ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 17, Issue 1, 2024

Online - 2455-3891
Print - 0974-2441

Research Article

A RETROSPECTIVE ANALYSIS OF REPORTED CUTANEOUS ADVERSE DRUG REACTIONS IN A TERTIARY CARE TEACHING HOSPITAL

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Received: 05 July 2023, Revised and Accepted: 25 August 2023

ABSTRACT

Objectives: Analysis of adverse drug reactions (ADR) reports enriches and updates physician's awareness about the pattern of cutaneous adverse reactions in the population studied and may play an important role to envision the frequency of appearance of reactions to specific drugs and morphological designs. This study intends to portray the clinical profile and causative agents of dermal ADRs in our population.

Methods: All the ADR reporting forms received from February 2021 to February 2023 were scrutinized, and forms with cutaneous ADRs (CADRs) were analyzed. The data about the history of drug intake, names of the drug taken, time lag of appearance of reaction, and clinical examination details were collected from the reports. Demography, prevalence, reaction time morphological pattern, and causative agents of CADRs were evaluated.

Results: Among the CADRs, acute urticaria 53.4 was the most common followed by acute exanthematous reaction 35.8% and lichenoid drug eruption 3.8%. Among the drugs causing CADRs, antibiotics top the list with 47% followed by ATT at 29.7% and iron sucrose 12.9%. Among the antimicrobials, fluoroquinolones 48% top the list followed by cephalosporins 21.6% and penicillins and vancomycin each 8.3%.

Conclusion: Physician's knowledge about pattern and causative agents of CADR in the specific population can aid in prevention and early management of ADRs and thereby reducing hospitalization.

Keywords: Retrospective, Adverse drug reactions reports, Cutaneous, Tertiary care.

 DOI: http://dx.doi.org/10.22159/ajpcr.2024v17i1.48770. Journal homepage: https://innovareacademics.in/journals/index.php/ajpcr

INTRODUCTION

Adverse effect is a unintended consequence of drug administration. Skin is the frequently involved organ in adverse drug reaction and cutaneous adverse drug reactions (CADRs) are due to allergic reactions, toxic effects, photosensitivity or idiosyncrasy. Premarketing studies can reveal only 50% of adverse events [1]. Hence, there is a great need for post-marketing surveillance during the entire lifetime of drugs in the market.

Adverse drug reaction (ADR) monitoring center in our institution functions under the Pharmacovigilance Programme of India program of our country. This ensures the safety of the patients, in coordination with various clinical departments in monitoring and reporting ADRs. Analysis of ADR reports enriches physician's awareness about the design of CADRs in the population studied and may play an important role to envision the commonness of the appearance of reactions to particular drugs and morphological patterns. Patients can also be given awareness of repeated intake of the offending medications. The main intention of this study is to portray the clinical profile and causative agents of CADRs.

METHODS

After getting due permission from the scientific and ethics committee in our institute, the study was started. All the ADR reporting forms received during the period from February 2021 to February 2023 were scrutinized, and forms with CADRs were analyzed. The data about the history of drug intake, names of the drug taken, time lag of appearance of reaction, and clinical examination details were collected from the reports. Demography, prevalence, reaction time, morphological pattern, and causative agents of CADRs were evaluated.

DISCUSSION

Out of 386 ADR reports, 131 were CADRs. This showed 34% of CADRs, slightly higher than that in other studies, which was 27% in Mittal *et al*. [2] and 10–20% according to Svensson *et al*. [3].

CADRs show more or less, an equal gender distribution of 51% in males, and 49% in females which was similar to the study by Murthy *et al*. [4]. This shows that gender does not play a role in development of CADR.

The adults were the predominant age group showing CADRs, which was congruent to the study of Sharma *et al*. [5]. This could be due to more awareness of the adults in reporting the adverse drug reactions. As the old age group has more exposure to polypharmacy, adverse reactions could be more, but in our study, it was only 13.8%.

Acute urticaria was the most common reaction 53.4% followed by acute exanthematous reaction 35.8%, which is similar to the study by Anant *et al*. [6]. However, in some other studies, acute exanthematous reaction was the most common as in Jha *et al*. [7] Rajendran *et al*. [8]. Severe CADR (SCADR), exfoliative dermatitis was only 1% and the majority is mild-to-moderate reaction, which is similar to Inbaraj *et al*. [9], Mittal *et al*. [2]. A higher incidence of SCADR was found in other studies Saha *et al*. [10] and Sasidharanpillai *et al*. [11]. Lower incidence of SCADR may be due to early notice of skin eruptions, and early discontinuation of the offending drug, leading to halting of evolvement.

