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ANALYSIS

Evaluating the prevalence of cutaneous drug eruptions

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ABSTRACT

An adverse cutaneous reaction to drugs is becoming a frequent phenomena affecting 2 - 3 % of the hospitalized patients with an approximate level of 1 in 1,000 total patients. Now a day, in everyday clinical practice, almost all physicians come across many instances of suspected adverse cutaneous drug reactions in different forms. Although such cutaneous reactions are common, comprehensive information regarding their incidence, severity and ultimate health effects are often not available as many cases go unreported. Therefore in the present study, we have evaluated the prevalence of cutaneous drug eruptions and the causative drugs. Results showed that the most common offending drug group is antimicrobials (48.6%) followed by 20% of anticonvulsants followed by 12.8% cases of NSAIDS and others constitute 18.6%.

Keywords: Adverse cutaneous drug reaction, etiology, drugs

1. INTRODUCTION

Generally, a drug is defined as a chemical substance, or combination of substances, administered for the investigation, prevention or treatment of diseases or symptoms. An adverse cutaneous drug reaction (ACDR) is an undesirable clinical manifestation resulting from administration of a particular drug which includes reactions resulting from overdose, side effects and unanticipated manifestations. The Incidences of ACDR in developed countries ranges from 1 - 3% among the patients[1,2] whereas in developing countries such as India, some studies show 2 to 5% of the inpatients[3-6]. In countries like United States, more than 100,000 deaths are annually attributed to serious adverse drug reactions[7]. Among the adverse drug reactions, skin reactions are found to be 2.6% to 45%[8,9].

Urticarial and fixed drug reactions were the most common morphological reaction types and Carbamazepine and phenytoin were the most common offenders[10]. The other common offending drug groups were found to be antimicrobials (34.10%), anticonvulsants (32.88%), anti-

inflammatory drugs (21.51%), antipsychotics, antidepressants, antihypertensive, oral contraceptives, antidiabetics, insulin, vaccines, radio contrasts, pancreatic enzyme supplements, homeopathic, ayurvedic preparations and co-trimoxazole (13.53%)[11,12]. Previous study showed that most common morphologic patterns are exanthematous, urticarial and/or angioedema, fixed drug eruption and erythema multiforme[13]. Exanthematous drug eruptions usually begin within one to two weeks of starting a medication and gradually resolve one to two weeks following cessation. A previous study showed that maculopapular rash is also the most common type of adverse cutaneous drug eruptions[14].

Some of the factors affecting adverse cutaneous drug eruptions include the route of administration[15], duration, dose, variation in metabolism[16], drug to drug interactions, tendency to find reactive intermediates or toxins[17]. Some of the tests to diagonise the ACDR include Skin biopsy, elevated peripheral blood eosinophil counts[18], medical imaging[13,19,20] and complement tests[21]. In the present study, we aim to calculate the prevalence of cutaneous drug eruptions, to evaluate the causative drugs leading to cutaneous drug eruptions and to study various clinical patterns of cutaneous drug eruptions.

2. MATERIALS AND METHODS

Study Cases used

The present study is a prospective study done over a period of one year from January 2013 to January 2014 in the department of Dermatology, Venereology and Leprosy DVL) in SVRRGGH hospital, Tirupathi. Study cases are all patients of either sex, attending to the outpatient or the inpatient ward of D.V.L. department. Patients with suspected ACDR referred to D.V.L. department were also included in the study. The study was performed under the approval from the Human Research Ethics Committee (HREC), of the S. V. Medical College, Tirupati.

Selection criteria

All cases of ACDRs willing to participate and having causal assessment according to WHO-UMC causality assessment scale are included in the study. Patients not willing to participate in the study were excluded from the study. The data parameters considered for the study case number, name, age, sex, type of reaction, past history of drug reaction, date of starting reaction, possible offending drugs, offender drugs (continued or discontinued), outcome (with treatment or without treatment), causality assessment using WHO-UMC (causality assessment scale) guidelines. Investigations were carried out under the supervision of guide wherever necessary i.e., complete haemogram, urine routine, liver function test, renal function test, skin biopsy, VDRL, HIV testing, blood sugar levels and oral provocation test where ever feasible in milder form of drug reactions were observed.

