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RESEARCH ARTICLE

Exploring Effective Alternatives to Beta-Lactam Antibiotics for Surgical Prophylaxis: A Comprehensive Investigation

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ABSTRACT:

Introduction: The significance of administering preventive antibiotics before a surgical procedure is firmly established, moreover the aim of antibiotic prophylaxis is to limit surgical site infections in surgical patients, based essentially on the use of betalactamines, Individuals with a beta-lactam allergy may experience adverse reactions to antibiotics within this class, such as penicillins and cephalosporins, it leads to life-threatening symptoms that require immediate medical attention, the aim of our study is to evaluate the surgical antibiotic prophylaxis practices by our staff

Material and methods: we carried out a survey using a questionnaire aimed at anesthesia-intensive care staff working in different operating rooms of different types of surgeries.

to assess antibiotic prophylaxis practices in the case of allergy to betalactam antibiotics (essentially the alternative antibiotic molecules used). The study lasted 3 months and involved 40 anesthesia-intensive care staff. Once the data had been collected from the questionnaires, they were processed using Excel, then presented in the form of tables and figures, reflecting the results obtained in relation to the aim of the study.

Results: the results of antibiotic prophylaxis showed that the use of betalactam antibiotics represented 96% of practices and that the antibiotic molecule chosen as an alternative in case of betalactam allergy was compliant in 84.44% of practices in relation to SFAR 2018 recommendations.

Conclusion: Antibiotic prophylaxis practices for patients allergic to betalactamines require major caution in order to limit surgical site infections and reduce hospitalization costs.

Keywords: antibiotic prophylaxis, betalactam, allergy.

Introduction:

Antibiotic prophylaxis is an effective measure for preventing postoperative infections, provided it is used optimally, which is disrupted in patients allergic to betalactam antibiotics. In the majority of cases, postoperative infection is attributable to the prescription of less effective antibiotic prophylaxis based on non-betalactam antibiotics. Individuals who possess an allergy to beta-lactams might encounter unfavorable responses to medications falling under this category, including penicillins and cephalosporins. This can result in severe symptoms necessitating urgent medical intervention. Our study's objective is to assess the practices of surgical antibiotic prophylaxis implemented by our healthcare professionals.

Materials and methods:

Our study is a comparative evaluation of anaesthetists practices and the recommendations of the guidelines. The study took place in the surgical departments of Ibn Rochd Hospital in Casablanca. It covered a period of 3 months (January 2022 - March 2022).

Results:

Nurse anesthetists represent 65% of the population studied, while intensive care anesthetists account for 35%. 80% of the staff had between 10 and 15 years experience, with regard to antibiotics used for surgical prophylaxis, we note a predominance of the use of the association Amoxicillin + clavulanic acid by 70% and cephalosporins by 30%.

concerning the alternatives to antibiotic prophylaxis for patients allergic to beta-lactams, in digestive surgery, 90% of our staff use clindamycine in association with gentamycine, meanwhile 10% use metronidazole with gentamycine.

In urological surgery, 85% use the association of metronidazole and gentamycine, and 15% use ciprofloxacin and gentamycine.

Concerning antibiotic prophylaxis in gynecological surgery and obstetrics, 93% uses clindamycine or gentamycine, meanwhile 90% of our staff use ciprofloxacin in thoracic surgery

In neurosurgery and orthopedic surgery, 88% of our team use vancomycine for patients allergic to betalactam antibiotics.

The calculated mean time from antibiotic prophylaxis injection to surgical incision was 35 minutes and 40 seconds. The minimum time recorded was 0 minutes, injection at the very moment of

incision. The maximum duration was 1 hour and 09 minutes.

Discussions:

In this study, the main objective was to assess conformity with antibiotic prophylaxis uses according to current recommendations, based on three indicators: time of incision, choice of molecule and dose delivered.

La prévalence réelle des réactions allergiques aux BL dans la population générale reste inconnue en raison de l'absence pour longtemps de moyens diagnostiques objectifs. The aim of antibiotic prophylaxis in surgery is to counteract bacterial proliferation and reduce the risk of postoperative infection. antibiotic prophylaxis is not intended to reduce infections away from the surgical site.³

Antibiotic prophylaxis recommendations are imperfectly applied, particularly as regards the timing of administration, in our study the mean time from antibiotic prophylaxis injection to surgical incision was 35 minutes and 40 seconds.⁴

Inadequate choice of molecules, longer administration times and longer duration of administration are factors that contribute to the emergence of multi-resistant germs and to higher healthcare costs.^{5,6}

For most surgical procedures, a betalactam antibiotic is the preferred perioperative antibiotic, Cefazolin, a first-generation cephalosporin antibiotic, is the drug of choice due to its spectrum of coverage, bactericidal activity and favorable pharmacokinetics, whereby the drug rapidly reaches optimal antibacterial concentrations in tissues.⁷

Overall compliance with the protocol was acceptable, meanwhile other studies had a lower protocol compliance rate.⁸⁻¹⁰ Moreover, Patients with reported BL allergies have a higher likelihood of experiencing surgical site infections (SSI) compared to those without reported BL allergies.¹¹

Conclusion:

The aim of our work was to evaluate the practice of antibiotic prophylaxis in cases of betalactam allergy (IBN ROCHD University Hospital, Casablanca), comparing it with international recommendations, our study shows the conformity between actual practice and the recommendations set out by learned societies.

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