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Original Research Article

Antimicrobial utilization pattern in indoor patients of obstetrics and gynecology ward of a tertiary care hospital

Aparna Chincholkar[1], Ankita Sawant[1]*, Vaishali Korde[2]

[1]Department of Pharmacology, MAEER'S MIMER Medical College, Talegaon Dabhade, Pune, Maharashtra, India
[2]Department of Obstetrics and Gynecology, MIMER Medical College, Talegaon Dabhade, Pune, Maharashtra, India

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***Correspondence:**
Dr. Ankita Sawant,
Email: ankitasangeeta0714@gmail.com

ABSTRACT

Background: Rational prescribing of antimicrobials is fundamentally necessary to reduce incidence of antimicrobial resistance. To evaluate the rationality of antimicrobial prescribing practices in patients admitted to obstetrics and gynecology ward of a tertiary care hospital using ICMR guidelines and to check how many drugs were prescribed from NLEMI.
Methods: It was a prospective observational study. Study included newly admitted patients in obstetrics and gynecology ward receiving antimicrobial therapy. Drugs prescribed to the patients during their hospital stay were noted from case sheets in case record form. WHO core and economic indicators were used to analyze prescribing patterns. Medguideindia.com was referred for prices of drugs.
Results: Average number of drugs prescribed for a patient admitted in the obstetrics and gynecology ward were 3.22 and 4.31 respectively. Percentage of drugs prescribed by their generic name were 37.11% and 39.42% in obstetrics and gynecology ward respectively. 26.85% and 34.14% of patients received drugs through parenteral route in obstetrics and gynecology wards respectively. All antimicrobials were prescribed from NLEMI.
Conclusions: WHO recommends prescribing all drugs by their generic names. Average duration of antimicrobial treatment was higher than recommended average duration suggested by ICMR. ICMR recommends use of 2nd generation cephalosporins but in the present study 3rd generation cephalosporins were used. For rational use of antimicrobials and to reduce their cost it is recommended to prescribe antimicrobials by their generic names and reduce treatment duration by referring to ICMR Guidelines and NLEMI.

Keywords: Antimicrobial resistance, Rationalism, WHO, ICMR

INTRODUCTION

World health organization (WHO) has claimed that more than half of all medicines are prescribed and dispensed inappropriately.[1] In developing countries, antimicrobials are prescribed inappropriately for 44% to 97% of admitted patients. [2,3] This inappropriate use of antimicrobials has resulted in an increased incidence of adverse drug reactions and the emergence of antimicrobial resistance (AMR).[4]

For an effective and efficient health-care system rational use of drugs is imperative.[2] Prescription surveillance studies help us to develop and standardize antimicrobial prescribing guidelines to prevent the emergence of antimicrobial resistance.[4]

Antimicrobial agents are most commonly prescribed drugs in the obstetrics and gynecology (OBGY) department, for various surgical, and non-surgical indications.[5,6] But fewer antimicrobial utilization studies have been conducted in

the indoor patients of the OBGY department therefore the following study has been undertaken.[7]

METHODS

Study type

Study type was of prospective observational study.

Study place

Study conducted at MIMER medical college and BSTR hospital, Talegaon Pune.

Study period

Study carried out from April 2023 to June 2023.

Selection criteria

Newly admitted patients in the OBGY ward receiving antimicrobial treatment during their hospital were included in the study.

Procedure

Following data was recorded from the case sheets to the case record forms. Patient's demographics, admission and discharge dates, diagnosis, name of the surgical procedure, name of the antimicrobials and other concomitant drugs prescribed during the hospital stay their dosage form, dose, frequency and duration.

WHO indicators were used to find out the prescribing patterns.[8]

Core indicators: i) Average no. of drugs per encounter, ii) % of drugs prescribed by generic name, iii) % of encounters with an injection prescribed and iv) % of drugs prescribed from EDL-India, WHO

Economic indicator

Average cost of the drug treatment and percentage of drug cost spent on antimicrobials, note-medguideindia.com was referred for the prices of the drug.

NLEMI 2022 was referred to know the percentage of drugs prescribed from them.[9]

Rationality of antimicrobials used in terms of choice, dose, duration and frequency was evaluated in accordance with the ICMR Treatment Guidelines for Antimicrobial Use in Common Syndromes, 2nd edition, 2019. [10]

Ethical approval

The present study was approved by the institutional ethics committee (IEC/MIMER/2023/INST/861).

Sample size

$N=Z\alpha/22\ (p\times q)/12$

$Z\ \alpha/2 = 1.96$ at $\alpha = 0.05$, $p = 85.18$, $q = 100-p$, $l = 10\%$ of p.

$N=1.96\times1.96(85.18\times14.82)/8.5\times8.5=68.$

RESULTS

Vaginal delivery accounted for 62.5% of cases for the patients admitted to the obstetrics ward (Figure 1).

