

Antibiotic Abuse in the Surgical Ward in Baquba Teaching Hospital

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Abstract

Background: The common use of antibiotics has led to at least two adverse consequences. One consequence includes unpleasant and occasionally lethal side effects resulting from changes in the normal microbial flora, these events leading to many problems sometimes require surgical removal or in some cases, lead to death.

Objective: To investigate the usage and pattern of antibiotics in the surgical ward of Baquba teaching hospital.

Patients and Methods: This is a retrospective study performed in Baquba teaching hospital during the period 2011-2013. The data collected from files of the patients who underwent different surgeries from the statistic unit in the hospital, recalled for which patient received the antibiotics and for how long.

The types of surgeries involved in the study are those which belong to class one and two. Also prescribing advanced antibiotics instead of starting with the simple one is considered abuse.

Results: Seven hundreds and ninety five case file of patients underwent clean and clean-contaminated surgeries in Baquba teaching hospital was reviewed for the use of antibiotics preoperatively and/or postoperatively, the type of antibiotic used and the duration, 541 (68%) patients were underwent clean surgeries. All of them received antibiotics postoperatively, 254 (32%) patients were underwent clean contaminated surgeries. None of them received prophylactic antibiotics and all of them received postoperative antibiotics in the form of parenteral antibiotics for 7-10 days (till removal of the stiches) and continue on enteral antibiotics for another 3-5 days following removal of the stiches. 367 (67.8%) patients of those underwent clean surgeries prescribed third generation cephalosporine (Cefotaxime). 233 (91.7) patients of those underwent clean contaminated surgeries given a combination of antibiotics (Cefotaxime+Metronidazole+/- Gentamycin). Antibiotics were abused in 600 (75.47%) patients. Only 195 (24.52%) patients prescribed antibiotics in the scientific way.

Conclusion: The random prescription of antibacterial is high leading to abuse of antibiotics. The number of antibacterials used and the duration shown to be increased. The combination of some antibiotics needs further evaluation.

Key words: Antibiotics, antimicrobial abuse, surgery and antibiotics.

Received: 17th November 2014

Accepted: 25th December 2014

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Introduction

Antibacterials have become widely spread and associated with many problems for example, many women show vaginal candidal overgrowth resulting from treatment of respiratory and urogenital infections with conventional antibiotics. A more serious catastrophe is the newly evolved epidemic of antibiotic-associated bowel infections caused by *Clostridium difficile*, which are becoming with time hard to treat, can occasionally need surgical resection of the colon, and in some patients end with death [1].

The most important side effect of the non-scientific use of antibiotics is the emergence of bacterial resistance with the invention of each new antibacterial; the biologic forces of random mutation have led to the appearance of resistant progenies that are sustained by continued use of the drugs [2]. Also these create lasting need to invent new antibiotics to treat increasingly more resistant infections [3].

In the past, the problem of resistance was believed to be in large part restricted to hospitals and nursing homes. Now a day, the proportion of community-acquired infections with bacteria resistant to the commonly used antibiotics has steadily increased [4]. The cost of treating these resistant infections has also raised, both in hospitals and outpatients [5].

Antibiotic misuse is a worldwide problem with the extent of the problem being greater in the third world countries [6-9]. The misuse could include both overprescription and underprescription, where both types are wrong [10-16].

Surgeons have taken important steps toward use of prophylactic antibiotics. Audits suggest that the opportunity to enhance performance in the predictable elective perioperative period is the corner stone [17, 18, 19].

Bacteria are normally prevented from causing infection in tissues by intact epithelial surfaces, but these are broken down by surgery. In addition to this mechanical barrier, there are other protective mechanisms, i.e. chemical (such as the low gastric pH), humoral (antibodies, complement and opsonins) and cellular (phagocytic cells, macrophages, polymorphonuclear cells and killer lymphocytes) the most extensive physical barrier is the skin. The skin contains its own resident microflora that may inhibit the attachment and invasion of non-commensal micro-organisms. Host response is debilitated by malnutrition which may present as obesity as well as recent rapid weight loss [20].

Infections resulting from this exposure may not be limited to the surgical site but may produce systemic effects. Prevention of wound infection (Also called surgical site infection SSIs) is therefore have priority to the surgeons and must be addressed in the planning of any operation. Standards of control have been developed for every step of a surgical procedure to help reduce the impact of exposure to microorganisms. This including prescribing prophylactic antibiotics for clean contaminated surgeries and some selected cases of class clean surgeries which involve insertion of prosthesis.

The prophylactic antibiotics are given with the induction of anesthesia. The principles of prescribing antibiotics are as follow: Class1 surgeries (clean surgeries donot need neither prophylactic nor therapeutic antibiotics. Class 2 surgeries (clean contaminated surgeries need one dose prophylactic antibiotics given with the induction of anesthesia and not more than 2-4 doses postoperatively. Giving antibiotics for class 1 surgeries is considered abuse. Also giving therapeutic antibiotics beyond 48 hours in class 2 surgeries is regarded abuse. Another type of antibiotic abuse can be in the



form of prescribing advanced antibiotics instead of starting with the simple one [21].

The present study done to investigate the usage and pattern of antibiotics in the surgical ward of Baquba teaching hospital.

Patients and Methods

This is a retrospective study for investigating the usage and pattern of antibiotics used in different surgical procedures in the surgical ward in Baquba teaching hospital.

