Surgical Antimicrobial Prophylaxis and Adherence to Standard Treatment Guidelines: Urgent Need of Antimicrobial Stewardship Program

Dear Editor,

Surgical site infections (SSIs) are becoming a growing threat in low- and middle-income countries. It is responsible for about one-third of postoperative deaths and 8% of all deaths in hospitals.[1] Surgical antimicrobial prophylaxis (SAP) is usually administered carefully before surgery to prevent SSIs. Administration of right antimicrobial in terms of dose, time, route, and duration is the critical step for the optimal use of SAP.[2] However, inappropriate use of antimicrobials is responsible for increasing resistance and ultimately costs of therapy.[1,2] Despite this evidence, the recommendations are poorly followed, and unavailability of local hospital guidelines is also reported by different studies.[1-4]

Nowadays, the frequent use of an antimicrobial is responsible for its misuse throughout the globe, including Pakistan.[5] It is reported that SAP shares one-third of all antimicrobial use in hospitals and 80% of all antimicrobial use in surgery.[1] Considering the importance of SAP and guidelines adherence, we conducted a study to investigate SAP practices in routinely performed surgical procedures. The main aim of the study was to investigate the appropriateness of SAP with respect to American Society of Health-System Pharmacists (ASHP) guidelines.[2] The secondary goal was to explain the importance of evidence-based guidelines and antimicrobial stewardship program.

A prospective cross-sectional observational study was conducted for 8 months at two teaching hospitals of Islamabad, Pakistan. The study was approved from the institutional review boards of selected settings. The most common surgical procedure, antibiotic use, correct or inappropriate use, combination, dose, route, and duration were investigated. Latest ASHP guidelines[2] were used to assess the appropriateness of SAP practices. The World Health Organization Anatomical Therapeutic Classification was also used to report antimicrobials. Descriptive statistics (percentage, frequency) were used for the presentation of results through SPSS version 22.0.

A total of 735 eligible surgical cases were investigated during the study period. Laparoscopic cholecystectomy (265, 36%) was the most commonly performed surgery, followed by acute appendectomy (220, 30%), total knee replacement (105, 14.2%), inguinal hernia (96, 13.1%) and total thyroidectomy (49, 6.7%). SAP was prescribed in 90% (662) of surgical procedures. Of these, 23% adhered according to the guidelines with respect to correct choice, 100% for dose, 100% for route, and 34% for the timing of antibiotic (optimal value 100%). Most patients received ceftriaxone (J01XD04, 480, 72.5%) followed by ciprofloxacin (J01MA02, 56, 8.4%) and amoxicillin plus clavulanic acid (J01CR02, 32, 4.8%). Latest international guidelines recommend narrow-spectrum cefazolin as a drug of choice. However, in our study, it was prescribed to only 9 (1.3%) patients.

In conclusion, inappropriate prescribing practices were observed in our study, primarily related to correct choice, appropriate timing, and misuse of broad-spectrum antimicrobial. The antimicrobial stewardship program focuses on accurate and careful management of antimicrobial use.[3] Antimicrobial misuse and resistance are global problems.[3,5] Therefore, the implementation of antimicrobial stewardship programs and evidence-based guidelines is urgently required at the national and global level for the prevention of antimicrobial misuse and resistance problems.

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Conflicts of interest

There are no conflicts of interest.

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