**ASSESSMENT OF PRESCRIPTION PATTERN OF ANTIBIOTICS IN GERIATRIC POPULATION AT TERTIARY HOSPITAL**

Kelgaonkar Prajakta Nandkishor, Ingole Akangksha Gajanan, Pathan Adiba Mansoor

Shivlingeshwar College Of Pharmacy Almala, Latur, India.

**ABSTRACT**

Antibiotics is an anti-infective agent that are capable of Destroying and inhibiting the growth of micro-organisms and it is derived from Bacteria or Moulds that are toxic to other bacteria. Alexander Fleming in1928,accidently discovered Penicillin notatum . he found that penicillin notatum are extremely effective even at very low concentration. In elder population Aging process causes changes in nervous system, cognition , vision , hearing , memory, learning , intelligence , pharmacokinetic and pharmacodynamic parameter . so use of antibiotics in elder patient should be done carefully

Evidence- Some evidences indicate that high incidence of inappropriate prescribing of antibiotics especially in geriatric population. can cause adverse reaction, morbidity and mortality.

Aim of our study is to study and assess the prescribing pattern of antibiotics administered in geriatric patients, disease condition for which Antibiotics prescribed and observed the rationality in the prescriptions.

Method-A Unicentric perspective observational study was conducted and undertaken over period of 3 months at tertiary care hospital. Patient of either gender Above 60 years of age admitted to Medicine Department due to various reasons causes infection or those who acquired infection hospitalization and patient were on the Antibiotics treatment, data collection was done by using patient profile form, prescription indicator form and investigational reports.

Result Our study had total 105 prescriptions were observed that cephalosporin class of antibiotic Ceftriaxone were most commonly prescribed Antibiotics and other data we analyzed by using various parameters such as , Age, Gender and Comorbidities present in elderly patient.

Conclusion This study conclude that the highest number of co-morbidities from total prescriptions were of HTN and DM. Some type of polypharmacy observed due presence of multiple disease conditions in Elderly Patients and some amount of irrationality were observed.

**Keywords**: Antibiotics, Anti – infective, pharmacokinetic, pharmacokinetic

**INTRODUCTION**

Antibiotics are anti infective agents that are capable of destroying and inhibiting the growth microorganism. Antibiotics are derived from bacteria or moulds that are toxic to other bacteria antibiotics have been used to treat infections from hundreds of years

Alexander Fleming accidently discovered penicillin he found that fungus Penicillium notatum is extremely effective even at very low concentration. also Selman Waksman discovered over20 antibiotics in his lifetime[1]

Different classes of antibiotics are as follow[1,5]:

B lactam , aminoglycosides, glycopepides ,ansaycin ,quinolones , streplogramins, lipopetides , sulfonamides, chloramphenicol ,tetracycline’s , macrolides , oxazolidinones .

There are six major modes of action of antibiotics :

1. Interference with cell wall synthesis
2. Inhibition of protein synthesis
3. Inhibition of membrane function
4. Inhibition of a nucleic acid synthesis
5. Inhibition of metabolic pathway
6. Inhibition of ATP synthesis

Misuse of antibiotics:

Misuse of antibiotics further may lead to antibiotic resistance . misuse of antibiotics is very common problem in developing countries , antibiotics are sold over the counter drugs and irrational prescribing are the important reasons for the misuse of antibiotics and antibiotic resistance. Causes of the antibiotic resistance are overuse, inappropriate prescribing and extensive agricultural use.[6,7]

Antibiotics use in geriatric population :

Geriatrics : a branch of medicine that deals with the diseases and problems of elderly people.[12]

According to WHO old patients are classified as follows[14] :

1. Age group 60-75 : young old ages
2. Age group 75-85: advanced old ages
3. Age group above 85 : older old ages

In elder population Aging process causes changes in nervous system, cognition , vision , hearing , memory, learning and intelligence . so use of antibiotics in elder patient should be done carefully.[15,16]

Older patient need relatively higher dose of antibiotics to treat the infection hospital acquired infection are very common in older patient so antibiotics are given to the hospitalized patients to avoid the hospital acquired infections such as pneumonia , hepatitis etc. [17]

**AIM AND OBJECTIVES**

Aim: To study the Assessment of Prescription Pattern of Antibiotics In Geriatric Population

Objective: -

To observe the Prescription Pattern of Antibiotics

To observe Rationality in prescription.

To Observe the most commonly used Antibiotics in geriatric population at Tertiary Care Hospital

METHODS AND MATERIAL: -

•Study Design: -

Unicentric Perspective Observational Study

•Sampling: -

The data collected from Medicine Department and was performed over 105 prescriptions and analyzed according to WHO guidelines.

•Study Duration: -

This Study was conducted over a period of 3 months

•Study Settings: -

This study was held at Department of General Medicine in tertiary care hospital

• Inclusion Criteria: -

Age group above 60 years.

• Exclusion Criteria: -

Age group Below 60 Years

Pediatric Population

Lactating Women.

Pregnant women.

