

## A 27- Year Retrospective Study of Cutaneous Adverse Drug Reaction on In-Patients at Tongji Hospital

Dr. Monique Kafle\*

Patan Academy of Health Sciences, Patan Hospital, Lagankhel, Lalitpur, Nepal

### Original Research Article

**\*Corresponding author**

*Dr. Monique Kafle*

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**Abstract:** This study was carried out to investigate the prevalence profile of cutaneous adverse drug reactions (CADRs) on in patients at Tongji hospital. A retrospective study was carried out on in-patients at Tongji medical college, Huazhong university of Science and Technology from May 1985 to April 2012. Out of 110553 in-patients 777 cases were diagnosed as CADRs. The most common type of CADRs was maculopapular eruption followed by Erythema multiforme, Fixed drug eruption and urticaria. The most common drugs causing CADRs was antibiotics followed by antiepileptic drugs, antipyretics and analgesics. The most common type of CADRs was maculopapular eruptions followed by erythema multiforme, fixed drug eruption and urticaria. The main offending drug was antibiotics followed by antiepileptic drugs, antipyretics and analgesics.

**Keywords:** Drug reaction, Exfoliative dermatitis, fixed drug eruption, Stevens Johnson syndrome.

### INTRODUCTION

World Health Organization (WTO) defined ADR as “a response to a medicine which is noxious and unintended, and which occurs at does normally used in man” [1]. The most common CADR is morbilliform exanthema [2]. Severe cutaneous adverse drug reaction (SCADRS) includes exfoliative dermatitis, Stevens - Johnson syndrome (SJS), toxic epidermal necrolysis (TEN), and drug reactions with eosinophilia and systemic symptoms (DRESS) [3]. A few epidemiologic studies in different populations, such as hospitalized patients, out- department patients and general population have been reported by different research groups from different countries and regions in recent years [4].

Although China is a developing country with the largest population in the world, there are only three research groups published their data on prevalence of CADRs in the eastern, southwestern and southern China to date [5-7]. This study was designed to survey retrospectively the prevalence profile of CADRs based on in-patients is one of the largest comprehensive hospital in central China during the past 27 years. A conclusion of the various epidemiological characteristics provided information for the further prevention of drug eruption.

### MATERIALS AND METHODS

Retrospective study was performed on patients with CADRs admitted in Department of Dermatology, Tonji Hospital, Tongji Medical Collage, Huazhong University of Science and Technology from May 1985 to April 2012 after the ethical approval from the institute.

All the medical records of in-patients with CADRs admitted at Tonji Hospital from 1985 to April 2012 were reviewed in Department of Medical Record, Tonji Hospital, Tonji Medical College, Huazhong

University of Science and Technology. Patients with all age and both sexes were included in the study.

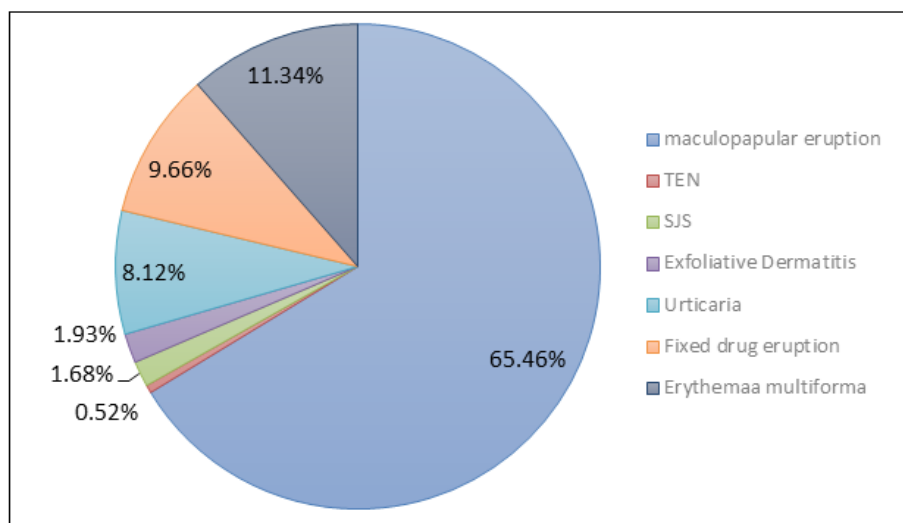
A questionnaire was designed for this survey, which included demographic data, medication used, latency, morphology of eruptions, complications, laboratory findings, treatment introduced and prognosis. To identify the causative drug, a logical approach based on the clinical characteristics, chronologic factors, and literature search was performed [8, 9]. All this leads to grading of highly probable, probable, possible, unlikely, or almost excluded. Cases classified as highly probable and probable were included in this study. To analyze the shift of the sensitizing drugs from 1985 to 2012, we divided the study span into three periods by every 9-year. The rate and variation of every allergenic drugs in different period were calculated.

Data were collected in a spreadsheet (Excel; Microsoft Corp, Redmond, Wash) and analyzed with statistical software (SPSS 17; IBM Corp, Armonk, NY) and chi square test was performed. The p values were calculated under the predetermined level of significance (0.05).

