Retrospective review of alternative antibiotic use in patients with a reported penicillin allergy at a community hospital

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Retrospective review of alternative antibiotic use in patients with a reported penicillin allergy at a community hospital

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BACKGROUND

- Penicillin (PCN) is the most commonly reported beta-lactam (BL) allergy; prevalence among hospitalized patients is 10%–20%.
- Less than 10% of these patients are truly allergic, but common side effects of BLs (i.e., fever, nausea, vomiting, diarrhea) are often mistaken for allergic reactions and inaccurately documented as an allergy in the electronic health record (EHR).
- A true PCN allergy may decrease over time; 50% of patients lose sensitivity after 5 years and 80% after 10 years.
- Patients with a reported PCN allergy are often treated with non-BL broad-spectrum antibiotics, which may lead to suboptimal antibiotic therapy, more adverse events, development of multi-drug resistant infections, increased length of stay, ICU admissions, higher mortality and increased treatment costs.
- Cross reactivity reported for 1st generation cephalosporins is ~ 1% and negligible for 2nd generation cephalosporins yet all cephalosporins are often avoided in patients with a reported PCN allergy.

OBJECTIVES

- Determine the incidence, clinical outcomes and costs associated with the use of alternative antibiotic treatment in patients with a reported PCN allergy.
- Establish the foundation for a follow-up phase II study evaluating the impact of a pharmacy-driven PCN allergy assessment on allergy clarification and antibiotic selection.

METHODS

- Study design: Single-center, retrospective chart review of patients admitted to Baptist Hospital of Miami with a reported PCN allergy between February 1, 2018 and August 1, 2018.
- Inclusion criteria: Individuals ≥ 18 years old, reported PCN allergy, diagnosis of an infection for which a PCN or a BL antibiotic can be used, received antibiotics for at least one day during hospital stay.
- Exclusion criteria: Patients receiving antibiotics (AH) 1st generation AH within 24 hours, or a 2nd generation AH within the 5 days prior to antibiotic administration, severe immunosuppression (i.e. HIV with CD4 count <200 cells/µL, neutropenia, malignancy, transplant patients taking immunosuppressive medications), anaphylactic allergy to PCN within the last 10 years, pregnant/breastfeeding, severe cardiovascular or pulmonary comorbidities.
- Primary outcomes: Type of antibiotic(s) used, costs, adverse effects and allergy documentation.
- Secondary outcomes: Length of stay, duration of therapy, resolution of infection and mortality.
- Reported allergies were reviewed and categorized into one of two categories: Defined: both an allergy to PCN and the associated reaction are documented on the EHR. Undefined: an allergy to PCN is documented on the EHR without an associated reaction.

RESULTS

- Baseline Characteristics n=50
  - Mean age (years): 72
  - Gender, n (%): Female 33 (66%)
  - Dual antibiotic therapy, n (%): 21 (42%)
- Allergy Type, n (%): UTI 16 (30%), CAP 9 (18%), HAP 7 (14%), SSTI 6 (12%), Intra-abdominal infection 5 (10%), Aspiration pneumonia 3 (6%), Sepsis 2 (4%), Gynecologic infection 1 (2%), Acute sinusitis 1 (2%)

- Allergy Documentation
  - 34 (68%): undefined
  - 16 (32%): defined

- Prescribing Trends by Specialty
  - Prescriber | Aztreonam | Levofoxacin | Cephalosporins
  - ID | 10 | 4 | 8
  - Hospitalist | 5 | 11 | 3
  - Critical care | 1 | 0 | 0
  - Pulmonologist | 1 | 1 | 1
  - Nephrologist | 1 | 1 | 0
  - Gastroenterologist | 0 | 1 | 0
  - Internal Medicine | 0 | 0 | 1

- Adverse Effects n
  - Antacid: 1 | Levofoxacin
  - Allergic reaction: 1 | Clindamycin
  - Rash: 1 | Cefepime

CONCLUSION

- Aztreonam and levofoxacin were the most common non-BL antibiotics prescribed for patients with a reported PCN allergy.
- Majority (88%) of reported PCN allergies were undefined. The most common infection types were urinary tract infections (UTI), community-acquired pneumonia (CAP) and hospital-acquired pneumonia (HAP).
- Infectious diseases (ID) physicians were more likely to prescribe cephalosporins.
- Hospitalists were more likely to prescribe fluoroquinolones.

LIMITATIONS

- Small sample size
- Difficult to draw conclusions based on comparative data between patients with defined and undefined allergies
- Unable to determine cost savings with use of alternative antibiotics.
- Documentation in the EHR was not complete/thorough.
- Information from outside of hospital stay not easily accessible.
- Time frame defined allergies (i.e. anaphylaxis).
- Prior medication use (i.e. AHS).
- Resolution of infection for patients discharged on outpatient antibiotics.

DISCUSSION

- Inaccurate allergy documentation may lead to unnecessary use of non-BL broad-spectrum antibiotics and higher treatment costs.
- Accurate allergy documentation by healthcare providers (i.e. nurses, pharmacists) and thorough review of allergy documentation by prescribers can potentially minimize unnecessary antibiotic use and decrease overall treatment costs.
- Prospective studies should be conducted to assess the impact of a pharmacy-driven PCN allergy assessment (detailed patient interview) in an attempt to clarify/define allergy history.

DISCLOSURES

- All authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation.

REFERENCES