Original article:

Prescribing Pattern of Antimicrobial Agents in Patients Suffering From Pelvic Inflammatory Disease in a Tertiary Care Teaching Hospital

Yogendra Kumar Dwivedi

Assistant Professor, Department of Pharmacology, National Institute of Medical Sciences and Research, Jaipur.
Corresponding Author: Dr. Yogendra Kumar Dwivedi, Assistant Professor, Department of Pharmacology, National Institute of Medical Sciences and Research, Jaipur

Abstract

Background: Pelvic inflammatory disease (PID) is a major health concern leading to profound gynecological morbidity among women in reproductive age group. Therefore this study was undertaken to analyze the prescription pattern of Antimicrobial Agents in patients suffering from Pelvic Inflammatory Diseases.

Methodology: This Prospective study was conducted at the Department of Pharmacology and Gynecology & Obstetrics of National Institute of Medical Sciences and Research, Jaipur for a period of one year during February 2012 to January 2013. A total of 442 prescriptions of clinically diagnosed PID cases from Outpatient Department (OPD) and Inpatient Department (IPD) were collected and analyzed in the department of Pharmacology on the basis of Drug utilization WHO indicators.

Results: Average number of AMAs per prescription was 2.3. Majority of patients were prescribed Antifungals (n=237, P=25.90%) followed by Nitroimidazoles (n=184, P=20.10%), Fluoroquinolones (n=182, P=19.89%), Doxycycline (n=166, P=18.14%), and least prescribed was Aminoglycoside and Urinary antiseptics (n=4, P=4.04%).

Conclusion: There was minimal difference between defined recommendations in standard treatment guidelines and the clinical use of antimicrobial agents. The only lacking part of this study was lesser use of generic drugs.

Keywords: Prescribing Pattern, Antimicrobial Agents, Pelvic Inflammatory Disease.

Introduction

Pelvic inflammatory disease (PID) constitute the Upper reproductive tract infection in women and a major health concern leading to profound gynecological morbidity among women in reproductive age group with impact on individual women, their families and communities. These infections entail a heavy toll on women, if untreated they can cause long-term complications, such as tubal infertility, ectopic pregnancy, chronic pelvic pain and abortions (1). World Health Organization estimates that each year there are over 340 million new cases of FRTIs in which 75-85% occur in developing countries. In India alone, 40 million new cases emerge each year (2). At presentation, women with PID may range from asymptomatic to seriously ill.

The most common presenting complaint is lower abdominal pain.PID is initiated by infection that ascends from the vagina and cervix causing endometritis, salpingitis, parametritis, oophoritis, tuboovarian abscess and pelvic peritonitis.

As far as the clinical diagnosis is concerned, following features are suggestive of a diagnosis of PID (3, 4, 5):

Lower abdominal pain (usually the most prominent symptom).

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Dyspareunia – caused by pelvic masses prolapsed in the pouch of Douglas are more common complaints.

Menorrhagia, polymenorrhagia,congestive dysmenorrhoea.

Postcoital or intermenstrual bleeding.

Dysuria (pelvic inflammatory disease canoccur with concurrent urethral chlamydialInfection).

Antibiotics are the most frequently prescribed drugs in PIDs. Programs designed to encourage appropriate antibiotic prescriptions in health care institutions are an important element in quality of care, infection control and cost control (6,7). The irrational prescription of antimicrobial agents leads to Resistance, means antibiotics, which were highly effective earlier, now no more active against the bacteria. The improper use of antibiotics is the main culprit for causing this health hazard. This is the reason drug utilization studies are carried out to aware the doctors what they are doing and what they have to do. The study of prescribing patterns seeks to monitor, evaluate and suggest modifications in practitioners' prescribing habits so as to make medical care rational and cost effective.

Inappropriate prescription increases the cost of medical treatment and increases morbidity and mortality. The impact of irrational prescription of drugs also leads to an increase in the incidence of adverse drug events and the emergence of drug resistance. Prescribing drugs is an essential skill, not only it reflects the physician's knowledge of pharmacology and pathophysiology but also his/her skill in diagnosis and attitude towards selecting the most appropriate treatment. The rational prescribing skills of clinicians can be assessed by conducting periodic prescription audits. There is an urgent need to ensure that patients are always given evidence-based, cost-effective and rational treatments.

