Randomized trial of ceftriaxone prophylaxis in elective cesarean section

Ishag Adam, MD, *Elsadig S. Adam*, MD, *Abdul-Salam Gerais*, MD, MRCOG.

Cesarean section is an essential operation, which is widely practiced and its rate has increased steadily and may reach up to 25% in some centers.[1] Maternal morbidity related to infections after cesarean section was 8-fold higher than vaginal delivery and endometritis was the most common of these complications.[2] The reduction of endometritis by two third to three quarters justifies a policy of administering prophylactic antibiotic to women undergoing elective or non elective cesarean section.[3] Controversy still exists on the benefit and the choice of prophylactic antibiotic in elective cesarean section, and the best prophylactic regimen has yet to be described. The study was performed to investigate the efficacy of ceftriaxone in decreasing the frequency of postoperative infection and related morbidity in elective cesarean section.

Patients planned for elective cesarean section at New Halfa Teaching Hospital, Eastern Sudan during the period September 2003 to April 2004 were enrolled in the study. Those who received antibiotics within the last 2 weeks had any visible infection, elevated temperature, allergic to antimicrobes or if they did not wish to participate in the study were excluded.

Patients were randomized in 2 groups; the study group to receive a single dose of ceftriaxone 1 gm intravenously at anesthetic induction or no prophylaxis (control group). After verbal consent, a complete history was taken in standard questionnaire and physical examination was performed. The outcome examined were the incidence of: 1) Postoperative febrile morbidity, defined as an oral temperature of 38. ^{0}C or more on 2 occasions at least 4 hours apart excluding the first 24 hours. 2) Postoperative infections, which include: a) Endometritis (fever, uterine tenderness and abnormal lochia). b) Wound infection. c) Pelvic abscess. d) Peritonitis (elevated temperature, tachycardia, abdominal distension and pain with guarding and rigidity aggravated by moving and breathing with absent bowel sounds at the onset of paralytic ileus). e) Other febrile morbidity, namely, urinary tract infection, chest infection and malaria. [4]

Once febrile morbidity was identified, the patients were examined to localize the potential source of infection (tonsils, breasts, chest abdomen and pelvis). Urine analysis followed by urine for culture and sensitivity if the result of examination was suggestive of infection, total white blood cells count, blood and cervical swabs were sent (Mackonkey agar media) for culture and sensitivity. Blood film (Giemsa stained) were taken by finger pricks to confirm or to exclude malaria.

The policy in New Halfa Teaching Hospital is to treat post-cesarean febrile morbidity (endometritis, peritonitis and pelvic abscess) with triple antibiotics (ampicillin/cloxacillin 500 gm every 6 hours, gentamicin 80 mg every 8 hours, metronidazole 500 mg every 8 hours for 7 days). If no response, these drugs were changed to antibiotic guided by the result of the culture sensitivity.

Data were entered in microcomputer for analysis using Statistical Package for Social Sciences. The X^2 test, students, t-test and Fischer's exact test were used where applicable. A p value of <0.05 was considered significant.

During the period of this study there were 920 vaginal deliveries and 287 cesarean sections (23.7.%), 34.8% of them were elective while 65.2% were emergency. There was one maternal death due to septicemia following emergency cesarean section.

Hundred patients planned for elective cesarean section for various reasons (repeated scars, cephalo-pelvic disproportion and others), were enrolled to the study, 50 patients in each group (study and control). The 2 groups were well matched at the enrollment and there were no statistical differences in the admission variables, **Table 1**. The incidence of postoperative febrile morbidity was not significantly different between the study and control groups (2% versus 4%, p = 0.5). There were 2 (2%) cases of endometritis, one in each group.

There was no patient in any group suffered wound infection or peritonitis. While one patient (2%) in the control group developed other febrile

Table 1 - The mean ± SD of maternal characteristics at the enrollment between the 2 groups*

Characteristics	Study group	Control group
Age, years	30.8 ± 6.3	29.9 ± 6.2
Parity	1.9 ± 1.9	2.4 ± 2.04
Weight, kg	63.2 ± 10.6	65.8 ± 12.2
Gestational age, weeks	38.7 ± 0.90	38.5 ± 1.09
Temperature ^{O}C	37.08 ± 0.17	37.1 ± 0 .18
Preoperative hemoglobin, (%)	69.6 ± (8.8)	71.1 ± 8.3

SD - standard deviation
*p>0.05 in all the values

morbidity not associated with endometritis (malaria), none of the study group developed this complication ($p = 0.5$).

There were 2 (4%) babies with low Apgar score (< 8) at 1 and 5 minutes in the study group versus 3 (6%) in the control group ($p = 0.64$). There were 2 perinatal deaths; one in each group, due to respiratory distress syndrome (control) and second died due to septicemia complicated imperforate anus (study).

The total incidence of postoperative febrile morbidity was 3% without significant statistical difference between the two groups; this figure is near to the incidence of postoperative febrile morbidity when ceftriaxone was compared with ampicillin/cloxacillin in the Central Sudan.[5] Thus, postoperative infections morbidity following low-risk cesarean section cannot be reduced by ceftriaxone prophylaxis.

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From the Department of Obstetrics and Gynecology (Adam I), Department of Surgery (Adam E), New Halfa Teaching Hospital, New Halfa and the Department of Obstetrics and Gynecology (Gerais) University of Khartoum, Khartoum, Sudan. Address correspondence and reprint requests to Dr. Ishag Adam, PO Box 61, New Halfa, Sudan. Tel. +249 (421) 822101. Fax +249 (421) 822070. E-mail: ishagadam@hotmail.com

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Retropubic space hemorrhage. *An unusual complication in cesarean section*

***Vaidyanathan Gowri**, MBBS, MRCOG, **Poornima Nair**, MD MRCOG, **Andrejz Krolikowski**, MD,PhD.*

Hemorrhage during cesarean section is usually from the uterus. Massive bleeding from the parietes is an unusual case. We report a very rare case of hemorrhage in the space of Retzius during elective cesarean section. The bleeding was a venous ooze and was eventually controlled with tamponade. Tamponade is the first approach to bleeding from the space of Retzius and it usually controls the bleeding. Factor VIIa is a single coagulation factor manufactured by recombinant cell technology and has been found to be useful in controlling hemorrhage in some surgical patients.

A 34-year-old female, gravida 3, para 2 with history of 2 previous cesarean sections, was booked in the antenatal clinic in our hospital at 32 weeks of gestation. She had undergone 2 cesarean sections for big babies (4.9 kgm and 5.2 kgm) in the past. She was healthy with no significant family history of diabetes mellitus. Abdominal examination revealed subumbilical midline vertical scars from previous cesareans. Oral glucose tolerance test was performed in view of her past recurs of having big babies and the results were as follows: fasting 6 mmol/l and 2 hours postprandial was 10 mmol/l. She was advised to follow diabetic diet and the subsequent glucose profile was normal. She was booked for an elective cesarean section at 38 weeks gestation. She was counseled for a subumbilical midline incision in view of her previous 2 subumbilical midline scars, but she refused. Cesarean section was carried out under spinal anesthesia through a suprapubic transverse incision at her request. A baby girl weighing 3330 gms was delivered without difficulty and uterine wound hemostasis was satisfactory. At the time of closure some bleeding was noted in the retropubic space, which appeared to be venous bleeding. An attempt was made to control the bleeding with simple pressure. This procedure only deteriorated the bleeding for there was deepening of the bleeding space and hemorrhage became heavy. An attempt to control the bleeding by putting stitches also failed. As there was no identifiable arterial bleeder, the