. Patient characteristics	Results
Patients receiving vancomycin	830
Patients with β-lactam allergy	196
Median age	57
Female sex	129 (78%)
Race, white	177 (90%)
Allergy breakdown by type	
Penicillin	155 (80%)
Cephalosporin	20 (10%)
Penicillin and Cephalosporin	21 (10%)
History of MRSA	22 (11%)
Orthopedic surgery	79 (40%)

Allergy assessment protocol

Table 1. β-lactam agents with common cross reactivity

If reaction to:	Avoid these agents:
Penicillins	Other penicillins
Cefazolin	None
Cephalexin	Amoxicillin, ampicillin
Cefoxitin	Penicillin G, cefuroxime
Cefuroxime	Cefoxitin, cefotaxime, cefepime, ceftriaxone, ceftazidime
Ceftriaxone	Cefotaxime, ceftazidime, cefuroxime, cefepime
Cefotaxime	Ceftriaxone, cefuroxime, ceftazidime
Ceftazidime	Ceftriaxone, cefotaxime, cefuroxime
Cefepime	Cefuroxime, ceftriaxone, cefotaxime

Table 2. Penicillin allergy assessment protocol



Among patients who received vancomycin 190 (97%) were potentially eligible for β-lactam prophylaxis

RESULTS

Figure 1. Penicillin allergy by type (n = 155)

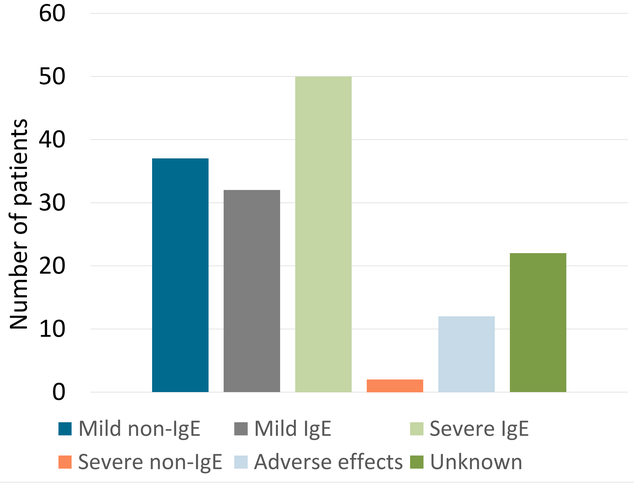


Table 4. Breakdown of penicillin allergy assessment and eligibility for β-lactam prophylaxis

Penicillin allergy testing eligibility	153 (99%)
Graded oral amoxicillin	82 (53%)
Penicillin skin testing	71 (46%)
Not eligible for testing	2 (1%)
History of MRSA not receiving additional β-lactam	19 (87%)
Ineligible for β-lactam prophylaxis	6 (3%)
Cefazolin allergy	4 (2%)
Severe non-IgE allergy	2 (1%)

DISCUSSION

- Patients with reported β-lactam allergies often qualify for receipt of a recommended β-lactam antibiotic
- There exists an opportunity for improved β-lactam allergy assessment
- Future studies should seek to evaluate outcomes associated with removal of β-lactam allergy in patients receiving surgical prophylaxis

CONCLUSIONS

The vast majority of patients receiving vancomycin for surgical prophylaxis due to β-lactam allergies can be safely evaluated and/or challenged for allergy to receive recommended first-line prophylaxis

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FOR MORE INFORMATION

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