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Original Research Article.

Evaluation of Antimicrobial Usage Pattern in Uncomplicated Caesarean Section Delivery in a Tertiary Care Teaching Hospital Based Study

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ABSTRACT

Background: Antimicrobials are commonly prescribed in Obstetrics and Gynaecology prophylactically for pre-operative and post-operative procedures (caesarean section, episiotomy, medical termination of pregnancy, total vaginal or abdominal hysterectomy, laparoscopic procedures, tubal ligation, dilatation and curettage, and myomectomy) or to treat ongoing infection (vaginitis, pelvic inflammatory disease, endometriosis, sexually transmitted diseases and urinary tract infections)

Materials and Methods: Total of 137 cases were screened out of which 78 fulfilled the inclusion exclusion criteria and were included in our analysis. Study was carried out after obtaining permission from the Institutional ethics committee and a duly signed informed consent form from the study participants.

Results: Almost 48.7% of the sample size was of the age group of 25 - 30 years followed by 20-25yrs and 30-35yrs probably due to demographic and sociocultural status of the patients to complete their school and complete their families. Only 2.6% were of more than 40yrs.

Conclusion: The commonest antimicrobial use is a combination of ceftriaxone, metronidazole and amikacin.

Keywords: Antimicrobial, Usage pattern and Caesarean Section.

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INTRODUCTION

Antimicrobials are commonly prescribed in Obstetrics and Gynaecology prophylactically for pre-operative and post-operative procedures[1] (caesarean section, episiotomy, medical termination of pregnancy, total vaginal or abdominal hysterectomy, laparoscopic procedures, tubal ligation, dilatation and curettage, and myomectomy) or to treat ongoing infection (vaginitis, pelvic inflammatory disease, endometriosis, sexually transmitted diseases and urinary tract infections). The rational use of antimicrobials in women of the child-bearing age group is important because it affects this population as well as their offspring. Indiscriminate use of antibiotics may result in the appearance of drug-resistant organisms.[2]

Drug utilization is defined by the WHO as 'The marketing, distribution, prescription, and use of drugs in society, with special emphasis on the resulting medical, social, and economic consequences. A drug utilization study is therefore one designed to describe quantitatively and qualitatively the use of a given drug, i.e., class of drugs, indications, duration of treatment, dosage, previous or associated treatments and compliance.[3]

The advent of antimicrobials had potentiated the therapeutic ability of the physicians in the last 50 years thus altering the prognoses of the patients with bacterial infections. It proved to be magic drugs in both prophylactic and curative cause. However, the casual attitude of physician regarding antibiotic prescription had led to the emergence of resistant microorganism leading to a constant threat to human population. The unnecessary use of broad spectrum and newer generation antibiotics in both human as well as veterinary practice had resulted an uncertain efficacy of antimicrobials at present with scarce newer ones in pipeline.[4]

With the evolution of resistant pathogens, the mortality, morbidity along with the treatment cost are all escalating. The hospital antibiotic use is generally determined by the socioeconomic, cultural, behavioural and contextual aspects.[5] Antimicrobials are very frequently used medications in Obstetrics and Gynaecology in their wide range of operative procedures and in treating various infections. Administering antimicrobial prophylaxis is a standard practice in caesarean section which is given in pre, intra and postoperative peroids.[6]

The wellbeing of both the mother and the baby is determined by a judicious use of antibiotic. Our aimed was to evaluation of antimicrobial usage pattern in uncomplicated caesarean section delivery in a tertiary care teaching hospital.

MATERIALS AND METHODS

This present study was conducted in the Departments of Pharmacology, in collaboration with department of Gynaecology and Obstetrics of Gauri devi institute of Medical Sciences, India, during the period from September to November 2019. Total of 137 cases were screened out of which 78 fulfilled the inclusion exclusion criteria and were included in our analysis. Study was carried out after obtaining permission from the Institutional ethics committee and a duly signed informed consent form from the study participants. Data were recorded in a predesigned case report form from the bed head tickets of the post C-section patients in the Obstetrics ward and through interview with the patients as well as the treating Gynaecologists. Follow up data were collected till they were discharged from the hospital. The last follow up data was procured from the Gynaecology and Obstetrics Outpatient Department after one week. The patients were contacted over telephone to ensure their checkup following one week. One month was dedicated for patient recruitment and an additional 7 to 11 days for the follow up of the last recruited patient. The privacy of the patient data was ensured. Data collected were put in the excel spread sheet and analysed by descriptive statistics. No additional statistical analysis was performed.