The reaction time was immediate to more than 2 months. The dawning of skin reaction was immediate in 5.4% of individuals. The immediate reaction was mainly with injection vancomycin in the pediatric age group. The reaction appearing <24 h was 29.3%, which is slightly elevated than that in the analysis by Jadhav *et al*. [12]. Studies by Patel and Marfatia [13] and Saha *et al*. [10] showed most of the reactions appearing in 1–45 days.

Table 1: Proportion of male and female cases

	Male	Female
Percentage of reports	51	49

There is a more or less equal distribution of cutaneous adverse drug reactions among both genders

Table 2: Distribution of CADR according to age

Age group in years	%
0–12	10.3
12–18	16.3
19–60	59.4
>60	13.8

More number of CADRs were reported in 19–60 years of age group.
CADRs: Cutaneous adverse drug reactions

Table 3: Reaction time for the appearance of skin eruptions

Reaction time	Percentage of cases%
immediate	5.4
<24 h	29.3
>24 h	42
>2 weeks	20.4
>2 months	3.2

More common reaction time is more than 24 h up to 2 weeks

Table 4: Commonly encountered drugs in each group

Drugs	Total (n)
Antibiotics	
Ciprofloxacin	26
Ofloxacin	2
Penicillin group	
Ampicillin	3
Amoxycillin	1
Piperacillin+sulbactum	1
Cephalosporins	
Cefotaxime	4
Ceftriaxone	6
Cefuroxime	2
Cefaperazone+sulbactam	1
Cloxacallin	1
Vancomycin	5
Amikacin	2
Clarithromycin	2
Erythromycin	1
Doxycycline	1
Metronidazole	1
Rifaximin	1
Terbinafin	2
ART (TLD regimen)	1
Efavirenz	1
Antitubercular drugs	
HRZE	28
HRE	13
Iron sucrose	17
Heparin	2
Etoricoxib	1
Metformin	1
Ranitidine	2
Chlorpheniramine	1
Sodium valproate	1
Carbamazepine	1

Cutaneous adverse drug reactions are encountered more commonly with Antibiotics followed by Antitubercular drugs

Among the drugs causing CADRs, antibiotics top the list with 47% followed by ATT 29.7% and iron sucrose 12.9%. Most of the studies

Table 5: Frequency of CADRs in different drug groups

Drug group	CADRs in %
Antibiotics	47
ATT	29.7
Iron sucrose	12.9
Terbinafine	2
Antiretroviral drug	2
Ranitidine	2
Heparin	2

CADRs are commonly encountered in antibiotics followed by ATT.
CADRs: Cutaneous adverse drug reactions, ATT: Antitubercular drugs

Table 6: Frequency of CADRs in different groups of antibiotics

Antibiotic group	CADRs in %
Quinoline	48
Penicillin group	8.3
Cephalosporins	21.6
Macrolides	5
Amikacin	3
Vancomycin	8.3

Among antibiotics, CADRs are commonly encountered in quinolones.
CADRs: Cutaneous adverse drug reactions

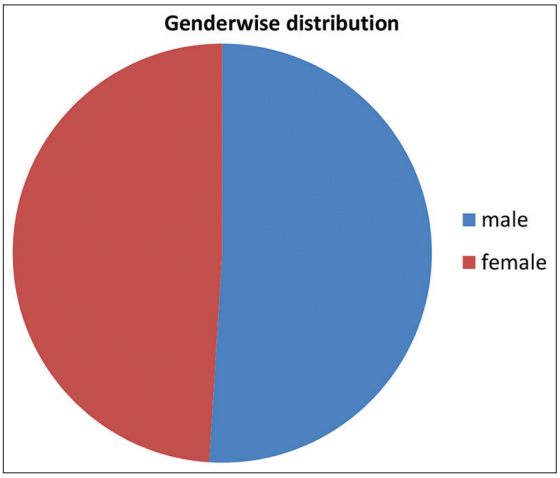

Fig. 1: Proportion of male and female cases

show antibiotics as the leading cost 14, 16. Non-steroidal anti-inflammatory drugs top the list in the study by Al Raii *et al.* [1]. ATT showed 29.7% which was similar to a study in Punjab Jha *et al.* [7] where ATT was the most common cause of SCADR but much lower 6.7% in a study by Murthy *et al.* [4]. This may be due to the good ADR reporting practice of doctors in the TB cell which is inside the campus of our institution.

Iron sucrose shows 12.9%. CADRs which are not seen in most of the studies and are attributed to prompt ADR reporting from the nephrology department, where iron sucrose is commonly used in patients with chronic kidney disease.