The way in which the study performed is that the case files of the patients who underwent different surgeries were recalled from the statistic unit in the hospital, recalled for which patient received the antibiotics and for how long.

The case files of 795 patients underwent different surgeries were checked for the usage of antibiotics. The types of surgeries involved in the study are those which belong to class one and two (Clean and clean contaminated surgeries respectively). As shown in table 1 and 2. Regarding the duration of treatment of antibiotics after discharging the patients, the surgeons were asked about it and their answer was to give antibiotics till removal of stiches (7-10 days) and for 3-5 days after that.

Giving antibiotics for class 1 surgeries is considered abuse. Also giving therapeutic antibiotics beyond 48 hours in class 2 surgeries is regarded abuse. Also prescribing

advanced antibiotics instead of starting with the simple one is considered abuse.

Results

Seven hundred and ninety five case file of patients underwent clean and clean-contaminated surgeries in Baquba teaching hospital were reviewed for the use of antibiotics preoperatively and/or postoperatively, the type of antibiotic used and the duration.

Five hundred and forty one (68%) patients were underwent clean surgeries. All of them received antibiotics postoperatively, 254 (32%) patients were underwent clean contaminated surgeries. None of them received prophylactic antibiotics and all of them received postoperative antibiotics in the form of parenteral antibiotics for 7-10 days (till removal of the stiches) and continue on enteral antibiotics for another 3-5 days following removal of the stiches; 367 (67.8%) patients of those underwent clean surgeries prescribed third generation cephalosporine (Cefotaxime) and finally 233 (91.7%) patients of those underwent clean contaminated surgeries given a combination of antibiotics (Cefotaxime+Metronidazole+/-Gentamycin).

This means that antibiotics were abused in 600 (75.47%) patients. Only 195 (24.52%) patients prescribed antibiotics in the scientific way.

Table (1): The types of the surgical procedures involved in the study together with.

	Type of surgery	Number of cases	Type of surgery according to the risk group for developing wound infection
1	Inguinal herniotomy in children	76	Clean
2	Hydroceles in children	43	Clean
3	Undescended testicles in children	32	Clean
4	Elective cholecystectomy	64	Clean-contaminated
5	Removal of lipomas	35	Clean
6	Removal of haemangiomas	13	Clean-contaminated
7	Removal of burn scars	15	Clean
8	Lateral sphincterotomy	44	Clean
9	Haemorrhoidectomy	89	Clean-contaminated
10	Removal of uninfamed pilonidal sinus	32	Clean
11	Removal of breast mass	57	Clean
12	Thyroid surgeries	37	Clean
13	Removal of ganglions in the wrist joint	9	Clean
14	Excision of uninfamed ingrown toe nail	26	Clean
15	Excision of cervical or axillary lymph nodes	29	Clean
16	Removal of uninfamed sebaceous cysts	24	Clean
17	Umbilical herniotomy in children	67	Clean
18	Removal of uncomplicated appendicitis	88	Clean-contaminated
19	Laparoscopic treatment of polycystic ovaries	2	Clean
20	Secondary suturing of wounds	13	Clean
	Number of cases	795	

Table (2): Risk groups for developing wound infection.

CLASS	CHARACTERISTICS	INCIDENCE (%)
Clean	Nontraumatic; no inflammation encountered; no break in technique; respiratory, alimentary, or genitourinary tracts not entered	<2
Clean-contaminated	Gastrointestinal or respiratory tract entered without significant spillage; appendectomy; oropharynx or vagina entered; genitourinary or biliary tract entered in absence of infected urine or bile; minor break in technique	2–8
Contaminated	Major break in technique; gross spillage from gastrointestinal tract	8–15

Table (3): Number and percentage of clean and clean contaminated surgeries.

Type of surgery	Number of cases	Percentage
Clean	541	68%
Clean-contaminated	254	32%
Total	795	100%

Discussion

Seven hundred and ninety five case file of patients underwent clean and clean-contaminated surgeries in Baquba teaching hospital were reviewed for the use of antibiotics preoperatively and/or postoperatively, the type of antibiotic used and the duration.

The study ensure the high proportion of hospitalized patients who receive antibiotics which reached 75.47% and this is really very high percentage and could be regarded as a serious problem if we consider the subject of emergency resistance to the antibiotics.

The use of antibiotics should be chosen should consider the efficacy, toxicity, cost and other aspects to maximize the benefits to the patient. A critical period for successful prophylaxis lies in the 4 hours following implantation of organisms into wound for which one or two doses of anti-microbial drugs parenterally may be sufficient [22].

Our results are coincide with those of Aseffa and Yohannes (1996) and Chambers and Sande (1996) [23,24]. Intervention strategies directed at establishment of antibiotic policy [25], education of prescribers [22, 26], establishment of a novel prescription system [27], was found to reduce the inappropriate use of antibiotics particularly for the prophylaxis of infections. Careful preoperative preparations and clean postoperative care have been found to decrease postoperative surgical site infections and thus limit the use of antibiotics [28, 29].

In conclusion, the random prescription of antibacterial is high leading to abuse of antibiotics, the number of antibacterials used and the duration shown to be increased. Our recommendation. Prescribe antibiotics

only when its truly indicated, Giving prophylactic antibiotics avoid long term use of antibiotics postoperatively which the later proved to be of no benefit 48 hours beyond surgery. Avoid giving multiple antibiotics at the same time, and avoid starting with advanced antibiotics because this may expose the patient to the emergency of bacterial resistance to the antibiotics.

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