



A PROSPECTIVE OBSERVATIONAL STUDY OF ANTIBIOTICS INDUCED ADVERSE REACTIONS IN CRITICAL CARE UNIT IN A TERTIARY CARE CENTER.

Pharmacology

**Israel Raja
Johnley. I**

Assistant Professor, Department of Pharmacology, Government Thoothukudi Medical College, Thoothukudi.

Meenambal. S

Assistant Professor, Department of Pharmacology, Government Thoothukudi Medical College, Thoothukudi. *Corresponding Author

Dharanishri. A. B

Medical student, Government Thoothukudi Medical College, Thoothukudi.

ABSTRACT

Aim and objectives: To study the prescribing pattern of antibiotics used in emergencies in a tertiary care hospital. To study the frequency of antibiotic related ADRs experienced in critical care unit.

Methods: This study is an observational prospective study which was done by collecting data from case sheets of patients who have developed adverse drug reactions against antibiotics in a critical care unit in a Government Thoothukudi hospital. Ethical clearance approval was done by institutional ethical committee.

Results: This study found that nearly 75% of ADRs are type B reactions. Most of the ADR's are cutaneous. The data presented here shows that there is increased reaction for cephalosporins. Drug surveillance can strongly identify targeted adverse events. Hence, the pattern of antibiotics and the prevalence of ADR in emergency are described.

Conclusion : This study also motivates the Doctors to report the ADR's, so that we, Doctors can be aware of those and make us ready to tackle the situation. Further elaborative clinical studies required to potentiate this claim.

KEYWORDS

antibiotics, adverse reactions

AIM OF STUDY:

To study the prescribing pattern of antibiotics used in emergencies in a tertiary care hospital.

To study the frequency of antibiotic related ADRs experienced in critical care unit.

INTRODUCTION:

Drugs are "double edged weapons ". With the multitude of drugs prescribed to a single patient, adverse drug reactions are bound to occur¹. An antibiotic is the most important type of antibacterial agent for fighting bacterial infections. Antibiotic medications are widely used in the treatment and prevention of such infections. An adverse drug reaction (ADR) is an injury caused by taking a medication².

Antibiotic medications in emergencies can produce serious life threatening side effects including allergies, toxicities and anaphylaxis. IgE mediated allergies are common after the administration of the drug. Types of IgE mediated hypersensitivity reactions are urticarial, bronchospasm anaphylaxis and angioedema. Non IgE mediated reactions are hemolytic anemia, thrombocytopenia, acute intestinal nephritis, serum sickness, vasculitis, erythema multiforme, Steven Johnson syndrome and toxic epidermal necrolysis. Excessive dosing and impaired metabolism are the main consequence of toxicity.

The main reason for monitoring ADR is because it has negative impact on both health and healthcare costs. More than 70% of ICU patients receive antibiotics for therapy and prophylaxis. Hence, it is important to know the adverse drug reactions and to take measures to reduce it by using a selective drug.

METHODS:

This study is an observational prospective study which was done by collecting data from case sheets of patients who have developed adverse drug reactions against antibiotics in a critical care unit in a Government Thoothukudi hospital.

Ethical clearance approval was done by institutional ethical committee.

RESULTS:

This study found that nearly 75% of ADRs are type B reactions. Most of the ADR's are cutaneous. The data presented here shows that there is increased reaction for cephalosporins.

Total no. of cases involved in this study are 50 cases. 38 patients among

50 cases developed type B reactions (76%) and 12 patients among 50 cases developed type A reactions (24%). In this study, type B reactions are more common than type A reactions. Among type B reaction, 21 patients are female (55%) and 17 patients are male (45%). Among type A reaction, 7 patients are female (58%) and 5 patients are male (42%).

Age wise data showed, 30% of patients around 30-40 years of age developed type B reaction when compared to other age groups. In this study, 5% of patients around 5 years of age and above 60 years had developed minimal reaction when compared to other age groups. 33% of patients around 20-30 years of age developed type A reaction when compared to other age groups. In this study, 5% of patients around 5 years of age had developed minimal reaction when compared to other age groups.

Drug wise data showed, 18% of patients who used β lactam antibiotics developed type A reactions and 36% of patients who used β lactam antibiotics developed type B reactions. 32% of patients who used fluoroquinolones developed type B reactions. Only 2% of patients who used nitroimidazole developed type B reactions, 18% of patients developed type A reactions.

