

Prevalence of adverse reactions of antibiotics

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ABSTRACT

INTRODUCTION: Adverse Reaction of Antibiotics is “ the unwanted or undesirable result of the antibiotic which occur at normally or prescribed dose used by the man”.

Aims and Objectives: The investigation of the association between the use of antibiotics during life span and the subsequent development of asthma and allergic disorders is the main theme of this study.

Methods and Materials: Research for the stated purpose was carried on 100 patients in two private medical colleges of Faisalabad through the random sampling.

Results: During the study period, a total of 39 antibiotic inimical (other than required) Drug Reactions were reported among 100 patients admitted for antibiotic use. The incidence rate of these reactions was found to be 39%.

Conclusion:

It was observed through the study that the unwanted Reactions of antibiotics is fairly less in selected medical colleges of Faisalabad. In our study, we came to know that antibiotic which caused most of the inimical reactions was cephalosporin than pencillin and fluoroquinolone and macrolide had the equal percentage. Through our study we came to know that most of the skin reactions (mild and moderate type) were caused by the antibiotic and incidence of very severe reactions were low. Many asthamatic people were the victom of antibiotic reactions. Causes of antibiotic reactions include illiteracy, overdose, lack of follow up and complex regime of prescription.

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Thus there is a need of some strategies to minimize the unwanted reactions of antibiotics.

INTRODUCTION:

In this simple definition, an Adverse Antibiotic Reaction is any undesirable effect of an Antibiotic beyond its anticipated therapeutics occurring during clinical use. The World Health Organization (WHO) defines an adverse drug reaction as “ any response to a drug which is noxious or unintended, and which occurs at doses normally used in man for prophylaxis, diagnosis or therapy of diseases, or for the modification of physiological function”. Thus, this definition excludes over dose (either accidental or intentional), drug abuse, and treatment failure and drug administration errors.

Due to the spreading of different diseases the use of antibiotics cannot be ignored and consumption of antibiotics is exponentially increasing day by day for the prevention or treatment of diseases. Drug is composed of chemical ingredients which have good effects and the bad effects over the human health as well. Despite their useful effects on human health the risk of antibiotics prevails over its benefits. 1

The prime responsibility of all health care providers is the Patient safety in each case. There is no doubt in it that the use of proper drug decreases the effect of diseases and the rate of mortality but on the other hand its side effects are also reaching to their climax in the human body. According to DJP Barker “ there are three actions of drug; the one you want, the one you don't want, and the one you don't know about”. Thus it is essential to control both known and unknown inimical or harmful effects of medicines. 2

Unwanted effects of drug can occur in every class of drug. Recent researches reveal that the side effects using antibiotics are increasing with the passage of time at an alarming level. Drug which is prescribed for a particular disease often proves fatal for the survival of healthy life because it impedes the normal physiological mechanism of the body. In a broad sense, it is logical to say that the use of antibiotics is just as harmful for human health as useful and it demands a new strategic approach in which the higher stage of adverse effects of antibiotics may decrease to minor threats. 3

A research was carried out by Mohammad Misbah in 2010 at Tertiary Care Hospital to determine the adverse reactions of drugs on human body. Total fifty (50) patients were selected for this purpose and 26% persons out of total were found victims of the adverse reaction of the drugs. This research shows that there is a need of those medicines which do not cause an adverse effect on human body at all. 4

Epidemiological data on adverse antibiotic reactions in non-hospitalized subjects and the general population is even more scarce and are limited mainly to studies on antibiotic use. A prospective study of patients receiving monthly injections of penicillin G (for rheumatic fever) found 57 reactions in 1790 patients (incidence of 3.2% of patients and 0.19% of injections), four cases of anaphylaxis (incidence of 0.2% of patients and 0.01% of injections), and one fatality (incidence of 0.05% of patients and 0.003% of injections).

STUDY OBJECTIVES:

The focused objectives of the study are given below:

1. To find out the association between the use of antibiotics during life period and the subsequent development of asthma and allergic disorders.
2. To determine the Incidence of adverse drug reactions.
3. To evaluate the frequency with which adverse drug events result in an incident report (IR) in two private medical colleges of Faisalabad.
4. To suggest strategies to tackle or avoid further abuse.

Material And Method

Study Design: It was cross-sectional study.

Study Area: This research was carried in two private Medical Colleges of Faisalabad.

Study Period: Jan 2018-Aug 2018 (six months).

Sample Size: Sample size was 100.

Sample Selection

Inclusion Criteria: People (both male and female) with age group of 20-40 years were included in the study because of high prevalence reported in recent year.

Exclusion Criteria: Teenagers under 20 years and adult above 40 years were excluded from the study.

Sample Procedure: Simple Random Sampling

Data Analysis Procedure: Data was carried by using Microsoft Excel.

Data Collection: Data was collected by Questionnaire filling which include 11 questions (close ended).