**RESULTS**

A total of 110,553 in-patients were admitted to Togji Hospital from May 1985 to April 2012. Among

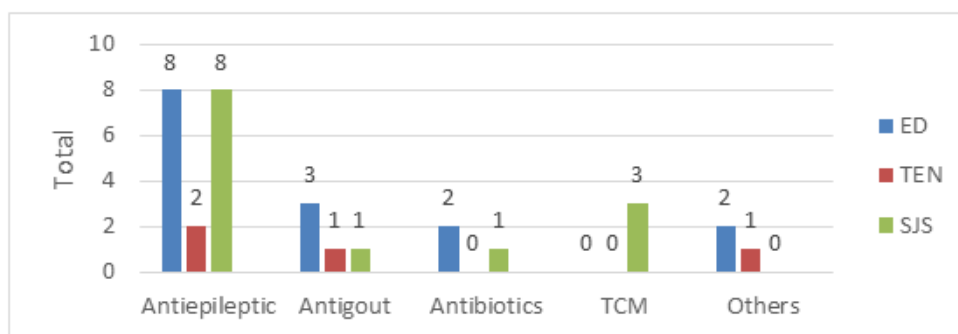
them, 777 cases were diagnosed as CADR, accounted for 0.70%.



**Fig-1: Distribution of CADR patterns in this study**

**Table-1: Causative drug linked to clinical patterns of CADR in this study**

Causative drugs	Types of CADR									Total
	M	EM	F	U	E	P	ED	SJS	TEN	
Penicillins	136	24	0	18	0	0	1	0	0	179
Cephalosporins	52	13	1	3	0	1	1	1	0	72
Sulfonamides	15	5	28	8	1	0	0	0	0	57
Quinolones	18	3	6	1	0	0	0	0	0	28
Antiepileptic drug	29	7	3	0	0	0	8	8	2	57
Antipyretics and Analgesics	22	7	8	0	3	0	0	1	0	41
Anti-gout drug	15	5	0	0	0	0	3	1	1	25
Traditional Chinese Medicine	12	0		1	1	1	0	0	3	18
Immunomodulatory and immunosuppressive agents	6	0	0	0	0	1	0	0	0	7
Xenogeneic serum preparation and vaccine	1	0	0	6	0	0	0	0	0	7
Antituberculosis drugs	4	0	0	1	0	0	0	0	0	7



**Fig-2: Causative drugs linked to SCARDs in this study**

Note: Exfoliative dermatitis (ED), Stevens - Johnson syndrome (SJS), toxic epidermal necrolysis (TEN)

**Table-2: The shift of causative drugs from May 1985 to April 2012 in this study**

Causative drug	5/2003-4/2012(%)	5/1985-4/1994(%)	5/1994-4/2003(%)
Antibiotics over all	114(86.36%)	109(68.99%)	113(54.85%)
Penicillins	65(49.24%)	68(43.04%)	46(22.33%)
Cephalosporins	6(4.54%)	20(12.66%)	46(22.33%)
Sulfonamides	41(31.06%)	13(8.23%)	3(1.46%)
Quinolones	2(1.52%)	8(5.06%)	18(8.73%)
Antipyretics and analgesics	12(9.09%)	15(9.49%)	14(6.80%)
Anti-gout drugs	0	4(2.53%)	21(10.19%)
Traditional Chinese Medicine	1(0.76%)	7(4.43%)	10(4.85%)
Immunomodulatory and Immunosuppressive agents	1(0.76%)	1(0.63%)	5(2.43%)
Xenogeneic serum and Vaccine	0	3(1.90%)	4(1.94%)
Antituberculosis drugs	0	2(1.27%)	3(1.46%)
Total (%)	132(100%)	158(100%)	206(100%)

## DISCUSSIONS

A total of 110,553 in-patients were admitted to Tonji Hospital from May 1985 to April 2012, out of which 777 cases were diagnosed as CADR. Hence, the incidence of drug eruption in hospitalized patients was 0.70%, which was similar to the range of 0.36%-12.2% in the study in previous report done by Patel TK, Thakkar SH, Sharma D [10].

In our study, the most common drug reaction was maculopapular eruptions 65.46%, followed by erythema multiforme 11.34% fixed drug eruption 9.66%, and TEN 0.52%. Similarly, most common drug reaction was maculopapular eruption: 39.5%, in study done by Ding wy, Lee Ck, Choon SE [11].

The most common causative drugs linked to SCARDs in our study were antiepileptic drug (56.25%) patient followed by Anti-gout (25.62%), Antibiotics (9.37%), traditional Chinese medicine (9.37%) which is dissimilar to the study done by Rohini Sharma in 2015 in India where The most common classes of drugs implicated were antimicrobials in 40% patients followed by nonsteroidal antiinflammatory drugs in 35.3%, steroids 15.7%, anticonvulsants 9% [12].

Maculopapular eruptions were mainly due to antibiotics (221 of 509 cases, 43.4%), followed by antiepileptic drugs (29 of 509 cases, 5.7%), antipyretics (22 of 509 cases, 4.3%) , which is similar to the study done by the Siew Eng Choon, Nai-Ming Lai in Malaysia [13], where, maculopapular eruption was due to antibiotic in 30 cases, antiepileptic drugs 23 cases and anti pyretic 9 cases out of 153 cases [11].

Fixed drug eruptions were mainly due to sulfonamides (28 of 75 cases, 37.3%), followed by antipyretics and analgesics (8 out of 75 cases,10.7%) which is similar to the study done by VK Sharma, G Sethuraman and B Kumar where sulfonamides 65 cases, NSAIDs 17 cases out of 150 cases [14].

## CONCLUSIONS

In our study, the incidence of CADR in hospitalized patients was 0.70. The most common clinical pattern of CADR was maculopapular eruptions followed by the erythema multiforme, fixed drug eruption, and urticaria. Antibiotic was the main offending agent, then followed by antiepileptic drugs, antipyretics and analgesics. Anticipating, recognizing and managing CADR is of prime concern so as to minimize the incidence of CADR.

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