STUDY OF PATTERN OF ANTIBIOTIC INDUCED ADVERSE CUTANEOUS DRUG REACTIONS IN A TERTIARY CARE HOSPITAL

Seema Patel¹, Nidhi Jain², Mayank Badkur³, Mithilesh Mehar⁴

¹Resident, Department of Community Medicine, Gandhi Medical College, Bhopal.

²Resident, Department of Pharmacology, Gandhi Medical College, Bhopal.

³Senior Resident, Department of Surgery, AIIMS, Bhopal.

⁴Resident, Department of Pharmacology, Gandhi Medical College, Bhopal.

ABSTRACT

BACKGROUND

Adverse Drug Reactions (ADRs) are important cause of morbidity, hospitalization, increased health expenditure and even death. Antibiotics are one of the commonest offender responsible for causing adverse cutaneous drug reactions.

AIM

To find out the pattern of adverse cutaneous drug reactions of antibiotics in a tertiary care hospital.

METHODOLOGY

A cross-sectional study was carried for a period of 1-year in Dermatology OPD of a tertiary care teaching hospital in Bhopal. A total of 48 cases of cutaneous adverse drug reactions were interviewed and examined in the study period from November 2014 to October 2015.

RESULTS

Mean age of the patient was 35.5 years, ranging from 8 years to 70 years. Amoxicillin was the most common drug causing adverse cutaneous drug reactions in 14.5% cases. Most common clinical pattern observed was fixed drug eruptions seen in 62.5% cases.

CONCLUSION

Study findings concludes that a wide spectrum of adverse cutaneous drug reactions ranging from mouth ulcer to serious SJS/TEN can occur due to antibiotics.

KEYWORDS

Cutaneous Adverse Drug Reactions, Tertiary Care Hospital, Pattern.

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INTRODUCTION

An Adverse Drug Reaction (ADR) is defined by the WHO as a response to a drug which is noxious and unintended and which occurs at doses which are normally used in man for the prophylaxis, diagnosis or the therapy of a disease or for the modification of the physiological function.¹ Cutaneous Adverse Drug Reaction (CADR) is an undesirable change in the structure and function of the skin, its appendages or mucous membrane.² CADRs are the commonest manifestation of ADRs, comprising of 10-30% of all adverse reactions reported and 2-3% of the patients receiving drug therapy for various reasons and also 1-3% of all hospitalized patients in developed countries, while 2-5% in developing countries.³

Antibiotics are used commonly in routine practice for treatment and prophylaxis of various disease conditions.⁴ Over half of all hospitalized patients are treated with antimicrobial agents and their use account for 20-50% of drug expenditures in hospitals. In Darchy's report, antibiotics accounted for 11% of iatrogenic disease. As more drugs are

marketed and as more individuals take multiple drugs, the occurrence of Adverse Drug Reaction will probably continue to increase. Therefore, better approaches must be devised for reporting, assessment and management of individuals who present with drug induced diseases.⁵

The pattern of cutaneous reactions differs among various drugs. Hence, understanding the precise nature of adverse cutaneous drug reactions may help narrow down the search for the offending agent. Knowledge of drugs that can cause adverse cutaneous drug reactions can help physicians in choosing safer drugs and therefore can be helpful to society at large. Studies conducted in many regions of India showed that antimicrobial are topmost in causation of cutaneous drug reaction; present study was conducted with the objective to find out the pattern of adverse cutaneous drug reactions of antibiotics in a tertiary care hospital.

MATERIAL AND METHODS

It was a hospital-based cross-sectional study, carried out in the Department of Dermatology, Hamidia Hospital, Bhopal, over a period of one year from the month of November 2014 to October 2015.

Patients of all age groups and both sexes with or suspected Cutaneous Adverse Drug Reaction (Those attending Dermatology OPD and inpatients admitted in various departments of Hamidia Hospital), who were ready to give written informed consent were included in the study.

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Corresponding Author:

Dr. Seema Patel,

#135, Kunjan Nagar, Phase-2,

Hoshangabad Road, Bhopal-462026,

Madhya Pradesh.

E-mail: dr.seemapatel04@gmail.com

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Those who were not able to recall the name of suspected medicine consumed (improper drug history) were excluded from the study and patients who were not ready to participate in the study were also excluded. The study was started after getting approval from the Institutional Ethical Committee.

After obtaining written informed consent patients were evaluated for the pattern, duration and severity of the reactions. For each patient a detailed history including drug history, personal history, family history, present and past medical history and history of previous drug reactions were documented and available case records were scrutinized to collect all valid data.

A thorough clinical evaluation was done to assess the pattern, extent, severity and duration of the reactions, to detect any predisposing or underlying disease/pathological factors and to assess any other organ/system involvement as a part of the drug reaction. The diagnosis of the CADR was done in consultation with expert dermatologists based on clinical and morphological criteria.

