



SURGICAL PROPHYLAXIS: EVERYTHING IN EXCESS IS OPPOSED FOR BODY

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ABSTRACT

Surgical prophylaxis refers to the antimicrobial agent given just before the beginning of the procedure. The potency of antimicrobials to prevent post-surgical infections at the site of surgery (incisional superficial, incisional deep, and organ or space infection) has been illustrated for many surgical procedures. Primary prophylaxis is defined as prevention of an early infection. Secondary prophylaxis is defined as prevention of reappearance of the pre-existing infection. Tertiary prophylaxis is defined as process to redeem from chronic disease. Quaternary prophylaxis is defined as prevention of increased harmful treatment. An adverse drug reaction (ADRs) is the major health issue. An ADR is a reaction that is noxious, is unintended, and occurs at doses normally used in human. According to National coordinating council for medication error reporting and prevention, (ADEs) adverse drug events are harmful that are either associated to the dose of the drug or the medical intervention. According to the studies, the use of prophylactic antibiotics significantly reduced the risk of surgical site infection and numerous infections can be prevented by prophylaxis. The timings of surgical antimicrobial prophylaxis, this study found that it is more beneficial to administer a preventive antibiotic before 30 to 59 minutes. Surgical site infections are prevented by prophylaxis. Surgical prophylaxis has to be logical and proportional to the standard guidelines, with assessment to the time of administration and dose of prophylactic drug. Optimum time of antibiotic administration is considered as a major factor for productive prophylaxis. Morbidity and mortality can be decreased by enlightening about the drug and its contraindications, adverse effects, comorbidities and its interaction to the patient.

INTRODUCTION:

Prophylaxis refers to the use of medication either to treat or prevent the medication. For instance, taking a Covid vaccine aids in preventing Covid infection as much as taking a hepatitis vaccine guards against hepatitis. There are numerous types of prophylaxis. **Primary prophylaxis:** this kind of prophylaxis aids in boosting a disease resistance. **Secondary prophylaxis:** this kind of prophylaxis is employed to prevent harm from occurring. **Tertiary prophylaxis:** this form of prevention aids in recovery of chronic illness.

Quaternary prophylaxis: This sort of prophylaxis states that more medical treatment that is harmful to the body should be avoided.

For instance, if a patient is receiving chemotherapy he should be halted if he doesn't respond. Surgical prophylaxis of antibiotic is determined as the utilization of antibiotic to block the infections at the surgical site.[1]. Significant prophylactic antimicrobials administration prior to surgery can decrease the prevalence of surgical site infection[2,3]. Surgical site of infections is the most recurrent type of infection related with the surgery, The experiment for surgical antibiotic prophylaxis was done forty years ago in pigs. The result obtained was that most potent period for prophylaxis begins when the bacteria gain access to tissues and is above three hours.[4]. Approximately 50% of the antibiotics given in

the hospital is for surgical prophylaxis. Though between 30%- 90% of this prophylaxis is unsuitable. Most often the antibiotic is given for too long or given at the wrong time.[5]. Post-operative surgical site infection is one of the leading nosocomial causes of morbidity and elevate the medical cost. In United States about 325,000 surgical site infections occur each year and cause additional medical cost. [6,7]. An adverse drug reaction (ADRs) is the major patient health issue. An adverse drug reaction is a reaction that is noxious, is unintended, and occurs at doses normally used in man.[8]. The recent report of institute of medicine points those medical errors are an important cause of morbidity, mortality and cost in the United States health care system.[9]. An adverse drug reaction (ADRs) is the major patient health issue, if it is untreated it may lead to morbidity or mortality of the patient. The use of antimicrobial prophylaxis can minimize the

risk of post-surgical infections but the use of extra antimicrobials may elevate the risk of antimicrobial resistance.[10]. According to (NCC MERP) national coordinating council for medication error reporting and prevention, (ADEs) adverse drug events are harmful that are either associated to the dose of the drug or the medical intervention.[11]. Due to lack of observation or monitoring and reporting system, (ADEs) adverse drug events are observed to be the fifth leading cause of death throughout the world. According to definitions of adverse drug reactions (ADRs) and adverse drug events (ADEs), all Adverse drug reactions are referred to as adverse drug events, but not all adverse drugs events can be considered as adverse drug reaction.[12].It is important to select an antimicrobials with narrowest antibacterial spectrum required to reduce the pathogens [13,14]