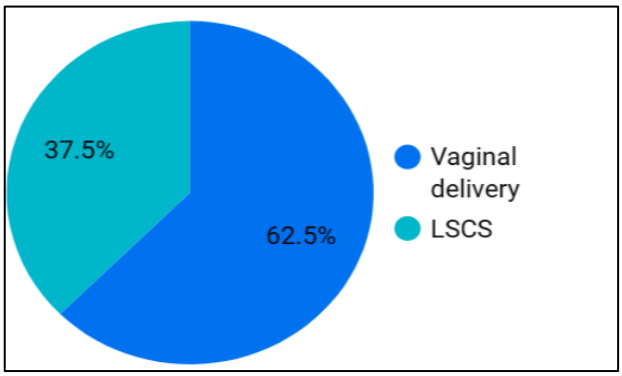

Figure 1: Type of delivery.

Table 1: WHO core indicators and Economic indicators.

Variables	Obstetrics, (n=48)	Gynecology, (n=20)
WHO core indicators		
Avg. no. of drugs per encounter	3.22	4.31
% of drugs prescribed by their generic name	37.11	39.42
% of encounters with an injection prescribed	26.85	34.14
% of drugs prescribed from EDL-India, WHO	100	100
Economic indicators		
Avg. drug cost per patient	274.32 rupees	314.05 rupees
% of avg. cost of antimicrobial treatment per patient	28.23	35.24

WHO core and economic indicators were slightly higher for patients admitted in the obstetrics ward as compared to the gynecology ward (Table 1).

Table 2: Antimicrobial utilization pattern.

Variables	Obstetrics, (n=48)	Gynecology, (n=20)
Avg. no. of antimicrobials	1.76	1.82
Avg. duration of antimicrobial treatment	5-7 days	7 days
Commonly prescribed antimicrobial	Cefotaxime	Cefotaxime

The average number of antimicrobials and average duration of antimicrobial treatment was also noted to be slightly higher in the gynecology ward as compared to the obstetrics ward (Table 2).

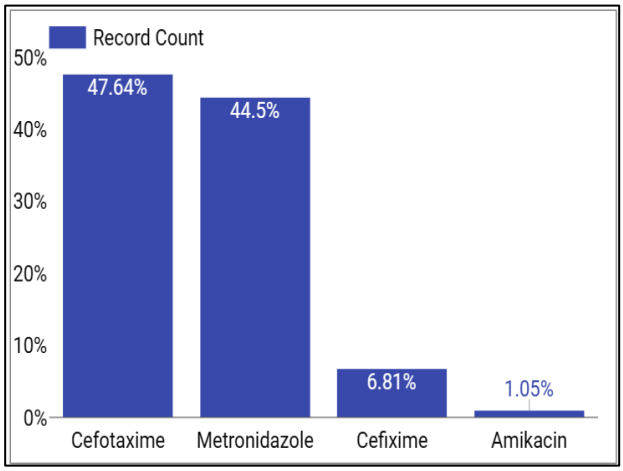

Figure 2: Antimicrobials commonly prescribed in obstetrics and gynecology ward.

Cefotaxime (47.64%) was the most commonly prescribed antimicrobial whereas amikacin was the least prescribed antimicrobial (1.05%) in the obstetrics and gynecology ward (Figure 2).

DISCUSSION

In the year 2019, in India AMR was responsible for 1.27 million deaths making India the 145th highest age-standardized mortality associated with AMR across 204 countries.[11] Rural tertiary care hospital settings though are successful in providing healthcare services across various sectors of the society but have to confront the obstacle of AMR.[12] To determine the severity of AMR evaluation of antimicrobial utilization practices is of utmost importance.[13,14] Prescription surveillance studies must be carried out regularly across various healthcare sectors.[15] In such awakening, we undertook this study to analyze the antimicrobial utilization pattern in the OBGY ward of a tertiary care hospital of a rural region.

In the present study average number of drugs prescribed for a patient admitted in the obstetrics and gynecology ward were 3.22 and 4.31 respectively (Table 1). These findings were also similar to those evaluated by Raja et al (3.7).[16] It was noticed that 37.11% and 39.42% of the drugs were prescribed by their generic names in obstetrics and gynecology ward respectively and WHO recommends to prescribe all drugs by their generic names (Table 1).[17] But the presence of various yojana's in the tertiary care hospital facilitates cost of branded drug treatment to be borne by the hospital authorities themselves. 26.85% and 34.14% of patients received drugs through the parenteral route in obstetrics and gynecology ward respectively which was found to be lower than the study conducted by Khan (73.10%) but the conducted by them included only post-operative patients (Table 1). Complete adherence to the NLEMI 2022 was identified for all the drugs including antimicrobials required for the treatment of the patients admitted in the obstetrics and gynecology ward of our tertiary care hospital.[9] Average number of antimicrobial agents in the obstetrics and gynecology ward were 1.76 and 1.82 respectively which was in accordance with the ICMR guidelines (Table 2).[10] The longer duration of the antimicrobial treatment for the patients admitted to our tertiary care hospital could be explained by the fact that most of the cases are referred from the periphery including unregistered cases with no prior history of antenatal care. This significantly includes cases with iron deficiency anemia, nutritional anemia with hypoproteinemia, unknown group B *Streptococcus status*, and prevalent unhygienic practices (Table 2).[18] ICMR guidelines recommend the usage of 2nd generation cephalosporin but the most commonly prescribed antimicrobial was cefotaxime, a 3rd generation cephalosporin which was in accordance with the hospital antibiotic policy (Figure 2).

