Antibiotic prophylaxis for caesarean section at Tawam Hospital, UAE

Jahan Ara Khanem[1], Howaida Khair[1], Roos Benson[2]

ABSTRACT

Objective: This retrospective study was undertaken to determine the use of antibiotic prophylaxis in cesarean sections at Tawam Hospital, Al Ain, UAE.

Materials and Methods: The sample was selected from 100 consecutive women undergoing Cesarean section during the period from January 2005 to April 2005. Data was analyzed for age, gravidity, type of cesarean section, indication of cesarean, and type and duration of antibiotic use.

Results: Of the total 100 patients 73.5% were in the age group 20-35 years. The highest proportion of patients (38.8%) were multigravidas. Emergency cesarean section was carried out in 64.9% cases while the procedure was elective in 35%. Antibiotic prophylaxis was given in 94% cases while no prophylaxis was received by the rest.

Conclusion: This study indicated that clinicians followed evidence-based practice with antibiotic prophylaxis when managing most patients, but there was no uniformity of practice regarding the type and duration in antibiotic use. In view of this a Clinical Practice Guideline for use of antibiotic prophylaxis in cesarean was issued and implemented, to be followed up with a re-audit in six months.

Key words: pregnant women, antibiotic prophylaxis, cesarean section

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INTRODUCTION

The single most important risk factor for postpartum maternal infection is cesarean delivery. A systematic review in the Cochrane Library showed that antibiotic prophylaxis in all cases of cesarean section significantly reduced the incidence of puerperal infection[1]. The time of drug administration was different from the practice followed in other general surgeries because of the risk of damage to fetus. The intra-operative administration of a drug shortly after cord clamping is considered to be as effective as administering the drug preoperatively. The duration of recommended antibiotic treatment in many trials has been reduced from ≥5 days to three days, and then to 24 hours, and the number of doses from three to one[2-4]. A second review of the Cochrane Library concluded that a single dose of ampicillin or first-generation cephalosporins has similar efficacy in reducing puerperal infection. In addition, the benefits are not different from those obtained from broad-spectrum cephalosporins[4]. Therefore, the audit was conducted to assess the use of prophylactic antibiotics in women undergoing caesarean section, and to assess compliance with available robust evidence for antibiotic prophylaxis in cesarean section. It was also planned to introduce changes in practice based on the observations of this audit and to re-audit our practice to assess the effect of the changes.

MATERIALS AND METHODS

The present study was conducted at Tawam Hospital, UAE, which is a tertiary referral center with an annual delivery rate of about 4000 and a caesarean section rate of nearly 15%. A

[1]Specialist and Consultant, Department of Obstetrics and Gynecology, Tawam Hospital; [2]Associate Professor, Department of Biostatistics, Faculty of Medicine and Health Sciences, Al Ain, United Arab Emirates.
Correspondence: Dr. Jahan Ara Khanem, Specialist, Department of Obstetrics and Gynecology, Tawam Hospital, Al Ain, United Arab Emirates.
Email:jahan_62@hotmail.com

retrospective audit of 100 consecutive women undergoing caesarean section was done during the period January 2005 to April 2005. An audit proforma with details of the patient and the cesarean section was used. A total of 98 patient records was analyzed. Data was analyzed as descriptive statistics using SPSS version 14.0.

RESULTS

In the audit three categories of patients were considered. Most of the patients were between the ages 20 and 35 years. Patients in their healthy reproductive years formed 73.4% of the study group. While 24.4% were above 35 years of age, 2.0% were below 20 years of age. Primigravida undergoing LSCS comprised 23.5% of the audit group while multigravidas were 38.7%. Grand multipara (greater than 5th gravid) were 20.4% and great grand multipara (greater than 8th gravid) formed 17.4% of the audit group.

Emergency LSCS formed the major type of the LSCS performed, constituting 64.9% of all the operations, while elective LSCS were performed in 35% of the cases. Details are given in Table 1.