Criteria for the Diagnosis of CADRs

1. Time interval between the drug intake and the onset of the reaction should be within a specific time described in the literature for each reaction:
- a) Erythematous drug eruption/maculopapular rash: <7 days.
 - b) Urticaria: 7-21 days.
 - c) Stevens Johnson Syndrome/Toxic epidermal necrolysis: 1-3 weeks.
 - d) Drug hypersensitivity syndrome: 2-6 weeks.
 - e) Photodermatitis: up to 1 year.
 - f) Fixed drug eruption: 30 minutes-16 hours.

- The reaction was not considered as drug-induced if the drug was administered after the onset of cutaneous reaction.
- 2. Improvement in the condition of the patient after de-challenge/withdrawal of the suspected drug.
 - 3. Re-challenge test was not included for ethical reasons and possible associated risks.

The offending/suspected drug(s) were discontinued and the appropriate treatment instituted and the treatment outcome was evaluated. Hospitalization was required only for severe reactions.

Fig. 1: Age Wise Distribution of Cases

Fig. 2: Gender Wise Distribution of Cases

Clinical Type	Gender n=48		
	Female	Male	Total
Angioedema	2	0	2(4.1)
Cutaneous vasculitis	0	1	1(2.0)
Erythematous drug eruption	2	4	6(12.5)
Fixed drug eruption	10	20	30(62.5)
Stevens Johnson Syndrome	1	0	1(2.0)
Urticaria	3	1	4(8.3)
DRESS (Drug reaction with eosinophilia and systematic symptoms)	0	1	1(2.0)
Mouth ulcer/eruption	2	0	2(4.1)
Itching	0	1	1(2.0)
Total	20	28	48(100)

Table 1: Clinical Pattern of Reactions with Gender Wise Distribution

Fig. 3: Stevens Johnson Syndrome

Fig. 4: Erythematous Drug Eruption

Clinical Type	Gender n=48		
	Female	Male	Total
Amoxicillin	0	7	7(14.5)
Amoxicillin+Clavulanic acid	2	2	4(8.3)
Ampicillin	1	1	2(4.1)
Azithromycin	0	1	1(2.0)
Cefixime	3	1	4(8.3)
Ceftriaxone	0	1	1(2.0)
Cefuroxime	1	0	1(2.0)
Ciprofloxacin	1	4	5(10.4)
Ciprofloxacin+Tinidazole	1	0	1(2.0)
Cotrimoxazole	1	5	6(12.5)
Doxycycline	1	1	2(4.1)
Levofloxacin	1	1	2(4.1)
Metronidazole	1	1	2(4.1)
Norfloxacin	1	0	1(2.0)
Norfloxacin+Tinidazole	4	1	5(10.4)
Ofloxacin	0	1	1(2.0)
Ofloxacin+Ornidazole	2	1	3(6.2)
Total	20	28	48(100)

Table 2: Causative Drugs Involved

RESULT AND DISCUSSION

A total of 48 cases of adverse drug reactions due to antibiotics were identified. Mean age of the patient was 35.5 years, ranging from 8 years to maximum age of 70 years. Majority (47.92%) of the patients belonged to 21-40 years of age group. More number of adult patients reported in other studies as well Agarwal et al,⁵ Dhar et al;⁶ while study carried out by Shamna et al⁷ in Kerala showed more cases in geriatric age group; 58.33% were male and 41.6% were female, M:F ratio is 1.4:1; similar finding i.e. male preponderance is seen in other Indian studies as well Shamna et al,⁷ while more female cases were seen in study carried out by Hussain et al.⁸ Amoxicillin was the most common drug causing adverse cutaneous drug reactions responsible for causing reaction in 7 cases followed by cotrimoxazole causing adverse cutaneous drug reactions in 6 cases. Study carried out by Dhar et al,⁶ reported more cases due to β -lactam antibiotic. Shamna et al⁷ observed that cephalosporins were the most accounted antibiotic class. Most common clinical pattern observed was fixed drug eruptions seen in 30 cases, similarly fixed drug eruptions as most common clinical pattern was seen in other studies, Thappa et al.⁹

CONCLUSION

The study concluded that adverse cutaneous drug reactions due to antibiotics are not a rare thing. A wide spectrum of adverse cutaneous drug reactions due to antibiotics can occur ranging from mouth ulcer to serious Stevens Johnson Syndrome.

Strength of the Study

This study provides a valid data to the concerned institute on above mentioned problem, as no such work was done before in this area.

Limitation of the Study

This is a hospital-based cross-sectional study and small sample size is also a limitation of our study.

Recommendation

Community based, follow-up study need to be conducted to understand the problem and pharmacovigilance needs to be enforced in our country for better and safe use of drugs.

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