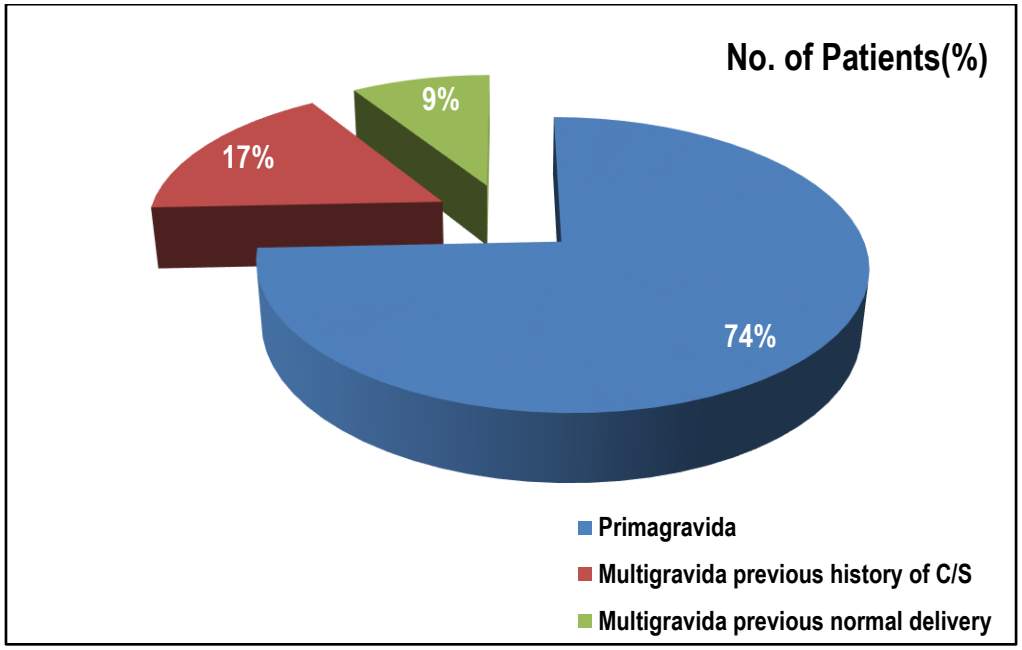

Fig.1: Gravidity of the study patients.

