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ASSESSMENT OF PRESCRIBING PATTERN OF ANTIMICROBIAL AND ANALGESIC DRUGS IN POST OPERATIVE WARD OF TERTIARY CARE HOSPITAL IN CHITRADURGA

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ABSTRACT

Antimicrobials and analgesic are required for the surgical care. Antimicrobial are designed to inhibit/kill the infecting organism to have minimal effect on the recipient. Analgesic are the drugs that selectively relives pain by acting in the CNS or on peripheral pain mechanism, without significantly altering consciousness. The present study aimed for prescribing pattern of antimicrobial and analgesic usage in post operative ward. **Objective:**

- To assess the prescribing pattern and different class of antimicrobial and analgesic used in post operative ward.
- To assess the rational use of antimicrobial according to national antimicrobial guidelines.

Materials and Methods: A prospective observational study which was carried out for a period of six month at post operative ward of tertiary care hospital. The data was collected in suitably pre designed data collection form. **Results:** A total of 200 subjects were included as per study criteria. Among 200 subjects 121 (60.5%) were male and 79 (39.5%) were female. Maximum number of subjects, 45.5 % were found between 31-50 years. Prescription pattern of different class of antimicrobials shows that Third generation cephalosporin were commonly prescribed. Prescription pattern of different class of analgesic shows that NSAIDs were commonly prescribed. Irrationality was not found. **Conclusion:** The study concluded that in different class of antimicrobials cephalosporin, Third generation cephalosporin (Ceftriaxone). and in

different class of analgesic NSAIDs, (Diclofenac sodium) are mostly prescribed in post operative ward. Antimicrobial prescription was rational according to Treatment Guidelines for Antimicrobial Use in Common Syndromes.

KEYWORDS: Prescription pattern, Antimicrobials, Analgesic, Post operative ward.

INTRODUCTION

Infection of a wound is characterized as an invasion of organism through tissue following breakdown of local and systematic host defences. The most common problematic issue of wound healing is wound infection. Post operative wound infection has been a problem since surgery was first used as a therapy modality.[1]

An SSI is a surgical site infection that develops at or close to the surgical site within 30daysof the operation. In low- and middle-income countries SSI were common often hospital acquired infections (HAI). Globally, the frequency of SSI ranges from 2.5% to 41.9%.[2] The recovery from surgery involves the return of normal physiological processes. Health workers should priorities infection prevention because infection increases patient mortality and morbidity.[3]

Antimicrobials are the agents which are used to eradicate or edge the growth of microorganism. The underlying reason for infectious diseases is due to microbes. The impact of drug molecules on cell structure, the impact of metabolic processes that are not typically present in the host body, or the attraction of microorganism to the biomolecules are the basic mechanisms by which antimicrobials destroy microbes. Antibiotics are used in surgery to treat pre-existing infections and prevent infections after surgery.[4]

Administration of antibiotics in patients on surgical site infections are;

- To reduce the occurrence of SSI
- Precise application of antibiotics to warrant the effectiveness
- Safeguard the normal flora of the patient in the use of antibiotic
- Avert the change of host defense mechanism.

Globally, 50% to 75% of people suffer from post operative pain.[5] Pain is an uncomfortable feeling that can be caused by an accident, illness or emotional disturbance and can vary in severity. The ongoing effort to make pain the fifth vital sign in medical treatment has

highlighted how important it is to analyse pain in the same way that you would analyse temperature, pulse, and blood pressure. Pain is always subjective. According to the International Association for the study of pain have acknowledged proper pain relief is a human right to all.[6] As a result, adequate pain management is crucial during the post operative period.[7]

Analgesic are the drugs which relive pain without altering sensory function or blocking nerve impulse conduction.[8] An Analgesic dosage that works well for one patient may have tolerable side effects and provide insufficient pain relief for another.[7]