Limitations

Smaller sample size, relatively larger sample size is need to be taken to further evaluate the antimicrobial utilization pattern.

CONCLUSION

For rational use of antimicrobials, to reduce their treatment duration and the cost borne by the hospital administration it is recommended to refer to the ICMR guidelines 2019. Prescribing antimicrobials by their generic names is imperative as it would significantly restrict the distribution of drugs at a price higher than that fixed by the government and would permit more drugs to be brought under the purview of drug price control order (DPCO) and national pharmaceutical pricing authority (NPPA). The present study also emphasizes the need for a clinical pharmacologist to work in collaboration with the clinicians for a more evidence based personalized therapeutic approach to successfully tackle the situation of AMR.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Tefera BB, Getachew M, Kebede B. Evaluation of drug prescription pattern using World Health Organization prescribing indicators in public health facilities found in Ethiopia: systematic reviews and meta-analysis. J Pharm Policy Pract. 2021;14(1):31.
2. Nk S, Bharath RKC, Shrinivasa BU, Shreyas K, Pratheeksha NM, Manali RL. Study on Prescribing Pattern of Drugs among Outpatients with Bipolar Affective Disorder in a Tertiary Care Teaching Hospital. J Young Pharm. 2022;14(2):203-6.
3. Shaikh Q, Samreen S, Anum R, Aneela H, Shameem B, Aamir SK, et al. WHO Point Prevalence Survey to Describe the Use of Antimicrobials at a Tertiary Care Center in Pakistan: A Situation Analysis for Establishing an Antimicrobial Stewardship Program. Antibiotics. 2022;11(11):1555.
4. Shanmugapriya S, Saravanan T, Rajee SS, Venkatrajan R, Thomas P. Drug prescription pattern of outpatients in a tertiary care teaching hospital in Tamil Nadu. Perspect. Clin. Res. 2018;9(1):133
5. Yimenu DK, Emam A, Elemineh E, Atalay W. Assessment of Antibiotic Prescribing Patterns at Outpatient Pharmacy Using World Health Organization Prescribing Indicators. J Prim Care Community Health. 2019;10:215013271988694.
6. Machowska A, Landstedt K, Stålsby Lundborg C, Sharma M. Antibiotic Prescribing to Patients with Infectious and Non-Infectious Indications Admitted to Obstetrics and Gynaecology Departments in Two Tertiary Care Hospitals in Central India. Antibiotics. 2020;9(8):464.
7. Shourya R, Sharma M, Gehlot A. A descriptive observational study of antibiotic prescription pattern in postoperative patients of obstetrics and gynecology ward at a tertiary care hospital. Eur J Pharmaceutical Med Res. 2022;9(2):607-12.
8. World Health Organization. How to investigate drug use in health facilities. Selected drug use indicators. Available at: https://www.who.int/publications/i/item/who-dap-93.1. Accessed on 12th January 2024.
9. Government of India and Ministry of Health and Family Welfare. National List of Essential Medicines. 2022.
10. Treatment Guidelines for Antimicrobial Use in Common Syndromes 2nd Edition. 2019.
11. The burden of antimicrobial resistance (AMR) in India. Available at: https://www.healthdata.org/sites/default/files/files/Projects/GRAM/India_0.pdf. Accessed on 12 January, 2024.
12. Sharma A, Thakur N, Thakur A, Chauhan A, Babrah H. The Challenge of Antimicrobial Resistance in the Indian Healthcare System. Cureus. 2023;15(7):e42231.
13. Kasthuri A. Challenges to Healthcare in India-The Five A's. Indian Assoc. Prev Soc Med. 2018;43(3):141-3.
14. Dereje B, Yibabie S, Keno Z, Megersa, A. Antibiotic utilization pattern in treatment of acute diarrheal diseases: the case of Hiwot Fana Specialized University Hospital, Harar, Ethiopia. J Pharm Policy Pract. 2023;16(1):62.
15. Mugada V, Mahato V, Andhavaram D, Vajhala SM. Evaluation of Prescribing Patterns of Antibiotics Using Selected Indicators for Antimicrobial Use in Hospitals and the Access, Watch, Reserve (AWaRe) Classification by the World Health Organization. Turk J Pharm Sci. 2021;18:282-8.
16. Raja D, Sasithra S. Assessment of the Antibiotics and Other Drug Prescribing Patterns in a Primary Health Care Setting. J Commun Dis. 2021;53(4):70-75.
17. Chem ED, Anong DN, Akoachere JFKT. Prescribing patterns and associated factors of antibiotic prescription in primary health care facilities of Kumbo East and Kumbo West Health Districts, North West Cameroon. PLOS One. 2018;13:e0193353s.
18. Grant J, Saux NL, Members of the Antimicrobial Stewardship and Resistance Committee (ASRC) of the Association of Medical Microbiology and Infectious Disease (AMMI) Canada. Duration of antibiotic therapy for common infections. Med Microbiol Infect Dis Can. 2021;6181-97.

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