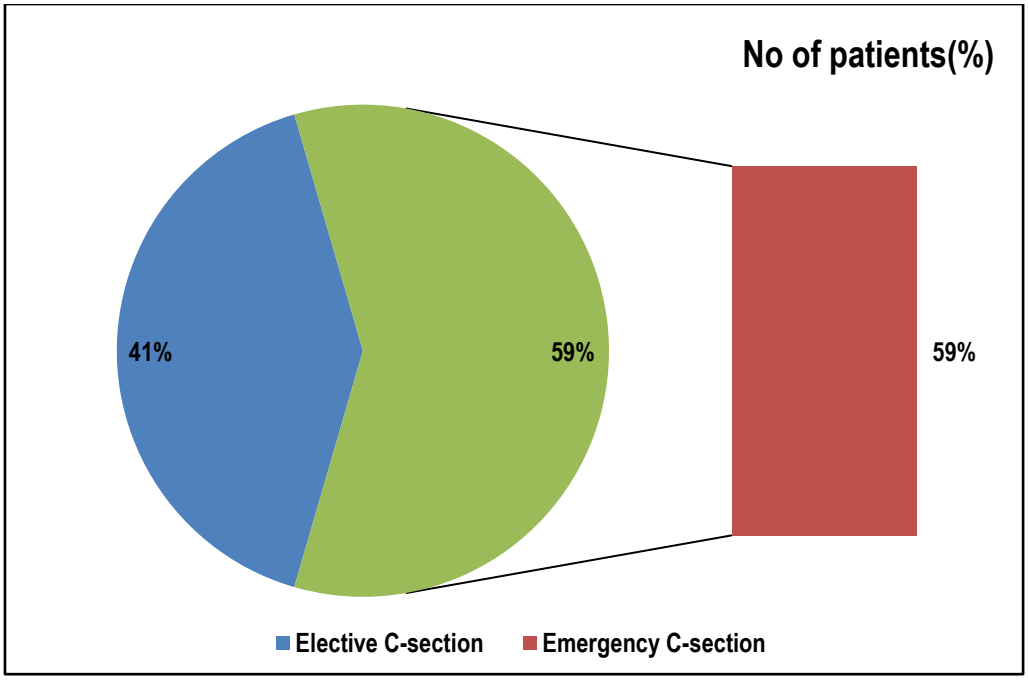

Fig.2: Types of Caesarean Section of the study patients.

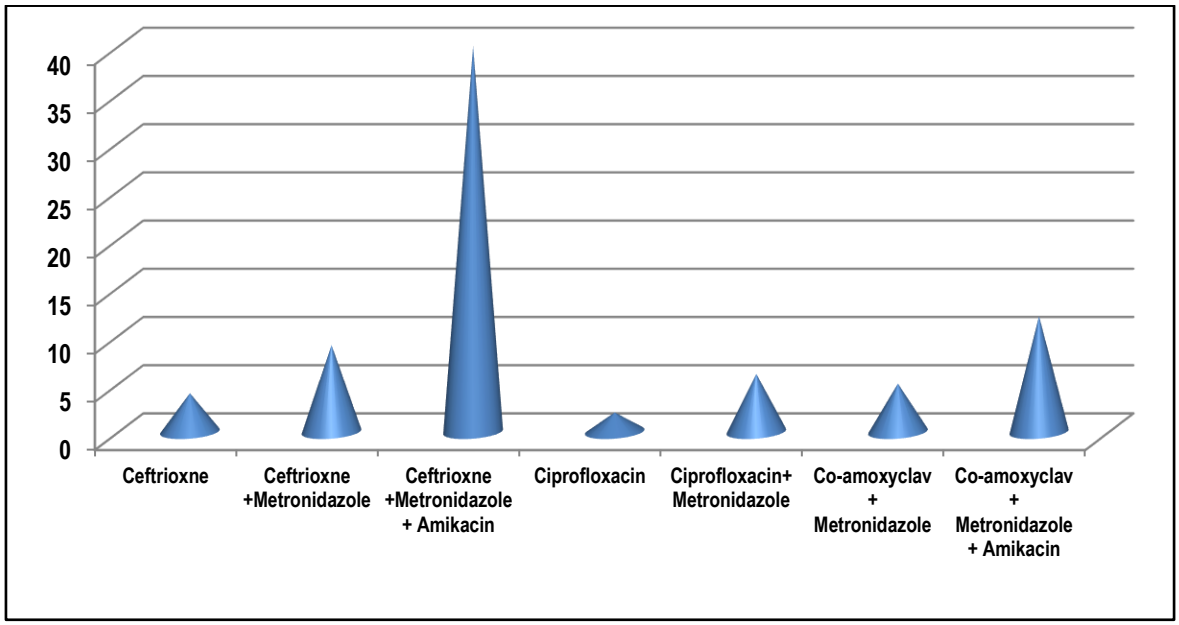

Fig.3: Parenteral antimicrobials used in caesarean section of the study patients with duration.