One of the most significant therapeutic exchanges between a doctor and patient is prescription. Due to the limited resources available for healthcare and medications in developing nations, it is crucial to rationally prescribe medications. If done carelessly, irrational prescribing could pose a professional and legal risk to the prescriber.[3] As per WHO rational use of drugs is "patient receiving medicine appropriate for their clinical needs, in doses that meet their individual requirement, for an adequate period of time and at the lowest cost to them and their community".[8] Prescription is used to evaluate and suggest the modification in prescribing practice to make medical care rational.[3]

Considering all the above facts there is a need to screen for the usage of antimicrobial and analgesic in post operative ward and to optimize the rational use of antimicrobial to increase quality of life of the patients. Therefore, the current study is carried and figures out how antimicrobials and analgesic are prescribed, and to assess the different classes of antimicrobial used in post operative ward of tertiary care hospital Chitradurga.

METHODOLOGY

Study Design: A prospective-observational study.

Study Site: Tertiary care hospital Chitradurga

Study Duration: The study was conducted over a period of six months.

INCLUSION CRITERIA

- Patients admitted to post operative ward.
- Both male and female patients in the age group of 18 - 60years are included in the study.

EXCLUSION CRITERIA

- Patient less than 18 years of age.
- Patients with psychiatric condition

ETHICAL APPROVAL

- The study was approved by the Institutional Ethical Committee of Sri Jagadguru Mallikarjuna Murugarajedra College of Pharmacy, Chitradurga.
- Ref: No. 627/2022-23

SOURCE OF DATA

- A data was collected in a suitably pre designed data collection form from post operative ward of tertiary care hospital.

STUDY PROCEDURE

- A six-month prospective observational study was carried out in selected post operative ward patient of tertiary care hospital. The study was initiated after receiving the approval from the Institutional Ethics Committee (IEC). Informed consent form was obtained from all the participants prior to enrollment in the study. The data was collected from the case sheets of post operative patients using a self-designed data collection form and evaluated for rationality, prescribing pattern and use of different classes of Antimicrobial and Analgesic drugs. Confidentiality of collected data is maintained.

STATISTICAL ANALYSIS

- The data collected was analysed by using IBM SPSS data analysis version 25 statistical software. The rationality of prescription was assessed by using one sample student t test. Descriptive statistics were applied to obtain standard deviation and frequency.

RESULTS

Epidemologic Profile

1. Age Distribution

Among 200 participants, 71 (35.5%) participants belong to 18-30 years, 91 (45.5%) participants belong to 31-50 years, 38 (19%) participants belong to age group of 51-60 years. The average age group of participants in the study were of 31-50 years shown in table No. 1

Table No. 1: Age distribution.

Age	Frequency	Percentage
18-30	71	35.5
31-50	91	45.5
51-60	38	19

2. Gender wise distribution

In The study population of 200 subjects the male population was 121 (60.5%) and female population was 79 (39.5%) shown in table No. 2.

Table No. 2: Gender distributions of participants.

Gender	Frequency	Percentage
Female	79	39.5
Male	121	60.5
Total	200	100.0

1. Piperacillin (Penicillin Antibiotic)

Among 200 patients 42 (21%) patients were prescribed with piperacillin antibiotic

And 158 (79%) patients were not prescribed with piperacillin antibiotic shown in table No. 3

Table No. 3: Distribution of piperacillin antibiotic.

Piperacillin (Penicillin antibiotic)	Frequency	Percent
No	158	79.0
Yes	42	21.0
Total	200	100.0

2. Ceftriaxone (Cephalosporin Antibiotic)

Out of 200 participants 174 (87%) were prescribed with ceftriaxone antibiotic and 26 (13%) were not prescribed with ceftriaxone antibiotic shown in table No. 4.

Table No. 4: Distribution of cephalosporin antibiotic.

Cephalosporin	Frequency	Percentage (%)
No	26	13.0
Yes	174	87.0
Total	200	100.0

3. Metronidazole (Nitroimidazole Antibiotic)

Among 200 patients 139 (69.5%) were prescribed with metronidazole antibiotic and 61(30.5%) were not prescribed with metronidazole antibiotic shown in table No .5

Table No. 5: Distribution of metronidazole antibiotic.