RESULTS

During study duration, it showed the aggregate of 39 Inimical Antibiotic Reactions out of 100 which were using antibiotic. The total cases which was reported was 39%. Study showed that males patients 20 (51. 2%) were more affected than female patients 19 (48. 8%) by inimical reaction of antibiotic. Results showed that Cephalosporins were the most considered antibiotic 14(35. 89%) than Pencillin 8(20. 51%). Fluoroquinolone and Macrolides had the equal percentage 4(10. 25%). Of the reported reaction, the severity of allergic reactions were as follows: Mild reactions 19(48. 71%), Moderate reactions 16 (41. 025%) and only 4 (10. 25%) were severe reactions. The results also revealed that 40% people (both males and females) faced breathing difficulty (asthma) due to inimical reactions of antibiotics while 60% people (both males and females) did not become the same problem. The study showed that undesireable reactions of antibiotics was more in young age 55% but adults were not escape from these reactions 45%.

DISCUSSION

Antibiotics are used for treatment and prophylaxis of various infectious conditions and are considered as safer drugs when used rationally. But, like all other drugs, they also show some Adverse Drug Reactions in various patient conditions.

The incidence rate of antibiotic adverse reactions in this study was found to be comparatively low when compared to other studies. This lower incidence

rate was due to the effective awareness of clinical pharmacist in Faisalabad delivering periodic adverse antibiotic reactions awareness classes and active involvement of clinical pharmacy in clinical activities and coordination of quality control unit in the Faisalabad.

In our study the frequency of inimical reactions in females was 48.8% and 51.2% male was reported in age group of 20-40 years. A study was conducted in Silchar Medical College is comparable with our result that depicts the prevalence of unwanted reactions of drug was 43.82% in females of age group 16-32 years. Anaphylactic reaction 69 (42.59%) in patient was the most common inimical reaction.

Another study was conducted in tertiary care hospital of Northeast India, the study revealed that out of 219 patients 101 (46.1%) were male while 118 (53.8%) patients were female. Most of the patient 91.7% were reported from outpatient department and rest 8.2% were reported inpatient department. Majority of patient 37.4% experience inimical drug reaction belonged to age group of 21-30 years.

In our study 35.89% patients were found victims by the use of cephalosporin while 10.25% by fluoroquinolone, 20.51% from penicillin, 10.25% from macrolides and remaining 23.07% drug from other drug use. A study was conducted in tertiary care hospital by M. Shamna and Yahya Mohammed, according to study cephalosporin was the most accounted antibiotic class 17 (36.49%) followed by fluoroquinolone, penicillin and macrolide collectively comprising 63.51%. The study result clearly pointed that both male and female were affected by adverse drug reaction. Moreover, cephalosporin

triggered the risk of causing this reaction as compared to the other drugs because cephalosporin was the most used antibiotic drug.

In this study breathing problem was observed in 40% of people and 60% people were found having breathing issues due to the use of antibiotics. The study was compared with Hunter Medical Research Institute (HMRI) in New South West and 40% people had moderate to severe asthma attack while 60% of people were found disease free.

Predictability of the reactions was based on the incidence of the reactions and literature reports and it was found that majority of them were predictable. Preventability analysis showed that majority of the reactions were definitely preventable.

RECOMMENDATIONS

1. Hypersensitive patient must avoid antibiotics and only take test dose.
2. There should be arrangements for seminars and awareness programmes on regular basis against self medications which in most of the cases results in adverse reaction due to lack of knowledge about medicines that they use to cure themselves so that the prescription by the physician must be encouraged.
3. Before prescribing Antibiotics, the evaluation risk factors should be analysed as mandatory amulet.
4. Proper counseling of patients should be done to avoid high dose of antibiotics.

5. When a patient requires long-term Antibiotic therapy, the Antibiotics given to the patient should be reviewed and alternative treatment approaches sought.
6. If no other alternative exists, the antibiotics should be used at the lowest possible effective dosage for the shortest possible time.

LIMITATIONS

People with age group 20- 40 years (both male and female) were included in the study because of high prevalence reported in recent years. Teenagers under 20 years and adult above 40 years were excluded from the study.

CONCLUSION

It was observed through the study that the unwanted Reactions of antibiotics is fairly less in the selected private medical colleges of Faisalabad for the research.

Harmful Drug Reactions which are not expected are one of the drug related problems in the hospitals and is a big challenge to be resolved through research. The medicines consist of Antibiotics which are used in patient prescriptions. Therefore, implementation of antibiotic guidelines in the hospital vicinity must be ensured to minimise the uncongenial results. The health supporting systems should encourage the spontaneous notifications of these reactions to antibiotics through proper documentation and periodic representations to regional pharmacological reporting centers to ensure the quality of not causing the harmful effect of the medicines.

In our study, we came to know that antibiotic which caused most of the inimical reactions was cephalosporin than penicillin and fluoroquinolone and

macrolide had the equal percentage. Through our study we came to know that most of the skin reactions (mild and moderate type) were caused by the antibiotic and incidence of very severe reactions were low. Many asthamatic people were the victom of antibiotic reactions. Causes of antibiotic reactions include illiteracy, overdose, lack of follow up and complex regime of prescription. Thus there is a need of some strategies to minimize the unwanted reactions of antibiotics.