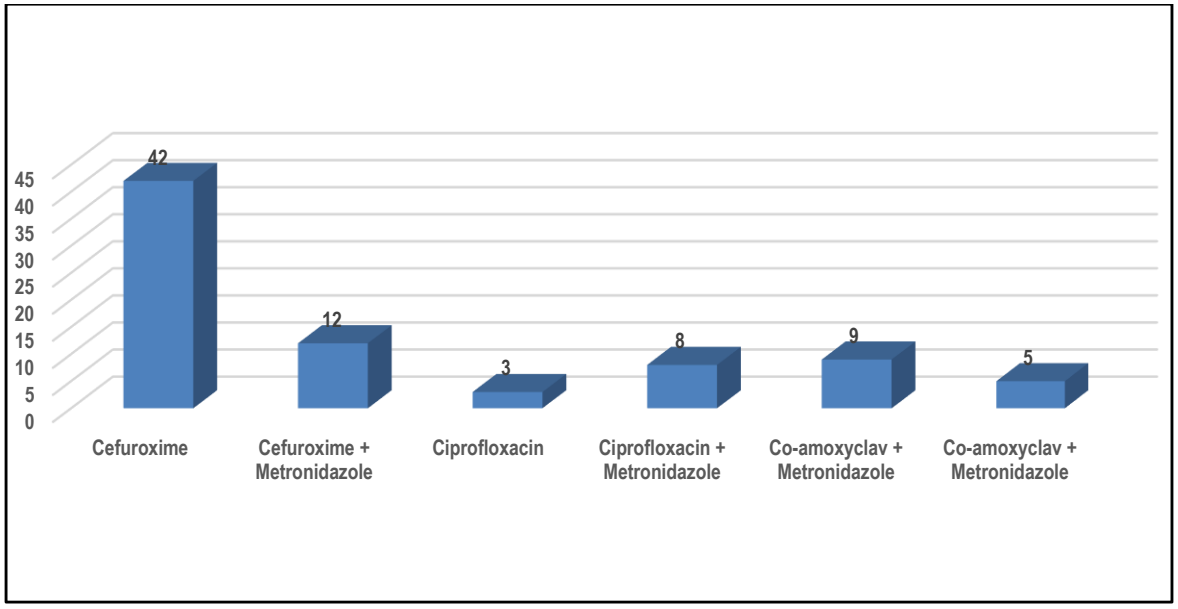

Fig.4: Oral antimicrobials used after parenteral therapy in caesarean section of the study patients with duration.

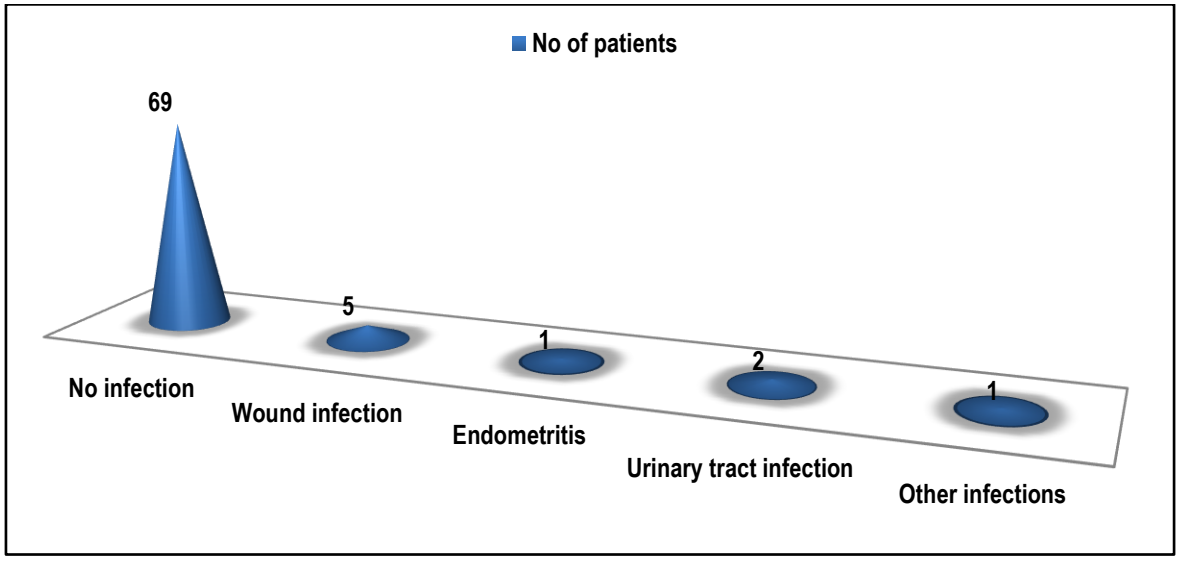

Fig. 5: Outcome in terms of infection or no infection after antimicrobials used in caesarean section of the study patients.