Metronidazole	Frequency	Percentage (%)
No	61	30.5
Yes	139	69.5
Total	200	100.0

4. Amikacin (Aminoglycoside Antibiotic)

In the study population of 200 patients 32 (16%) were prescribed with amikacin antibiotic and 168 (84%) were not prescribed with amikacin antibiotic shown in table No.6

Table No. 6: Distribution of amikacin (aminoglycoside) antibiotic.

Amikacin	Frequency	Percentage (%)
No	168	84
Yes	32	16
Total	200	100.0

5. Penicillin antibiotic

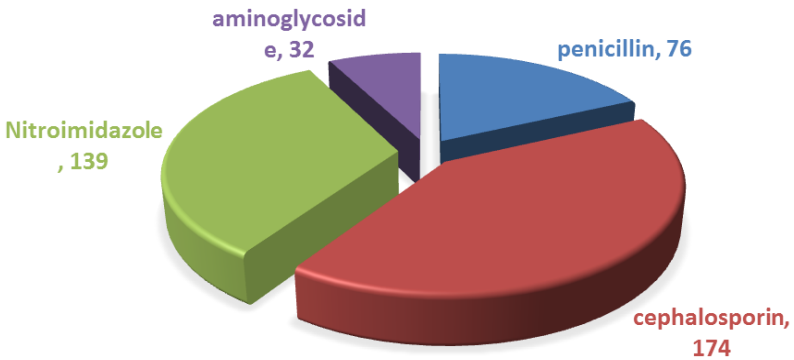
Among 200 patients 34 (17%) were prescribed with penicillin antibiotic and 166 (83%) were not prescribed with penicillin antibiotic shown in table No.7.

Table No. 7: Distribution of penicillin antibiotic.

Penicillin	Frequency	Percent
No	166	83.0
Yes	34	17.0
Total	200	100.0

6. Different antimicrobials prescribed

Among 200 patients, 421 antimicrobials were prescribed in which penicillin 76(18%), cephalosporin 174(49%), nitroimidazole 139(33%) and aminoglycoside 32(7%) were prescribed shown in figure No. 1



Percentage of analgesic prescribed

1. Diclofenac sodium (NSAIDs)

Among 200 participants 157 (78.5%) were prescribed with Diclofenac sodium analgesic and 43 (21.5%) were not prescribed with Diclofenac sodium analgesic shown in table No. 8

Table No. 8: Distribution of Diclofenac sodium analgesic.

Diclofenac sodium	Frequency	Percentage (%)
No	43	21.5
Yes	157	78.5
Total	200	100.0

2. Sumol (NSAIDs)

Out of 200 subjects 94 (47%) were prescribed with sumol analgesic and 106 (53%) were not prescribed with sumol analgesic shown in table No. 9.

Table No. 9: Distribution of sumol analgesic.

Sumol	Frequency	Percentage (%)
No	106	53.0
Yes	94	47.0
Total	200	100.0

3. Tramadol (Opioid)

Among 200 subjects 98 (49%) were prescribed with tramadol analgesic and 102 (51%) were not prescribed with tramadol analgesic shown in table No. 10

Table No. 10: Distribution of Tramadol analgesic.

Tramadol	Frequency	Percentage (%)
No	102	51.0
Yes	98	49.0
Total	200	100.0

4. Zerodol (NSAIDs)

Out of 200 participants 81 (40.5%) were prescribed with zerodol analgesic and 119 (59.5%) were not prescribed with zerodol analgesic shown in table No. 11

Table No. 11: Distribution of Zerodol analgesic.

Zerodol	Frequency	Percentage (%)
No	119	59.5
Yes	81	40.5
Total	200	100.0

5. Different class of Analgesic prescribed

In the study population of 200 patients, 438 analgesics were prescribed in which NSAIDs 332 (77.20%), and opioid 98(22.79%), shown in table no.12

Table No. 12: Distribution of different class analgesics.