Table 1. Details on age distribution, gravida and type of Caesarean section

Variables	Groups	No.	%
Age group			
	< 20 years	02	2.0
	20-35 years	72	73.5
	≥ 35 years	24	24.5
Gravida			
	Primi	23	23.5
	Multi	38	38.8
	Grand multi	20	20.4
	Great grand	17	17.3
	Fifth	49	12.7
Type of Caesarean section			
	Emergency	64	64.9
	Elective	34	35.1

The major indication for LSCS was breech presentation (31.6%). The second was suboptimal Cardiotocograph (CTG), which formed 14.3% of the LSCS. Previous LSCS was the factor in 11.2%. Suboptimal CTG and failure to progress in combination was a reason for LSCS in 8.2%. Multiple pregnancies led to the decision for LSCS in 8.2% cases. Failure to progress and other factors were observed in 6.1% while Intra Uterine Growth Retardation and failed instrumental delivery each constituted 3.1% of the reason for operation. Maternal request and unfavorable cervix were reasons in 20%, while preeclampsia, two previous LSCS, and cord prolapse were reasons in 1% of the cases. Details are given in Figure 1.

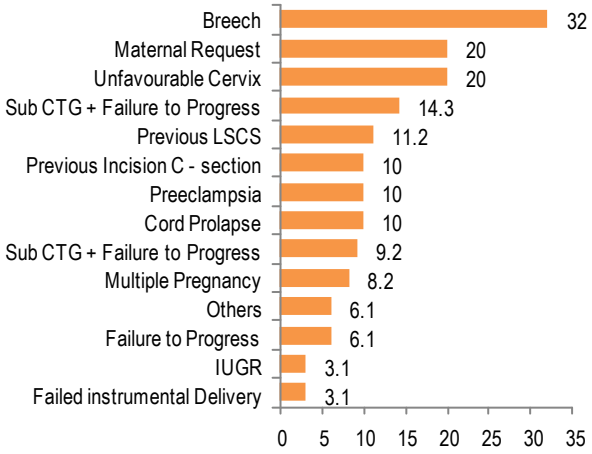

Figure 1. Distribution of participants according to Indications for Caesarean section

The largest group of 79% of the patients received a single dose injection Cefuroxime (Zinacef) 1.5g intravenously at the time of surgery. The second largest group, comprising 12.6%, received Injection Zinacef 1.5g and Flagyl 500mg intravenously. Injection Augmentin was received by 4.2% and other antibiotics by another 4.2% of the cases. Details are given in Figure 2.

92 patients (94%) undergoing LSCS received antibiotic prophylaxis while only 6 patients (6%) did not receive any kind of prophylaxis.

Our study showed that a single dose prophylaxis at time of surgery, which is considered

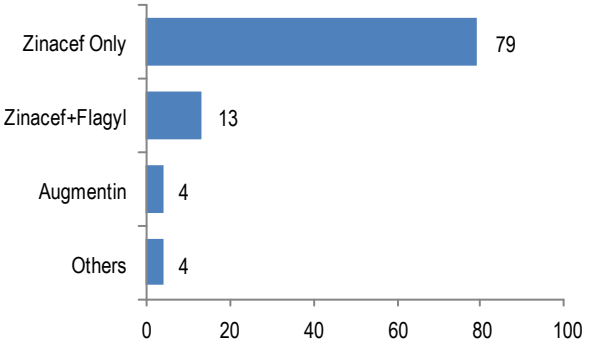

Figure 2. Distribution of participants according to the type of antibiotic prophylaxis

as appropriate prophylaxis, had been given in 81 (88.0%) patients. Administration of three doses or different regimens was observed in 11 (11.2%) of the cases, as depicted in Table 2.