Among the antibiotics, fluoroquinolones top the list with 48%, followed by cephalosporins 21.6%, but in most of the other studies, sulpha drugs [14] or betalactam group of antibiotics top the list [15], penicillin group had 8.3% of CADR which is much lower than cephalosporins and fluoroquinolones. This may be due to more frequent use of these drugs than the penicillins. In our study, vancomycin was the cause for 8.3% of CADRs. A feature not present in other studies. macrolides share 5% and amikacin 3% of the CADRs. This dissimilarity in the pattern of drugs causing CADRs may be due to distinct ethnic group traits, diverse patterns of drug utilization, and lack of uniform guidelines.

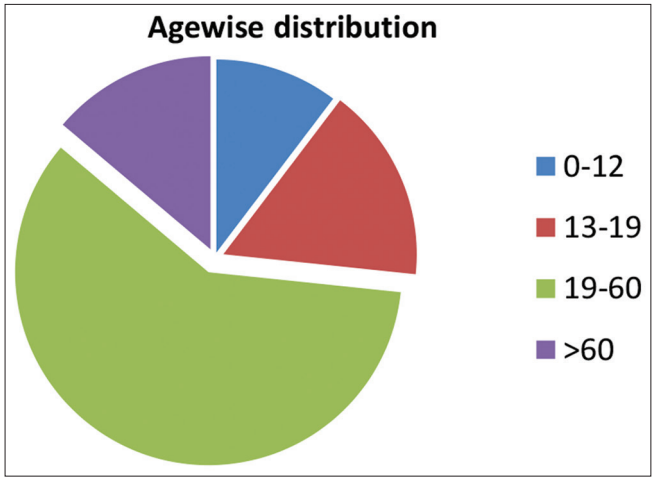

Fig. 2: Distribution of cutaneous adverse drug reactions according to age

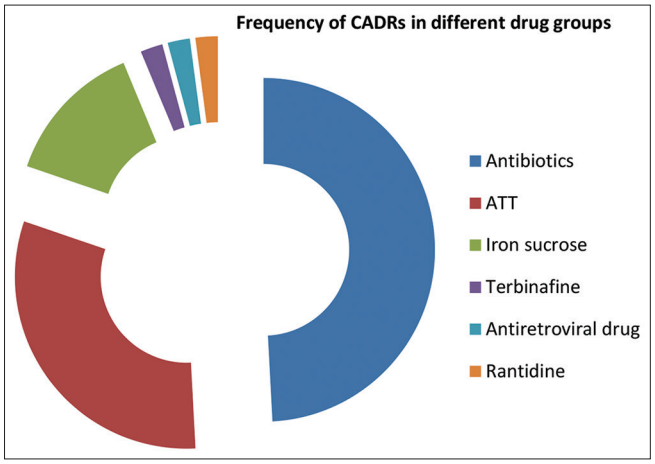

Fig. 3: Frequency of cutaneous adverse drug reactions in different drug groups

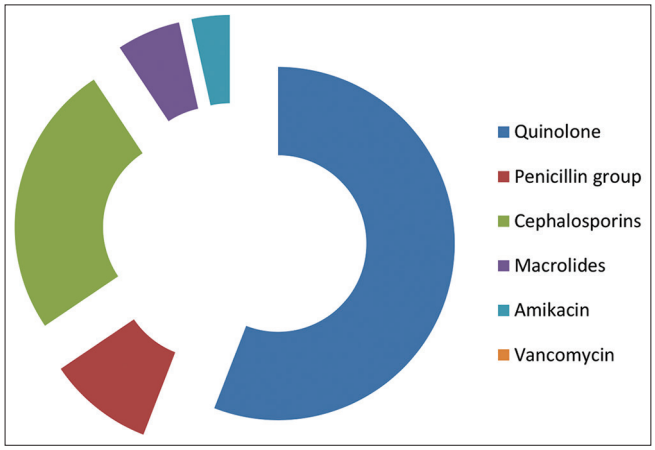

Fig. 4: Frequency of cutaneous adverse drug reactions in different groups of antibiotics

CONCLUSION

We cannot diagnose CADR with any investigation, but only proper history taking and clinical examination, physicians suspect ADR, and withdraw the drugs. Early identification and management by physician and patient education on self-administration of drug and awareness about ADRs can play a paramount role in precluding ADRs.

CONFLICTS OF INTEREST

There are no conflicts of interest or other author contributions.

AUTHOR FUNDING

There is no author funding.

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