3. RESULTS AND DISCUSSION

A total of 22,073 patients attended the department of dermatology during study period. Among them, 70 cases showed the presence of ACDRs. The prevalence rate is found to be 0.0032%. The respective age and sexwise distribution of drug eruptions is shown in the Table 1 given below. Results showed that most of the patients (32/70) were in the age group of 21-40 years of age, followed by (14/70) in the age group of 41-50years, (10/70) in the age group of (11-20), in the age group of >50years and (6/70) in age of (0-10) years. The male to female ratio is found to be 2.18: 1; there were 48 males and 22 females. Morphological types of ACDRs shown were given in the Table 2 below. The respective drugs implicated in the ACDRs is shown in the Table 3 given below. Percentagewise distribution of drug eruptions is shown in the Figure 1 given below.

Most of the cases (96%; 67/70 cases) developed rash while they are taking the incriminating drug. The most common offending drug group is antimicrobials (48.6%) followed by 20% of anticonvulsants followed by 12.8% cases of NSAIDS and others constitute 18.6% as shown in the Table 4 given below. The most common offending drug were phenytoin (14.3%) followed by diclofenac (10%) then clotrimoxazole (7.2%). The most common morphological types of the ACDRs were acneiform eruptions 17(24%), fixed drug eruptions 13(18%), maculopapular rash 10(12.8%), TEN-SJS 10(12.8%), Dapsone 3(4.28%) and pruritis 3(4.28%) as shown in the Table 3 given below. Genital and oral mucosal involvement is seen in 12% of cases, followed by oral mucosal involvement in 7% of cases as shown in the Table 5 given below.

4. CONCLUSION

The predisposition to some drug- induced eruptions may be due to genetic and family hypersensitivity syndromes. These adverse cutaneous drug reactions are distressing to both the patient and physician; therefore more effective and potent drugs are to be developed in the future. The patient should be alerted about the potential adverse events of the drug and to report them early.

REFERENCES

1. Bigby M. Rates of cutaneous reactions to drugs. *Arch Dermatol*, 2001 Jun, 137(6), 765-70
2. Craig KS, Edward WC, Anthony AG. Cutaneous drug reactions. *Pharmacol Rev,* 2001, 53, 57-79
3. Noel MV, Sushma M, Guido S. Cutaneous adverse drug reactions in hospitalized patients in a tertiary care centre. *Indian J Pharmacol*, 2004, 36,292-5
4. Uppal R, Jhaj R, Malhotra S. Adverse drug reactions among inpatients in a North Indian referral hospital. *Natl Med J India*, 2000 Jan-Feb, 13(1),16-8
5. Jhaj R, Uppal R, Malhotra S, Bhargava VK. Cutaneous adverse reactions in in-patients in a tertiary care hospital. *Indian J Dermatol Venereol Leprol*, 1999 Jan-Feb, 65(1), 14-7
6. Pudukadan D, Thappa DM. Adverse cutaneous drug reactions: Clinical pattern and causative agents in a tertiary care center in South India. *Indian J Dermatol Venereol Leprol*, 2004 Jan-Feb, 70(1), 20-4.
7. Lazarou J, Pomeranz BH, Corey PN. Incidence of adverse drug reactions in hospitalised patients: a meta-analysis of prospective studies. *JAMA*, 1998 Apr 15, 279(15), 1200-5.

