

Prescribing Pattern of Antimicrobial Agents in Pelvic Inflammatory Disease – A Hospital Based Prospective Study

Devesh Gupta¹, Arvind Kumar Gupta^{2*}

¹Assistant Professor; ²Professor, Dept. of Pharmacology, World College of Medical Science and Research, Jhajjar, Haryana

ABSTRACT

Background: Pelvic inflammatory diseases (PID) is a noteworthy wellbeing concern prompting significant gynecological grimness among ladies in conceptive age gathering. Along these lines this review was attempted to dissect the medicine example of Antimicrobial Agents in patients experiencing Pelvic Inflammatory Diseases. **Methods:** A cross-sectional study was conducted at the Department of Gynecology & Obstetrics of World College of Medical Science and Research, Jhajjar, Haryana; for a period of 5 months during December 2016 to April 2017. A total of 210 prescriptions of clinically diagnosed PID cases from Outpatient Department (OPD) and Inpatient Department (IPD) were collected and analyzed in the department of Pharmacology based on Drug utilization WHO indicators. **Results:** Average number of AMAs per prescription was 2.26. Majority of patients prescribed were Antifungals (n=112, P=23.57%) followed by Fluoroquinolones (n=102, P=21.47%), Aminoglycosides (19.36%), Nitroimidazoles (16.0 %) and Doxycyclines (P=15.78%). Urinary antiseptics were the least prescribed class (3.78%). Individually, most commonly used agents of these is Clotrimazole + Tinidazole followed by Doxycycline and least prescribed was Nitrofurantoin. **Conclusions:** 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.

Key words: Pelvic Inflammatory diseases, Antimicrobial agent, Drug utilization studies.

INTRODUCTION

Pelvic inflammatory disease (PID) constitute the Upper conceptive tract contamination in ladies and a noteworthy wellbeing concern prompting significant gynecological horribleness among ladies in reproductive age group with effect on individual ladies, their families and groups. 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^[3-5]:

- Lower abdominal pain (usually the most prominent symptom).
- 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 can occur with concurrent urethral chlamydial Infection).

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Corresponding Author

Dr. Arvind Kumar Gupta, Professor, Dept. of Pharmacology, World College of Medical Science and Research, Jhajjar, Haryana.

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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 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.

METHODS

This prospective study was done by Dept. of Pharmacology, World College of Medical Science and Research, Jhajjar, Haryana in collaboration with the department of Obs/Gynaecology.

The female patients aged 15-60 years suffering from Pelvic Inflammatory disease attending Obs/Gynecology department of World College of Medical Science and Research, Jhajjar 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, World College of Medical Science and Research, Jhajjar.

The study was conducted for a period of 5 months from Dec 2016 – April 2017 on clinically diagnosed (both acute and chronic) PID patients.

Data from Gynaecology & Obstetrics department both OPD and IPD were gathered randomly twice weekly and the detailed records of demographic, clinical features & treatment instructions were noted in 'Case Record Form' after getting explained consent from the patients. Later, whole data send to Department of Pharmacology via email for further evaluation.

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 based on a WHO format.

WHO CORE INDICATORS

Data was 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 210 prescriptions were analyzed during the 5 months' study period. The maximum numbers of female patients suffering from Chronic PID were from the age group of 21-40 years (n=110), and least of the patients fall under age group of 61-80 yrs. (n=18) (Table-1).

The total no. of drugs which were prescribed to the patient was 635. Each patient on an average was prescribed 3.0 drugs per prescription. Out of 635 of total drugs, 475 were antimicrobial agents and rest 160 were concomitant drugs.

During the study, it was observed that the most commonly prescribed Antimicrobial agents were Antifungals (n=112, P=23.57%) followed by Fluoroquinolones (n=102, P=21.47%), Aminoglycosides (19.36%), Nitroimidazoles (16.0 %) and Doxycyclines (P=15.78%). Urinary antiseptics were the least prescribed class (3.78%). Individually, most commonly used agents of these is Clotrimazole + Tinidazole followed by Doxycycline and least prescribed was Nitrofurantoin (Table-2).