Analgesic	Frequency	Percentage (%)
NSAIDs (Dynapar, Sumol, Zerodol)	332	77.20
Opioid (Tramadol)	98	22.79
Total	430	100

5.4 Rationality

Among 200 participants included in the study there was no antimicrobial irrationality found in any of the patient prescription. Every prescription done was rationally according to the patient conditions and for the better patient outcome.

Table No. 13: Rationality of the Prescription.

Rationality	Frequency	Percentage (%)
Rational	200	100
Irrational	0	0
Total	200	100

DISCUSSION

Postoperative drug utilization is very much marked. Drugs are prescribed for the purpose of analgesic, prevention of infections ana so on.

Antimicrobials are agents which are used to eradicate or edge the growth of microorganism**.**

Analgesic are the drugs that selectively relieves pain by acting in the CNS or on peripheral pain mechanism, without significantly altering consciousness. Antimicrobial and analgesic drugs play a vital role in preventing infection and for thresholding the pain.

A prospective observational study was carried out to assess the prescribing pattern of antimicrobial and analgesic in post operative ward of tertiary care hospital Chitradurga. The total of 200 participants were enrolled in the study. We have categorized the subjects based on demographic details like age and gender

The study aims to assess the prescribing pattern, rationality, and different class of antimicrobials and analgesic used in post operative ward.

Age distribution among post operative patients

In our study of 200 patients, there were of different age group that is 18-30years 71(35.5%), 31-50 years 91(45.5%) and 51-60 years, 38 (19%) shown in table No. 1 and Figure No.1 which is similar to the studies carried by Philip Jacob et al., showed 20-40 years (13.8%), 61-80 years (40.88%) and 80years above (3.86%).

Gender distribution

In our study of 200 participants there were majority of male 121 (60.5%) compared with female 79(39.5%) is similar to the study carried out by Lakshmi Sabapathi S the result showed, male 43(72%) were majority to female 17(28%) and the study conducted by Ramalingam Velvizhy et al concluded that 289 (56.34%) were male and 224(43,66%) were female.

Different class of antimicrobials prescribed

200 participants were taken in our study and data of respective participants was collected. In which total of 421 antimicrobials were prescribed of different class such as Cephalosporin 174(49%), Nitroimidazole 139(33%), Penicillin 76(18%) and Aminoglycoside 32(7%) shown in table no. 8 is similar to the study conducted by Dr. Nuzhath irfana et al., showed that most commonly prescribed antimicrobials were Cephalosporin (47.5%), Nitroimidazole (10.3%), Penicillin (9%) and others (33%) and the study conducted by Mamta Naagar et al., showed that most commonly prescribed antimicrobials Cephalosporin 120, Nitroimidazole 39, Aminoglycoside 38, Penicillin 33 and others 24. In different class of antimicrobial prescribed cephalosporin class of drugs was mostly prescribed similar to the study carried out by Dr. L. Niharika et al.

Different class of analgesic prescribed

200 participants were taken in our study and data of respective participants was collected. In which total of 438 analgesic were prescribed of different class such as NSAIDs 332(77.20%,), Opioid 98(22.79%) is like the studied carried out by Farhad Marghoubi et al., showed that NSAIDs (64%), Opioid (35%), and other analgesics (1%).

CONCLUSION

The present study is aimed to assess prescribing pattern, rationality, and different class of antimicrobials and analgesic used in post operative ward.

- The result of the study shows that in different class of antimicrobials and analgesic prescribed the most commonly prescribed is cephalosporin antibiotic and NSAIDs.
- Antimicrobials are more efficient in the case of wound healing.
- Efficiency of analgesic can be identified by using the parameters like pain, swelling shows activity of analgesic.
- When compared with treatment guidelines for antimicrobials use in common syndrome there was no irrationality to be found in the study.

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