8. Chatterjee S, Ghosh AP, Barbhuiya J, Dey SK. Adverse cutaneous drug reactions: A one year survey at a Dermatology outpatient clinic of a tertiary care hospital. *Indian J Pharmacol,* 2006, 38, 429-31
9. Ajayi FO, Sun H, Perry J. Adverse drug reactions: a review of relevant factors. *J Clin Pharmacol*, 2000 Oct, 40(10), 1093-101
10. Chatterjee S, Ghosh AP, Barbhuiya J, Dey SK. Adverse cutaneous drug reactions: A one year survey at a Dermatology outpatient clinic of a tertiary care hospital. *Indian J Pharmacol,* 2006, 38, 429-31
11. Sullivan JR, Shear NH. Drug eruptions and other adverse drug effects in aged skin. *Clin Geriatr Med*, 2002 Feb, 18(1), 21-42
12. Kauppinen K, Stubb S. Drug eruptions: Causative agents and clinical types. A series of in-patients during a 10-year period. *Acta Derm Venereol*, 1984, 64(4), 320-4
13. Stern RS, Wintroub BU. Cutaneous reactions to drugs. In: Freedberg IM, Eisen AZ, Wolff K, Austen KF, Goldsmith LA, Katz SI, et al. editors Fitzpatrick's Dermatology in general medicine. 5th ed. McGraw-Hill: New York; 1999.p.1634-42.
14. Sharma VK, Sethuraman G, Kumar B. Cutaneous adverse drug reactions. Clinical pattern and causative agents - a six year series from Chandigarh, India. J Postgrad Med, 2001 Apr-Jun, 47(2), 95-9
15. Anderson JA, Adkinson NF Jr. Allergic reactions to drugs and biologic agents. JAMA, 1987 Nov 27, 258(20), 2891-9
16. deShazo RD, Kemp SF. Allergic reactions to drugs and biologic agents. JAMA, 1997 Dec 10, 278(22), 1895-906.
17. Ajayi FO, Sun H, Perry J. Adverse drug reactions: a review of relevant factors. J Clin Pharmacol, 2000 Oct, 40(10), 1093-101
18. Romagosa R, Kapoor S, Sanders J, Berman B. Inpatient adverse cutaneous drug eruptions and eosinophilia. Arch Dermatol, 2001, 137, 511-2
19. Shepard GM. Allergy to beta-lactam antibiotics. Immunol Allergy Clin North Am, 1991, 11, 611-33
20. Anne S, Reisman RE. Risk of administering cephalosporin antibiotics to patients with histories of pencillin allergy. Ann Allergy Asthma Immunol, 1995 Feb, 74(2), 167-70
21. Adams LE, Hess EV. Drug related lupus. Incidence, mechanisms and clinical implications. Drug Saf, 1991 Nov-Dec, 6(6), 431-49

Table 1

Age and sex wise distribution of drug eruptions

Age	Male	Percent age (%)	Female	Percent age (%)	Total	Percentage
0-10	5	7.14	1	1.42	6	8.52
11-20	8	11.42	2	2.8	10	14.28
21-30	11	15.71	5	7.14	16	20
31-40	13	18.57	3	4.28	16	22.85
41-50	4	5.71	10	14.28	14	20
>50	7	10	1	1.43	8	15.7

Table 2

Morphological types of ACDRs

Type of drug reaction	No. of Cases	Percentage (%)
Acne form eruptions	17	24.28
Fixed drug eruptions	13	18.52
Morbilliform rash	10	14.28
Toxic Epidemolytic Necrolysis	6	8.75
Dapsone syndrome	3	4.28
Erythema multiforme	1	1.43
Purpura	1	1.4
Exfoliative dermatitis	2	2.85
Pruritis	3	4.28
Stevens Johnson Syndrome	4	5.71
Urticaria	2	2.85
Lichenoid eruptions	2	2.85
Psoriasiform eruptions	2	2.85
Peeling of palmar skin	1	1.43
Acute generalised exanthematouspustulosis	1	1.43
Eczematous eruption	1	1.43
Drug rash with eosinophilia & systemic symptoms(DRESS)	1	1.43
Total	70	100

