

Tolerance of preoperative prophylactic cefazolin in penicillin-allergic patients

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INTRODUCTION: The most commonly used prophylactic antibiotic before orthopaedic surgery is cefazolin. Cefazolin is a beta-lactam-type of antibiotic whose chemical structure shares characteristics with that of penicillin. Common practice avoids cefazolin prophylaxis in patients with documented penicillin allergy, and the sensitivity rate of penicillin-allergic patients to cefazolin is estimated to be approximately 10%. Our anecdotal experience indicates otherwise, and we were interested in reviewing a database of penicillin-allergic orthopaedic fracture surgery patients to determine whether preoperative cefazolin is tolerated.

METHODS: After IRB approval, we retrospectively reviewed 5,169 primary fracture surgery procedures (arms, legs, or pelvis) performed by one of six orthopaedic trauma-fellowship trained surgeons at our institution during a four-year time period. Patients were included if they had a self-reported non-anaphylactic penicillin allergy (exclusion for facial/tongue/throat swelling or breathing difficulty reports). We documented penicillin allergy reported by the patient, antibiotic administered preoperatively, and any intraoperative or immediate postoperative adverse events, including documented allergic reactions or use of rescue medications (such as epinephrine, hydrocortisone, or diphenhydramine) as well as incidence of postoperative infection.

RESULTS: We identified 452 patients who claimed penicillin allergy preoperatively. Of those patients, 173 received preoperative antibiotic prophylaxis with cefazolin (36.8%). Only two intraoperative events were noted by the anaesthesia service that might have been related to cefazolin administration (1.2% - one with erythematous rash on face, one with intraoperative fever/hypotension/decreased respiratory rate). Three of the remaining 279 patients experienced intraoperative events possibly related to drug administration (1.1% - one allergic event not otherwise specified after clindamycin administration, one episode of nausea after clindamycin administration, one episode of facial edema and bronchospasm after vancomycin administration). The difference between these groups was not significant (χ^2 , $p=0.936$). Nine patients in the cefazolin group experienced intraoperative blood pressure or cardiac lability (5.2%). Eleven patients in the non-cefazolin group experienced intraoperative blood pressure or cardiac lability (3.9%) and one patient in the non-cefazolin group required postoperative reintubation. Total intraoperative event rate (not including postoperative intubation) was not different between groups (χ^2 , $p=0.527$). Seven patients in the cefazolin group and ten in the non-cefazolin group developed postoperative infections (4.0% vs. 3.6%, $p=0.802$).

DISCUSSION AND CONCLUSION: Prophylactic administration of cefazolin prior to fracture surgery appears safe in patients who claim non-anaphylactic penicillin allergies. We did not identify differences in adverse event rates between patients receiving cefazolin vs. another preoperative antibiotic. Our findings corroborate other recent reports in the literature as well as the anecdotal experiences of many surgeons.