Accordingly, in view of the aforementioned observations, this prospective study envisages compilation, analysis of the pattern, trend, rationality and frequency of the use of drugs in the treatment of PIDs, with emphasis on available treatment regimens inclusive of primary and adjunctive therapy.

Materials & Methods

This prospective study was done by Department of Pharmacology and Gynecology & Obstetrics of National Institute of Medical Sciences and Research, Jaipur for a period of one year during February 2012 to January 2013.

The female patients aged 15-60 years suffering from Pelvic Inflammatory disease attending Obs/Gynecology department of Rama Medical College, Hospital and Research Centre, Hapur were enrolled who were on antimicrobials and satisfy the inclusion and exclusion criteria. The patient data obtained were analyzed for drug utilization studies by the department of Pharmacology, National Institute of Medical Sciences and Research, Jaipur. The study was conducted on clinically diagnosed (both acute and chronic) PID patients. Study was approved from Institutional Ethical Committee.

Rationality

A. The therapy was considered rational if the antimicrobial use and its route of administration, dose, frequency and duration of use were considered appropriate for infection.

B. Therapy was considered irrational if the antimicrobial was used without indication, prophylaxis under circumstances of unproven efficacy or by clearly inappropriate route, dose or preparation for that indication.

It is a prospective study and is based on medication utilization form, which has been designed on the basis of a WHO format.

WHO COREINDICATORS

Data will be further analyzed as under:

1. Age and sex wise distribution.

2. Average number of drugs per encounter.

3. Prescribing Percentage of encounters with an antibiotic prescribed.

4. Percentage of encounters with an injection prescribed.

5. Percentage of drugs prescribed by generic name.

6. Percentage of drug prescribed from Essential drug list formulary

Results

A total of 442 prescriptions were analyzed during the 12 months study period. The maximum numbers of female patients suffering from Chronic PID were from the age group of 21-40 years (n=235), and least of the patients fall under age group of 61-80 yrs. (n=45) (Table-1).

The total no. of drugs which were prescribed to the patient was 1175. Each patient on an average was prescribed 2.6 drugs per prescription. Out of 1175 of total drugs, 915 were antimicrobial agents.

During the study, it was observed that the most commonly prescribed Antimicrobial agents were Antifungals (n=237, P=25.90%) followed by

Nitroimidazoles (n=184, P=20.10%), Fluoroquinolones (n=182, P=19.89%), Doxycyclines (n=166, P=18.14%), and Aminoglycosides. Urinary antiseptics were the least prescribed class (n=4, P=4.04%). Individually, most commonly used agents of theseis Doxycycline,Clotrimazole+ Tinidazole followed by Metronidazole, combination of Ofloxacin + Ornidazole, Fluconazole + Ornidazole and least prescribed was Nitrofurantoin(Table-2).

In the concomitant medications, Proton Pump Inhibitors were mostly prescribed (n=118, P=45.38%) followed by NSAIDs (n=75, P=28.84%), Sedatives were the least prescribed class (n=67, P=25.76%). (Table- 3)

Out of Total 915antimicrobials prescribed ,n=806 (88.08%) were given orally and n=106 (11.58%) were parenterally administered (Table 4). There was a high prevalence of empiric treatment with orally administered antibiotics in this study. The average no. of Antimicrobial agents prescribed per patient was found to be 2.3. It was observed that out of 915 drugs which were prescribed to the patient none of drugs were in generic form. All drugs were prescribed from Essential Drug List. (Table-4)

Table1: Age wise distribution of PID patient n=442:

Age(yrs)	Total No. of female patients	Percentage
15-30	235	53.16
31-45	162	36.65
46-60	45	10.18
Total	**442**	**100**