DRUGS	ADVERSE DRUG REACTION (ADRs)
Metronidazole	When metronidazole is used, cerebral dysfunction, visual impairment, vestibulotoxicity, choleleotoxicity, ataxic gait, dysarthria, and seizures have been documented. [15,16].With mild to severe side effects such as nausea, abdominal pain and diarrhea metronidazole is generally well tolerated.[17]
Cefotaxime	Cefotaximes and other cephalosporins are most frequently associated with hypersensitivity reactions, which can result in skin rashes, urticaria, eosinophilia, and anaphylaxis[18]. Other side effects could include nausea, vomiting, pseudo membranous colitis, diarrhoea and temporary liver enzyme increase.[19,20].
Amoxicillin	Aseptic meningitis, aseptic hyperactivity, reversibly agitation, anxiety, sleeplessness, confusion and convulsions.[21] Hemorrhagic colitis, pseudo membranous colitis and a tongue covered with black hair.[22]
Vancomycin	Vancomycin is not first choice of medication due to a number of side effects, including tachycardia, hypotension, phlebitis, nephrotoxicity and ototoxicity [23]
Clindamycin	Rash, hepatotoxicity and diarrhoea are typical side effects of using clindamycin. Nausea anorexia, vomiting, flatulence and a metallic taste are undesirable side effects.[24]
Azithromycin	Among the cardiac arrhythmias caused by azithromycin include QT prolongation and ventricular tachycardia, other effects include fever, skin eruption [25].

DISCUSSION:

[26] Sriram A. Et al., study on antimicrobial use in surgical Prophylaxis. Third generation cephalosporin was the most frequently recommended antimicrobial prophylaxis in this investigation. Three different administration-related characteristics, including choice of administration, timings, and prophylactic length were observed. This study is relevant to hospitalised patients who have post-surgical infections and the prophylactic use of antibiotics.

Ceftriaxone 1 gm, Cefotaxime 1 gm, and Metronidazole 500 mg is the dosage. According to the study's findings, prophylactic antibiotic use greatly decreased the risk of surgical site infection, and prophylaxis can prevent a variety of infections.

[27].Dr. Hitesh Kumar. Et al., stated that, in light of postoperative surgical site infection, a comparative study on elective laparoscopic cholecystectomy with and without antimicrobial

prophylaxis. The cases in this research are split into two categories.

Group A: Antibiotic prevention is involved.

Group B: Does not require the prophylaxis of antibiotics. In the case group, the research wound infection affected 2 out of 50 patients (4%) and 1 out of 50 patients (2%); all of them had superficial SSI. Patients in the control group had lower rates of surgical site infection than those in the case group. [28]. SadiaIftikhar al., To Inference A multi-study cross-sectional investigation in Lahore, Pakistan, assessed the casualty and preventability of unwanted reactions to drugs and adverse drug events of antibiotics among inpatients. In the current research, 38.9% of the patients had antibiotics associated with ADEs (adverse drug events). The fluoroquinolones, imidazole derivatives, and macrolides were the most common culprits. The results of this research show that compared to adult patients, paediatric patients experienced more antibiotic-related adverse events. Fluoroquinolones, macrolides, and imidazole and its derivatives were the most commonly prescribed antibiotics among hospitalised patients (ADEs). [29] Walter P. Et al., Surgical antimicrobial prophylaxis schedule, According to this research, the timing of antimicrobial prophylaxis should ensure that serum and tissue drug levels are higher at the start of the procedure than the minimal inhibitory concentration for organisms that are likely to be present in the surgical environment. This conclusion that surgical antimicrobial prophylaxis should not be administered as close to the time of incision as possible is supported by a few recent studies on antimicrobial agents with different pharmacokinetics [30, 31]. This study found that giving a prophylactic antibiotic before 30 to 59 minutes is more advantageous.

CONCLUSION:

Over the recent years surgical site infections have been prevented by the use of prophylaxis. Even though several measures are taken to reduce antimicrobial use, a considerable increase of usage has been noted especially in the surgical patients. Antimicrobials are used to prevent surgical site infections, appropriate timing, selection, and duration of administration of antimicrobial prophylaxis is essential. From the above article, we conclude that prophylaxis should be used only where there is confirmation of

potency or expert concurrence. It should be used only in cases where benefits outweigh risks keeping in mind the optimum time of antibiotic administration which makes the prophylaxis productive. This article also gives a solutions and states that the morbidity and mortality of excess use of antimicrobials can be decreased by enlightening people about them and their contraindications, adverse effects, comorbidities and interactions which can be done by educating the patient. It also emphasizes that any adverse effect if observed should not be neglected, immediate action should be taken and ADR should be treated with supportive therapy for management of symptoms. It also explains the importance of following hospital specific guidelines on rationale antimicrobial use in choosing prophylaxis and providing proper patient counselling for the patients.

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