Figure-1 Number Of Cases Versus Reaction Type

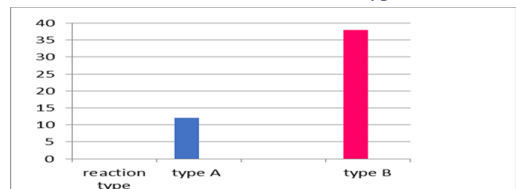


Figure – 2 Number Of Patients Versus Gender

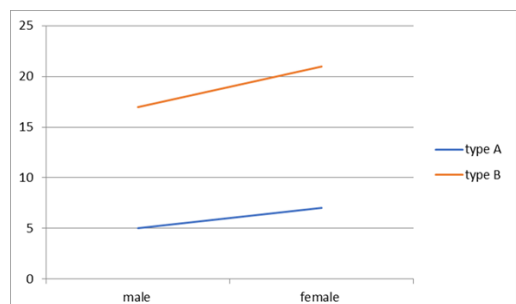


Figure –3 Reaction Versus Age Group

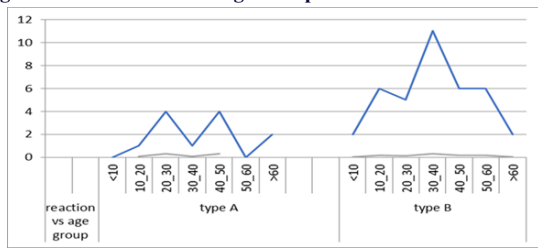
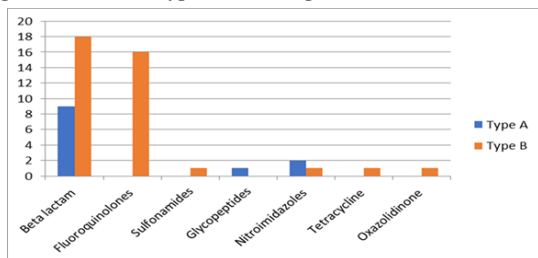


Figure –4 Reaction Type Versus Drugs



DISCUSSION:

Hospital centered monitoring is one of the best method to fetch the data about drug prescriptions and adverse drug events. Antibiotics, anticonvulsants and NSAIDs were the most frequently implicated drug groups³. The aim of this observational prospective study was to evaluate the frequency and type of adverse reaction to antibiotics among ICU inpatients. The data on all ICU patients undergoing antibiotic treatment were collected and analysed.

In the 50 inpatients evaluated 50 patients: 22 were males and 28 were females of age group from 5 to 70 years. In particular, β lactams (47%), fluoroquinolones (42%), sulfonamides (3%), tetracyclines (2%), nitroimidazoles (3%) and oxazolidinone (3%) were the most commonly used antibiotics in ICU in our tertiary care hospital. This study shows, hospital-based monitoring is a best method with which we can identify links between the drug exposure and adverse drug reactions in both children and adults⁴.

CONCLUSION:

In this prospective study, antibiotics are a common cause of ADRs in hospitalized patients and therefore, drug surveillance can strongly identify targeted adverse events⁵. Hence, the pattern of antibiotics and the prevalence of ADR in emergency are described. This study found that nearly 75% of ADRs are type B reactions. Most of the ADR's are cutaneous. The data presented here shows that there is increased reaction for Cephalosporin. This study also motivates the Doctors to report the ADR's, so that we, Doctors can be aware of those and make us ready to tackle the situation. Further elaborative clinical studies required to potentiate this claim.

REFERENCES:

1. Shamna M, Dilip C, Ajmal M, Mohan PL, Shinu C, Jafer CP, Mohammed Y. A prospective study on Adverse Drug Reactions of antibiotics in a tertiary care hospital. Saudi pharmaceutical journal. 2014 Sep 1;22(4):303-8.
2. Alomar MJ. Factors affecting the development of adverse drug reactions. Saudi pharmaceutical journal. 2014 Apr 1;22(2):83-94.
3. Ding WY, Lee CK, Choon SE. Cutaneous adverse drug reactions seen in a tertiary hospital in Johor, Malaysia. International journal of dermatology. 2010 Jul;49(7):834-41.
4. Pharmacological Research Volume 51, Issue 3, March 2005, Pages 269-274
5. Gallelli L, Ferreri G, Colosimo M, Pirritano D, Guadagnino L, Pelaia G, Maselli R, De Sarro GB. Adverse drug reactions to antibiotics observed in two pulmonology divisions of Catanzaro, Italy: a six-year retrospective study. Pharmacological research. 2002 Nov 1;46(5):395-400.