**STUDY METHODOLOGY**

DATA COLLECTION: -

Patient Profile form: -

✓ The Structure Patient Profile form it will be used for collect Information of Patient as per WHO Guidelines.

Prescribing Indicator Form: -

According to WHO standard Prescribing indicator form is used to collect all demographic information of patient and helps in the assessment of prescription pattern.

It consists of parameters such as Name of Patients, Age, Dose of Drug, Route of administration, Frequency of drug.

**PROCEDURE**: -

This study was conducted in hospital setting at medicine department and all data was collected. From data collection to data assessment and everything was performed with almost care and safety. The further procedure will take place through standard operating procedure (SOP).

Patient Profile Form was used to collect demographic information such as age, gender, diagnosis, co-morbidities of patient and Antibiotics data. Data was collected and recorded directly on the patient indicator form and drug with entire name was coded in prescribing form. Antibiotics data in the prescription included entire name, unit of strength, route of Administration used until patient discharged.

Sample selection: we have collected sample from prescribed and historical data and arranged them in standardized way.

**RESULT**

1) Age wise distribution of use of antibiotics

2) Gender wise Distribution of Antibiotics

3) No. Of antibiotics prescribed

4) Distribution of Antibiotics on the Basis of Comorbidities

AGE WISE DISTRIBUTION OF TOTAL NO OF PATIENTS

In our study Mean age of geriatric patients were between 60 -100 year, out of 105 prescriptions near about 65 patients were at age group of more than 60-75 years. Near about 23 patients were comes at age group of above 75- 85 years and in the age group of more than 85 years included 17 patients

Table 01: Age wise distribution of use of antibiotics

|  |  |
| --- | --- |
| **AGE GROUP** | **NO OF PATIENTS** |
| 60-75 | 65 |
| 75-85 | 23 |
| 85-100 | 17 |

GENDER WISE DISTRIBUTION

This study includes total 105 no. of prescriptions among which highest no. of prescription were are Males that is 72 prescriptions and the rest of the 33 prescriptions were of Female.

Table 02: Gender wise Distribution of Antibiotics

|  |  |
| --- | --- |
| **GENDER** | **NO OF PATIENT** |
| MALE | 72 |
| FEMALE | 33 |

ANTIBIOTIC PRESCRIBED IN TOTAL NO OF PRESCRIPTION

There are 13 various types of antibiotics were prescribed in which Monocef were highly prescribed antibiotic near about 82 patients out of 105 patients and Oframax were second most prescribed antibiotic, Cefudif S prescribed to 18 patients and further Antibiotics are shown in Table No. 03

Table 03: No. Of antibiotics prescribed

|  |  |
| --- | --- |
| **ANTIBIOTICS** | **NO OF PRESCRIPTIONS** |
| INJ LINID | 15 |
| INJ OFRAMAX | 70 |
| INJ CEFUDIF S | 52 |
| INJ METRO | 12 |
| INJ MONOCEF | 78 |
| INJ PIPTAZ | 6 |
| TAB DOXY | 5 |
| INJ AMPOXIN | 5 |
| INJ AMIKACIN | 13 |
| INJ CIPRO | 6 |
| INJ ZONAMAX ES | 8 |
| INJ POLY-B | 5 |
| INJ MONOCYCLINE | 5 |

7.5 DISTRIBUTION ON THE BASIS OF COMORBIDITIES

From the collected data we can say that the Highest no. of comorbidities from the total no. of prescriptions were of Hypertension (83) and Diabetes Mellitus (76).

Table 04: Distribution of Antibiotics on the Basis of Comorbidities

|  |  |  |
| --- | --- | --- |
| **SR. NO** | **TYPES OF COMORBIDITIES** | **NO OF PATIENTS** |
| 1 | DIABETES MELLITUS | 76 |
| 2 | HYPERTENSION | 83 |
| 3 | RESPIRATORY DISEASES | 17 |
| 4 | LIVER DISEASES | 5 |
| 5 | HYPOTHYROIDISM | 15 |
| 6 | OSTEOPOROSIS | 8 |
| 7 | KIDNEY DISEASES | 2 |
| 8 | ISCHEMIC HEART DISEASE | 2 |

**DISCUSSION**

We observed Antibiotic prescribing pattern in geriatric population. In general, the elderly

population are more vulnerable to infections and thus a higher number of Antibiotics are

prescribed in them. The most commonly prescribed Antibiotics in our study were Inj. Monocef

and Inj. Oframax were the next most widely prescribed Antibiotics. There are 13 various types of

Antibiotics prescribed in the hospital for geriatrics patients. Out of 105 patient cases studied in a

work, we observed the number of co- morbidities associated with individual patient. From the

collected data we can say that the highest number of comorbidities from total number of

prescriptions were Hypertension (83) and Diabetes Mellitus (76). This study was necessary to

reveal the prescription pattern of antibiotics as a part of drug utilization research in elderly

patients. It provides opportunities for enhancing the use of antibiotic in geriatric population

healthcare in our environment, through awareness creation for rational and ideal use of

Antibiotics.