Table 3

Drugs Implicated In Adverse Cutaneous Drug eruptions

S.No	Name of the drug	Type of eruption	No.of cases	Frequency (%)
1.	Cotrimaxozole	Bullous FDE	1	
		FDE	1	
		Morbilliform rash	2	7.14
		pruritis	1	
2.	Tab Dapsone	Dapsone syndrome	3	4.28
3.	Tab Ciprofloxacin	Erythema		
		multiformae	1	
		TEN	1	2.86
4.	Tab Doxycycline	FDE	3	5.71
		Bullous FDE	1	
5.	Tab Metronidazole	FDE	1	2.86
		TEN	1	
6.	Tab Nevirapine	SJS	3	5.71
		Morbilliform rash	1	
7.	Cap Amoxicillin	Morbilliform rash	2	2.86
8.	Syp Amoxiclav	Morbilliform rash	1	1.43
9.	Tab Flucanazole	Urticarial	1	1.43
10.	Inj Amikacin	Maculopapular rash	1	1.43
11.	Tab Chloroquine	Lichenoid eruptions	2	4.28
		Urticarial	1	
12.	Tab Isoniazid	Acneiform eruptions	3	4.28
13.	Inj Ampiclox	Maculopapular rash	1	1.43
14.	Tab HCQs	Psoriasiform eruption	1	1.43
15.	Inj Ampicillin	AGEP	1	1.43
16.	Steroids (oral & inhalation)	Acneiform	7	11.42
		eruptions		
		Purpura	1	
17.	Tab Phenytoin	Acneiform eruption	6	14.28

		Exfoliative dermatitis	2	
		TEN	1	
		DRESS	1	
18.	Tab carbamazepine	TEN	2	5.71
		SJS	1	
		Maculopapular rash	1	
19.	Diclofenac (tablet & injection)	FDE	3	10
		Pruritis	2	
		TEN	1	
		Peeling of palmar skin	1	
20.	Tab Lithium	Psoriasiform eruption	1	2.86
		Acneiform eruption	1	
21.	Tab Etoricoxib	Exanthema	1	1.43
22.	Tab Risperidone	Eczematous eruption	1	1.43
23.	Multiple drugs	FDE	1	1.43
		TEN	1	
24.	Tab tramadol	TEN	1	1.43

Table 4
Drug groups implicated in ACDRs

Drug group	No. of cases	Frequency (%)
Antimicrobials	34	48.5
Anticonvulsants	14	20
NSAIDs	9	12.8
Steroids	8	11.4
Others	5	7.1

Table 5
Mucosal involvement in ACDRs

Mucosal involvement	No. of cases	Frequency (%)
Oral	5	7.1
Genital	3	4.3
Conjuctiva	2	2.8
Oral and genitalia	9	12.8
Oral, genital &conjuctiva	2	2.8

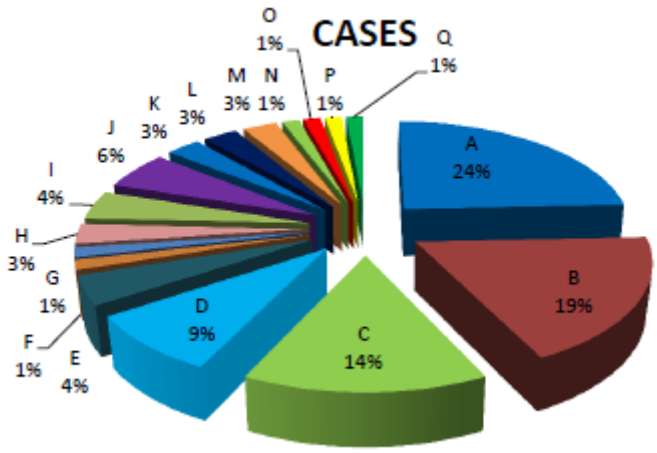

Figure 1
Percentagewise distribution of drug eruptions
A- Acneiform eruptions, B- Fixed drug eruptions, C- Morbilliform rash, D- Toxic Epidemolytic Necrolysis, E- Dapsone syndrome, F- Erythema multiforme, G- Purpura, H- Exfoliative dermatitis, I- Pruritis, J- Stevens Johnson Syndrome, K- Urticaria, L- Lichenoid eruptions, M- Psoriasiform eruptions, N- Peeling of palmar skin, O- Peeling of palmar skin, P- Eczematous eruption, Q- Drug rash with eosinophilia & systemic symptoms (DRESS)