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Summary: BackgroundThis study investigated the efficacy of first-generation (cefazolin) and third-generation (ceftizoxime) prophylactic antibiotics in patients undergoing cardiac surgery and the incidence of surgical site infections, hospital stay lengths, and medical costs.MethodsAll adult patients (?20 years) undergoing cardiac surgery (coronary artery bypass surgery, valve operation, or combined surgery) at one hospital from January 01, 2009 to December 31, 2016 were included in this study. A single prophylactic antibiotic was administered at a dose of 1 g within 1 hour of surgical incision and for three days after surgery at eight-hour intervals. After the propensity score matching, 194 patients in each antibiotic prophylaxis groups (first-generation vs third-generation) were analyzed. Among the 388 patients, the incidence of surgical site infection were compared according to the type of prophylactic antibiotics and risk factors were evaluated by chi-squared tests followed by multivariate logistic regression analysis. A Student's t-tests were analyzed to compare hospitalization and medical costs. ResultsThe incidence of deep surgical site infections significantly lower in first-generation group (5.7%) than third-generation group (16.5%). The pathogens isolated from surgical infection sites were similarly distributed in both groups, but gram-positive bacteria were more highly infectious than gram-negative bacteria (67% vs 23%). Preoperative hospitalization duration, mean operation time, and ventilator use time were similar in both groups but the postoperative hospitalization duration was significantly shorter in the first-generation group (25.5 days) than third-generation (29.8 days). In addition, the medical cost lower in the first-generation group (20,594 USD) than third-generation (26,488 USD).ConclusionIn conclusion, the first-generation (cefazolin) is better than the third-generation (ceftizoxime) as a prophylactic antibiotic in reducing surgical site infection rates, hospitalization lengths, and medical expenditures.

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