

Incidence of Allergic Reactions to Cefazolin in Patients With Penicillin Allergy Undergoing Operative Repair of Pelvis or Extremity Fracture

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Purpose: Surgical site infections (SSI) account for 20% of all healthcare-associated infections with an estimated yearly cost of \$3.3 billion in the United States alone. Cefazolin (Ancef) is a commonly used prophylactic antibiotic in orthopaedic surgery and has been shown to reduce SSI compared to other antibiotics, but potential cross-reactivity in patients with a penicillin allergy (PA) leads to concerns regarding the safety of cefazolin administration. This study evaluates the incidence of allergic reactions to cefazolin in patients undergoing orthopaedic surgery.

Methods: A retrospective cross-sectional database review study was conducted. Patients age 18 or older who underwent surgical repair of pelvic or extremity fractures were included. The primary outcome was anaphylaxis or other allergic reaction (defined as skin rash or hives). Logistic regression analysis controlled for variables such as age, sex, race, body mass index (BMI), and comorbidities.

Results: A total of 5823 patients received cefazolin while undergoing orthopaedic surgery (PA: n = 354, No allergy: n = 5469). The PA group was found to have an allergic reaction frequency of 2.50% compared to 0.70% in the non-PA group ($p = 0.0016$). The PA group was found to have anaphylaxis frequency of 2.30% versus 0.60% in the non-PA group ($p = 0.0019$) and a skin rash frequency of 0.3% versus 0.1% ($P = 0.314$). Logistic regression revealed odds of allergic reaction are 3.574 times with PA compared to without PA ($p = 0.0004$, 95% CI: 1.773–7.205).

Conclusion: Patients with PA who received cefazolin while undergoing orthopaedic procedures had a low likelihood of having any allergic reaction (2.5%). Cefazolin has a different R1 side chain than penicillin and other cephalosporins, and this study confirmed a low cross-reactivity in the setting of orthopaedic surgical prophylaxis. Patients with a listed PA are, however, more likely to experience an allergic reaction or anaphylaxis than patients without PA. Because of the broad spectrum gram positive coverage and high bone penetration of cefazolin with a low overall rate of allergic reaction, it remains the preferred choice for prophylactic antibiotics in orthopaedic surgery. Patients with a known anaphylactic PA could be considered for treatment with other prophylactic antibiotics.