In the concomitant medications, Proton Pump Inhibitors were mostly prescribed (P=46.87%) followed by NSAIDs (31.25%), Sedatives were the least prescribed class (n=67, P=21.87%). (Table- 3)

Out of Total 475 antimicrobials prescribed, n=410 were given orally and n=65 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 2.26. It was observed that out of 475 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=210:

Age (yrs)	Total No. of female patients	Percentage
21-40	110	52.38
41-60	82	39.04
61-80	18	8.57
Total	210	100

Table: 2 Antimicrobials prescribed in Gynaecology department

Class	Antibacterial agents	No. of agents prescribed	Consumption %
Fluoroquinolones	Ofloxacin + Ornidazole	77	16.21
	Ofloxacin + Cefixime	25	5.26
	Total	102	21.47
Broad Spectrum antibiotics	Doxycycline	75	15.78
	Clotrimazole + Tinidazole	78	16.42
Antifungals	Fluconazole + Ornidazole	34	7.15
	Total	112	23.57
Aminoglycosides	Amikacin	32	6.73
	Gentamicin	60	12.63
	Total	92	19.36
Nitroimidazoles	Metronidazole	48	10.10
	Ornidazole	27	5.68
	Total	76	16.00
Urinary antiseptics	Nitrofurantoin	18	3.78
	Grand Total	475	100

Table 3: Concomitant drugs used:

Class	Generic Name	No. of agents prescribed	Consumption %
Proton Pump Inhibitors	Pantaprazole	75	46.87
Nsaids	Serratiopeptidase + diclofenac	50	31.25
Sedatives	Alprazolam	35	21.87
Total		160	100

Table: 4 Prevalence & indication of antimicrobials

Indicators	No. of Patients
1. Average number of drugs per prescription	3.0
2. Average number of antibiotics per prescription (encounter)	2.26
3. Percentage of drugs prescribed by generic name;	0
4. Number of encounters resulting in prescription of an injection	0
5. Percentage of drugs prescribed from EML	100
Prevalence of use	
1. Total No. of Prescription	210
2. Total No. of AMAs prescribed	475
3. Mean No. of AMAS	2.26
Routes of Drug Administration Antibiotics	
1. Oral	410
2. Parenteral (i.v)	65
Evaluation of antimicrobial therapy	
1. Rational	78%
2. Irrational	22%

DISCUSSION

Antibiotics were once considered 'supernatural occurrence medications' and have been utilized for a considerable length of time to viably treat an assortment of bacterial contaminations. Shockingly, far reaching use and abuse worldwide have prompted the rise of 'super bugs' and other medication safe microbes.

Pointless utilization of anti-microbial agents has additionally offered ascend to an expanded danger of reactions, high expenses and impacts requiring restorative consideration.

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 to make medical care rational and cost effective.

In our Study, the most commonly prescribed Antimicrobial agents were Antifungals (n=112, P=23.57%) followed by Fluoroquinolones (n=102, P=21.47%), Aminoglycosides (19.36%), Nitroimidazoles (16.0 %) and Doxycyclines (P=15.78%). Urinary antiseptics were the least prescribed class (3.78%). Individually, most commonly used agents of these is Clotrimazole + Tinidazole followed by Doxycycline and least prescribed was Nitrofurantoin (Table-2).

In the concomitant medications, Proton pump inhibitor drugs were mostly prescribed followed by NSAIDs. These findings are similar to study conducted by Sharma S et al, 2013^[8], whereas our results contradict the study conducted by Basu J et al. 2015 where number of antimicrobials prescribed was 3.0.^[9]

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. As previous study showed good results by Saini et al, where the researchers found good response to gentamicin to provide coverage against gram negative aerobic bacilli.^[10]

Use of Doxycycline with metronidazole was higher in our study to provide coverage against Chlamydia trachomatis and anaerobes, respectively as recommended by Saini et al recommended doxycycline against C. trachomatis in their study.^[10]

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 presumes that: treatment approach was observational without target criteria of disease and the vast majority of these medications were endorsed utilizing 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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