**CONCLUSION**

The study on the Topic of Assessment of Prescription Pattern of Antibiotic was done

successfully. From the study we conclude that Cephalosporin class of Antibiotic include

Monocef and Oframax were the most commonly prescribed Antibiotics in the hospital for the

elderly patients. In this study we observed that the highest number of co- morbidities from total

prescription were of Hypertension and Diabetes Mellitus. Some type of polypharmacy observed

due to the multiple disease conditions in elderly patients. As the Generic Drug prescribing is low

the issue of frequent use of brand name needs to be addressed. But the Antibiotics were

prescribed in rational manner by the physicians in most of prescription, and very few

prescriptions were prescribed irrationally, this study conclude that some Antibiotics in geriatric

population suppress the immune system because of variation in pharmacokinetic and

pharmacodynamic parameter as compare to adult hence physician must monitor the therapeutic

effect of antibiotics.

**BIBLOGRAPHY**

1. Duffin J. History of Medicine, Second Edition: A Scandalously Short Introduction. University of Toronto Press; 2010.
2. Pharmacokinetics and drug metabolism of antibiotics in the elderly - PubMed [Internet]. [cited 2023 May 24]. Available from: https://pubmed.ncbi.nlm.nih.gov/30251551/
3. Desalegn AA. Assessment of drug use pattern using WHO prescribing indicators at Hawassa University teaching and referral hospital, south Ethiopia: a cross-sectional study. BMC Heal Serv Res 2013 131 [Internet]. 2013 May 7 [cited 2023 May 24];13(1):1–6. Available from: https://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-13-170
4. Assessment of drug use pattern using WHO prescribing indicators at Hawassa University teaching and referral hospital, south Ethiopia: a cross-sectional study | BMC Health Services Research | Full Text [Internet]. [cited 2023 May 24]. Available from: https://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-13-170
5. Essential Drugs Survey. WHO; 1993.
6. Alnemri AR, Almaghrabi RH, Alonazi N, Alfrayh AR. Misuse of Antibiotic: A Systemic Review of Saudi Published Studies. Curr Pediatr Res [Internet]. 2016 [cited 2023 May 24];20(2):169–73. Available from: https://www.alliedacademies.org/articles/misuse-of-antibiotic-a-systemic-review-of-saudi-published-studies.html
7. Amarya S, Singh K, Sabharwal M. Ageing Process and Physiological Changes. Gerontology [Internet]. 2018 Jul 4 [cited 2023 May 24]; Available from: https://www.intechopen.com/chapters/60564
8. Ventola CL. The Antibiotic Resistance Crisis: Part 1: Causes and Threats. Pharm Ther [Internet]. 2015 [cited 2023 May 24];40(4):277. Available from: /pmc/articles/PMC4378521/
9. Bist A, Kulkarni GP, Gumma KM. Study of patterns of prescribing antibiotics in geriatric patients admitted to the medical wards in a tertiary care hospital. Int J Basic Clin Pharmacol [Internet]. 2016 Dec 24 [cited 2023 May 24];5(1):155–8. Available from: https://www.ijbcp.com/index.php/ijbcp/article/view/158
10. Misuse of Antibiotic: A Systemic Review of Saudi Published Studies. [Internet]. [cited 2023 May 24]. Available from: https://www.alliedacademies.org/articles/misuse-of-antibiotic-a-systemic-review-of-saudi-published-studies.html
11. Study of patterns of prescribing antibiotics in geriatric patients admitted to the medical wards in a tertiary care hospital | International Journal of Basic & Clinical Pharmacology [Internet]. [cited 2023 May 24]. Available from: https://www.ijbcp.com/index.php/ijbcp/article/view/158
12. Geriatric population in India: Demography, vulnerabilities, and healthcare challenges - PMC [Internet]. [cited 2023 May 24]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8132790/
13. Geriatric Care Special Needs Assessment - StatPearls - NCBI Bookshelf [Internet]. [cited 2023 May 24]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK570572/
14. Introduction to Geriatrics - Geriatrics - MSD Manual Professional Edition [Internet]. [cited 2023 May 24]. Available from: https://www.msdmanuals.com/en-in/professional/geriatrics/approach-to-the-geriatric-patient/introduction-to-geriatrics
15. Ageing Process and Physiological Changes | IntechOpen [Internet]. [cited 2023 May 24]. Available from: https://www.intechopen.com/chapters/60564
16. Amarya S, Singh K, Sabharwal M, Amarya S, Singh K, Sabharwal M. Ageing Process and Physiological Changes. Gerontology [Internet]. 2018 Jul 4 [cited 2023 May 24]; Available from: https://www.intechopen.com/chapters/60564
17. Pharmacokinetics of Antimicrobial Agents in the Elderly | Clinical Infectious Diseases | Oxford Academic [Internet]. [cited 2023 May 24]. Available from: https://academic.oup.com/cid/article-abstract/9/2/250/330740