Table 2. Details of prophylaxis given

Antibiotic	Number	(%)
Received	92	(93.2)
Not received	6	(6.1)
Appropriate	81	(88.0)
Not appropriate	11	(11.4)

DISCUSSION

Nearly three fourths of the patients in our study were between the ages 20 and 35 years. The age distribution is a reflection of the demographic status of the community as most females tend to complete their families during this period. The elective LSCS group formed one third of the study participants. It is important to opt for elective procedures, where feasible, as it provides the opportunity to have a clean operative field. Almost all LSCS were performed under antibiotic prophylaxis to avoid post-operative morbidity. This reflects that, in general, the practice in the audit setting is evidence-based.

Single dose peri-operative antibiotic prophylaxis before skin incision is sufficient for all clean surgical procedures to prevent postoperative infectious morbidity (both elective and emergency procedures), with the added advantage of cost effectiveness and the possibility of minimizing the risk of development of antibiotic resistance[1,2]. The Cochrane Review titled "Antibiotic prophylaxis for caesarean section", which analyzed a large number of randomized controlled trials, revealed that the use of antibiotic prophylaxis in women undergoing caesarean section leads to a decreased risk of infection-related complications, including fever, endometritis, wound infection, urinary tract infection, and serious infection after caesarean section. A small reduction was also found in the mother's duration of stay in hospital. There was, however, an increased risk of certain side effects, although they were neither serious nor consistently recorded. Regardless of the antibiotic regimen used and of the differences among populations studied, the protective effect of prophylactic antibiotics was homogeneous across all patients undergoing caesarean section (reported in the trials as being elective, non-elective, or not specified). This effect of significant reduction in postoperative infectious morbidity (by around two thirds) led the reviewers to recommend that antibiotic prophylaxis be provided to all women undergoing caesarean section[3].

The second Cochrane review titled "Antibiotic prophylaxis regimens and drugs for caesarean section" aimed to identify the most effective antibiotic regimen for the specific purpose of decreasing infectious morbidity after caesarean section. It found that it did not matter which regimen was used. Ampicillin and first generation cephalosporins showed similar effectiveness and there seems to be no justification for using any other drug with a broader spectrum or multiple drugs[2,3].

Nearly 94% of our patients received antibiotic prophylaxis, which is good clinical practice and comparable to international standards of evidence-based practice worldwide. The reduction in post-operative infection-related morbidity, in turn, is cost effective as it reduces the number of days the patient has to stay in hospital[1,6,7]. Additionally, it reduces the incidence of hospital-acquired infections and infections with more resistant microorganisms. Reviewing the evidence, it is seen that single dose intravenous injection of Ampiciilin 2g or injection Cefazolin 2g before skin incision is an effective antibiotic prophylaxis in elective cesarean sections. In case of penicillin allergy, a single dose intravenous injection of Clindamycin 600mg along with injection Gentamycin 5mg/kg is effective as antibiotic prophylaxis[6,7]. The recommendation to use ampicillin or first generation cephalosporin for the purpose of caesarean section antibiotic prophylaxis makes this task easier. These antibiotics are, in fact, the most common drugs that have been used in the past decades in the developing countries[3].

Our study showed that most of the patients had received Zinacef 1.5g, a second generation Cephalosporin, which is more expensive than the recommended antibiotics while it covers nearly the same spectrum of microorganism. However, at present it is effective against most of the infective organisms encountered in our practice, but prolonged use will lead to the development of resistant organisms, requiring third and fourth

generation cephalosporins. To avoid this dilemma and to ensure uniformity of practice we plan to issue a unit guideline for antibiotic prophylaxis in cases of cesarean section, which will be available to the staff after being approved by the Clinical Practice Guideline (CPG) Committee. After implementation of the guideline a re-audit cycle will be carried out after six months to observe the effect of change in practice.

CONCLUSION AND RECOMMENDATION

Use of prophylactic antibiotics in women undergoing cesarean section substantially reduced the incidence of episodes of fever, endometritis, wound infection, urinary tract infection and serious infection after cesarean section. We need to aim at a target of 100%, which is achievable once the Clinical Practice Guideline is implemented in our hospital to ensure uniformity of care, as prophylaxis does not involve prolonged medication and other factors like patient compliance.

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