RESULTS AND DISCUSSION

This present study was carried out in the Departments of Pharmacology, Gauri devi institute of Medical Sciences, India. In the present study a total of 137 patients were encountered within the time frame who had caesarean section. Only 78 patients complied with the inclusion and exclusion criteria determined for this study reflecting a huge proportion of patient suffering from comorbid conditions. Almost 48.7% of the sample size was of the age group of 25 - 30 years followed by 20-25yrs and 30-35yrs probably due to demographic and sociocultural status of the patients to complete their school and complete their families. Only 2.6% were of more than 40yrs. A similar preponderance of age group was seen in a study conducted in China.[7] The primigravida represented a greater proportion of 74.4% of the total sample size than the multigravida which was alike to similar study.[8] Since this institution caters mainly the rural population so a lot of referral cases from the primary health centres are met resulting in a substantial number of emergency caesarean section. This reflected in the present study where 59.0% were emergency and the rest elective. Few selected classes of antimicrobials are used among which the combination of ceftriaxone, metronidazole and amikacin were the most extensively used antimicrobials in 51.3%.

A consolidated approach against gram positive, gram negative and anaerobes is the basis of it liberal use.[9] However a study from Cochrane database systemic review concluded that there was no overall difference in efficacy between the different classes of antibiotics in controlling infections in caesarean section but the data on bacterial resistance and neonatal sepsis was lacking.[10] WHO has also recommended the use of beta lactams over other antimicrobials in caesarean section. All the antimicrobials starting from beta lactam, flouroquinolones, nitroimidazole group and aminoglycosides are all hospital supplied and combination drugs are preferred more. With the use of this combination of ceftriaxone, amikacin and metronidazole the average duration of parenteral therapy was 2.5 days which was less than the other antimicrobials. Ceftriaxone or amoxy-clavulanic acid combination with metronidazole were next most commonly used. Cefuroxime was the most commonly prescribed oral antimicrobial in our study followed by coamoxyclav with metronidazole combination. A systemic review in Cochrane database of 25 randomised controlled trial inferred from the available evidence that cephalosporins and penicillins have similar efficacy when immediate postoperative infections are taken into consideration.[2] The overall duration of treatment was 7 days for all antimicrobials used. Prophylaxis with antimicrobials is standard treatment approach to combat neonatal sepsis and post-operative infections in mother. A systemic review of 95 studies supported the practice of prophylactic antibiotics to be administered routinely to all women undergoing caesarean section to halt infection.[8] Such adherence was noticed in this study which was reflected by 88.5% patients having uneventful post-operative recovery with no infections. Wound infection was found only in 6.4% of patients due to unawareness of the patients regarding hygiene. 100% Adherence to prophylactic use of antimicrobials in caesarean section in this institution is a good gesture from the part of treating gynaecologist to tackle post-operative infections. This resulted in reduced morbidity and thus cutting down the hospital expenses.[11] Apart from appropriate prophylactic antibiotics, proper skin preparation, limiting vaginal exams, practicing sterile technique and limiting hospital stay are paramount factors responsible in decreasing infection risk. However, the findings from this baseline study represent the first step among a number of interventions which have been designed to improve the antimicrobial prescribing in our institution.

CONCLUSION

These findings suggest that the commonest antimicrobial use is a combination of ceftriaxone, metronidazole and amikacin. An initiative for establishing a hospital antimicrobial policy and antimicrobial prescribing guidelines, in collaboration with the pre-scribers, should be undertaken.

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