Table: 2 Antimicrobials prescribed in gynaecology department

Class	Antibacterial agents	No. of agents prescribed	Consumption %
Fluoroquinolones	Ofloxacin + Ornidazole	109	11.91
	Ofloxacin + Cefixime	73	7.9
	Total	182	**19.89**
Broad Spectrum antibiotics	Doxycycline	166	**18.14**
Antifungals	Clotrimazole+ Tinidazole	146	15.95
	Fluconazole + Ornidazole	91	9.94
	Total	237	**25.90**
Aminoglycosides	Amikacin	36	3.93
	Gentamicin	73	7.97
	Total	109	**11.91**
Nitroimidazoles	Metronidazole	110	12.02
	Ornidazole	74	8.08
	Total	184	**20.10**
Urinary antiseptics	Nitrofurantoin	37	**4.04**
	Grand Total	**915**	**100**

Table 3: Concomitant drugs used:

Class	Generic Name	No. of agents prescribed	Consumption %
Proton Pump Inhibitors	Pantaprazole	118	45.38
Nsaids	Serratiopeptidase+diclofenac	75	28.84
Sedatives	Alprazolam	67	25.76
Total		**260**	**100**

Table: 4 Prevalence & indication of antimicrobials

Indicators	No. of Patients
1. Average number of drugs per prescription	2.6
2. Average number of antibiotics per prescription (encounter)	2.3
3. Percentage of drugs prescribed by generic name;	
4. Number of encounters resulting in prescription of an injection	0
5. Percentage of drugs prescribed from EML	0
	100
Prevalence of use	
1. Total No. of Prescription	442
2. Total No. of AMAs prescribed	915
3. Mean No. of AMAS	2.0
Routes of Drug administration Antibiotics (915)	
1. Oral	806
2. Parenteral (i.v)	109
Evaluation of antimicrobial therapy	
1. Rational	**74%**
2. Irrational	**26%**

Discussion

Antibiotics were once considered 'miracle drugs' and have been used for decades to effectively treat a variety of bacterial infections. Unfortunately, widespread use and misuse worldwide have led to the emergence of 'super bugs' and other drug-resistant bacteria.

Unnecessary use of antibiotics has also given rise to an increased risk of side effects, high costs and effects requiring medical attention.

Quality of life can be improved by enhancing standards of medical treatment at all levels of the health care delivery system. Setting standards and assessing the quality of care through performance review should become part of everyday clinical practice. The study of prescribing patterns seeks to monitor, evaluate and suggest modifications in practitioners' prescribing habits so as to make medical care rational and cost effective.

In our Study, the most commonly prescribed Antimicrobial agents were Antifungals (n=237, P=25.90%) followed by Nitroimidazoles (n=184, P=20.10%), Fluoroquinolones (n=182, P=19.89%), Doxycyclines (n=166, P=18.14%), Aminoglycoside. Urinary antiseptics were the least prescribed class (n=4, P=4.04%). Individually, most commonly used agents of these is Doxycycline, Clotrimazole + Tinidazole followed by Metronidazole, combination of Ofloxacin + Ornidazole, Fluconazole + Ornidazole and least prescribed was Nitrofurantoin (Table-2).In the concomitant medications Proton pump inhibitor drugs were mostly prescribed followed by NSAIDs.

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In the current study it was found that Gentamicin was prescribed more in comparison to Amikacin in patients requiring hospitalization with suspected or proven urinary tract infection.

The findings of this study suggest that there was minimal difference between defined recommendations in standard treatment guidelines and the clinical use of antimicrobial agents. Establishing an appropriate and restrictive guide for antibiotic was therefore be a high aim and priority to this hospital.

Conclusion

The present study concludes that: treatment approach was empirical without objective criteria of infection and most of these drugs were prescribed using brand names.

Most of the antimicrobials were administered orally and parenteral administration was less preferred. This may be reflective of an improvement in this aspect of prescribing pattern as opposed to previous excessive use of injections by some physicians who hold the erroneous belief that injections are more effective and offer better patient satisfaction. The other positive aspect of this study was average no. of antibiotics prescribed per prescription is lesser than other studies. This minimizes the habit of polypharmacy and drug-drug interactions.

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