Low-risk Caesarean Section "Antibiotics or no Antibiotics"

*Wafa A. Najdawi, MBBS**
*Hakam F. Akasheh, MBBS**

Objective: A prospective double-blind, placebo controlled study, was performed to determine the effectiveness of single-dose antibiotic prophylaxis versus no antibiotics in low-risk patients undergoing caesarean section.

Methods: One hundred women, at low-risk for postoperative infectious morbidity, who were to undergo caesarean section at Queen Alia Military Hospital were randomly assigned to receive either one gram of ceftizoxime after clamping of the cord, or no antibiotic.

Results: The incidence of febrile morbidity, endometritis and wound infection was similar in both groups.

Conclusion: In low-risk patients, no benefit was encountered after using single-dose prophylactic antibiotic compared to no prophylaxis.

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The incidence of caesarean section has risen steadily over the past 20 years[1]. Morbidity associated with this operative procedure is therefore of increasing concern.

Short-term prophylaxis, generally three doses within the first 12 hours, is currently preferred because, in high-risk patients, longer regimens have not demonstrated a significant advantage[2].

In low-risk patients, the preferred method of prophylaxis is a single dose given after cord clamping[3].

This study was undertaken to evaluate the effectiveness of single-dose antibiotic prophylaxis, in reducing infectious morbidity, in patients at low-risk for maternal infection after caesarean section.

METHODS

One hundred patients who underwent caesarean section during the period April 1, 1998 to October 31, 1998 were enrolled in this study. All patients were considered at low-risk for development of postoperative infectious morbidity.

Criteria for defining low-risk were intact membranes, ruptured membranes for less than four hours, less than four pelvic examinations, no internal uterine pressure monitoring and no fetal blood sampling.

Exclusion criteria consisted of history to allergy to penicillins or cephalosporins, history of hepatic or renal dysfunction, underlying chronic disease, active infection before the operative procedure and previous antibiotic therapy within three days of admission.

After obtaining informed written consent, patients were randomised into two groups by means of even and odd days. After cord clamping, patients on even days were given one gram of ceftizoxime while patients on odd days were given normal saline. All patients were observed every four hours for febrile morbidity, which was defined as a patient with an oral temperature of $\geq 38^{o}C$ on two occasions at least four hours apart within any 24 hour period, excluding the first postoperative day.

Endometritis was defined as fever $\geq 38^{o}C$ accompanied by foul lochia or uterine tenderness.

Urinary tract infection was defined as fever $\geq 38^{o}C$ and $\geq 10^{5}$ organisms per millilitre in urine culture.

Wound infection was defined as fever $\geq 38^{o}C$ and an abnormal looking wound, surrounded by cellulitis and/or draining purulent material.

* Department of Obstetrics and Gynaecology
Queen Alia Military Hospital
P. O. Box 2173
Amman 11181
Jordan

RESULTS

Ninety-nine women completed the study. One patient was withdrawn when she became febrile two hours after the operation. Her blood culture was positive for group B β-haemolytic streptococci. Forty-nine women received placebo and fifty received ceftizoxime. The mean ages of the patients were 26.20 ± 7.28 for the placebo group and 25.80 ± 6.80 for the antibiotic group.

The groups were comparable. No significant difference was observed between the two groups with respect to maternal age, parity, gestational age, duration of labour, duration of ruptured membranes or number of vaginal examinations, however, there was a benefit in terms of hospital stay in those patients who were given ceftizoxime (Table 1).

Table 1. **Comparison of study groups**

	Placebo (no=49)	Antibiotic	p-Value (no=50)
Age (yr)	26.2	25.8	0.77
Parity	2.4	2.7	0.49
Gestational age (wks)	38.8	39.3	0.07
Rupture of membranes (h)	1.7	1.5	0.54
Labour (h)	4.9	4.9	0.98
Vaginal examinations	1.7	1.5	0.34
Hospital stay (days)	3.1	2.8	0.007

(Significance is p-value <0.05)

There was no significant difference regarding the indications for caesarean section (Table 2).

Table 2. **Indications for caesarean section**

	Placebo (no=49)	Antibiotic (no=50)
Cephalopelvic disproportion	15 (30.61%)	13 (26%)
Fetal distress	14 (28.57%)	13 (26%)
Previous 2≥ caesarean sections	10 (20.41%)	12 (24%)
Multiple pregnancy	2 (4.08%)	2 (4%)
Breech	5 (10.21%)	6 (12%)
Others	3 (6.12%)	4 (8%)

No significant difference was also observed between the two groups regarding postoperative endometritis, febrile morbidity, urinary tract infection or wound infection (Table 3).

Table 3. **Postoperative morbidity**

	Placebo (no=49)	Antibiotic (no=50)
Febrile morbidity	2 (0.98%)	1 (0.5%)
Endometritis	1 (0.49%)	0 (0%)
Urinary tract infection	1 (0.49%)	1 (0.5%)
Wound infection	0 (0%)	0 (0%)

One drug reaction occurred in the ceftizoxime group, a maculopapular rash immediately after antibiotic administration that subsequently resolved without therapy.

DISCUSSION

In 1968, Miller et al published one of the first reports on the possible benefits of antibiotic prophylaxis in reducing postoperative infectious morbidity[4]. Since that time, most other studies demonstrated a reduction in postoperative febrile morbidity with the use of perioperative antibiotic prophylaxis.

The duration of antibiotic prophylaxis and the most effective agent are not known. Initial trials consisted of long term administration of a single or multiple antimicrobial agents, sometimes up to five days[5,6]. More recently, a three dose regimen was found to be effective[7], although some authors advocate the use of a single dose for prophylaxis, given at the time of cord clamping[3,8].

A recent study by Newton et al demonstrated a change in endometrial and endocervical microflora with the use of prophylactic ampicillin and cefazolin. They advised against the use of this combination[9].

The purpose of this study was to evaluate the efficacy of single-dose antibiotic prophylaxis versus no prophylaxis, in a group of low-risk patients undergoing an abdominal delivery. Our results compare well with Rizk et al[10] and Yip et al[11], but, in terms of hospital stay, agree with Di Lieto et al[12], Bibi et al[13] and Alba et al[14], who also demonstrated a benefit in wound infection in low-risk patients receiving prophylactic antibiotics compared to controls.

CONCLUSION

In low-risk patients, no benefit was encountered after using single-dose prophylactic antibiotic compared to no prophylaxis. It is our view that this matter is far from settled. Many conflicting data

emerge which make it difficult for us to follow a certain route and ignore all other options. It is worthwhile treating each case separately. Larger studies are needed to define the proper route for managing these patients.

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