A STUDY ON DERMATOLOGICAL OUTCOME IN DENGUE FEVER

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ABSTRACT
BACKGROUND: Around the world dengue incidence has dramatically grown with a large number of asymptomatic cases. Worldwide about 390 million dengue infections were occurring per year, among them 96 million people were developing clinical manifestations with varied severity. About 3.9 billion people residing in 128 countries, were at-risk of dengue virus infection. Dengue fever (DF) is one of the common causes of acute febrile illness. In half the patients with dengue fever skin involvement occurs.
AIM& OBJECTIVES: To study the socio-demographic parameters, clinical features and laboratory parameters among the patients with and without skin rash in dengue infection. Also determine outcome among the patients with dengue fever and its association with skin rash.
MATERIAL AND METHODS: A hospital-based, analytical prospective study was conducted in the Department of General Medicine, Kamineni Institute of Medical Sciences, Narketpally, Nalgonda (Dist), Telangana. Patients older than 16 years of age with clinical features and laboratory reports suggestive of dengue infection were included. The study was conducted for a period of 6 months from 1st August 2018 to 31st January 2019. These patients were further divided based on the skin rash presence and absence. The data obtained was entered in Microsoft Excel and analyzed in SPSS version-22 trial. Analysis was done using unpaired students t-test, ANOVA.
RESULTS: In total 97 patients with dengue fever were enrolled into the study. About 14.4 p.c (14) patients were with skin rash. The patients with skin rash were found to have lower platelet levels during the disease course. Patients with skin rash had higher percentage of platelet transfusion which was statistically significant.
CONCLUSION: A cutaneous involvement may facilitate clinical diagnosis but it may not be present among all the patients.

KEYWORDS : Dengue Fever, skin Rash.

INTRODUCTION
Dengue a mosquito-borne, arboviral disease caused by a single-stranded positive-sense RNA virus belonging to Flaviviridae family with 4 distinct serotypes (DENV-1, DENV-2, DENV-3 and DENV-4).[1,2] It is transmitted by female Aedes mosquito mainly belonging to the species A.aegypti and A.albopictus.[3] Infection with any one dengue serotype provides lifelong immunity to that serotype virus, but there is no cross-protective immunity to the other serotypes.[4] Dengue virus infection among humans causes a spectrum of illnesses ranging from inapparent or mild febrile illness to dengue hemorrhagic fever (DHF) and dengue shock syndrome(DSS).[5] Classic dengue fever characterized by sudden onset of fever (saddle-back), weakness, frontal headache, nausea and vomiting, anorexic, altered taste sensation, a mild sore throat, retro-orbital pain, body aches, joint pains, bradycardia, petechiae, facial flushing and rash (scarlatiniform to maculopapular).[6,7] WHO has simplified the differential diagnosis of DF and DHF/DSS based on the presence or absence of major organ involvement.[3,8] Skin involvement occur commonly in DF.[9] During recent years the incidence of dengue around the world has dramatically grown with a large number of asymptomatic cases so the dengue cases which are actual present could not be reported and mostly misclassified.[1] An estimate has indicated 390 million dengue infections per year of which 96 million were developing clinical manifestations with varied severity.[10] Another study reported that about 3.9 billion people, in 128 countries, were at risk of infection with dengue viruses.[11]

AIM & OBJECTIVES
1. To study the demographic parameters among the dengue patients.
2. To determine the clinical features and laboratory parameters among the dengue patients with and without skin rash.
3. To determine outcome among the patients with dengue fever and its association with skin rash.

MATERIAL AND METHODS
A hospital-based, analytical prospective study was conducted in the Department of General Medicine, Kamineni Institute of Medical Sciences, Narketpally, Nalgonda (Dist), Telangana. Patients older than 16 years of age with clinical features and laboratory reports suggestive of dengue infection were included. Patients with laboratory evidence of co-infection were excluded. The study was conducted for a period of 6 months from 1st August 2018 to 31st January 2019. IEC approval and written consent were obtained in prior. The data obtained was entered in Microsoft Excel and analyzed in SPSS version-22 trial. Analysis was done using unpaired students *t*-test, ANOVA. Based on the skin rash patients were divided into subjects with skin rash and without skin rash during their hospital visit. Patients with petechiae or skin lesions or both were identified to with skin rash. Other details regarding clinical features, laboratory investigations, organ involvement, treatment, and outcome were also recorded.

RESULTS
About 97 patients with dengue fever were included in the present study. Patients with the presence of skin rash were 14 (14.4%) and 83 (85.6%) patients were without skin rash. Mean age among patients with skin rash was 29 years and 31 years among patients without skin rash (SN). In both the groups the mean duration of fever was 5–6 days. History of abdominal pain, gastrointestinal bleeding, hematuria, overt bleeding, epistaxis and gum bleeding were more among patients with skin rash when compared to patients without skin rash were statistically significant. Heart rate during admission, other variables (vital signs and hemogram) did not have a significant difference between the groups. Table-1 shows details of both the groups regarding socio-demographic parameters, clinical features and disease outcome. Patient with skin rash had lower levels of platelets. Alanine-amino transferase (ALT) or serum glutamic-pyruvic transaminase (SGPT) levels were abnormal in patients of both the groups. Heart rate and SGPT had shown a statistical significance. Platelet count during admission and lowest platelet during disease course were not significant. There was no difference in the sequential organ failure assessment score among both the groups. Table-2 shows various outcomes among both the groups, inpatient stay and platelet transfusion had a statistically significant association.

Table-1: Socio-demographic parameters, laboratory findings, clinical features among dengue patients

Variables	Dengue with skin rash (n = 14)	Dengue without skin rash (n = 83)
Age [Mean ± (SD)]	29 ± 10 years	31 ± 13 years
Sex ratio (Male : Female)	8:6	47:36
Duration of fever in days [mean (min–max)]	5.5 (3–11)	5.8 (1–20)
Fever with chills	10 (71.4%)	61 (73.4%)
Myalgia	13 (92.8%)	71 (85.5%)
Arthralgia	3 (21.4%)	9 (10.4%)
Headache	10 (71.4%)	52 (62.6%)

Vomiting	7 (50%)	37 (44.5%)
Abdominal pain	4 (28.5%)	16 (19.2%)
Loose stool	3 (21.4%)	6 (7.2%)
Dyspnoea	1 (7.1%)	6 (7.2%)
Cough	3 (21.4%)	11 (13.2%)
Low sensorium	1 (7.1%)	3 (3.6%)
Overt bleeding	4 (28.5%)	18 (21.6%)
Gastrointestinal bleeding	3 (21.4%)	5 (6.02%)
Epistaxis	2 (14.2%)	3 (3.61%)
Haematuria	2 (14.2%)	2 (2.4%)
Gum bleeding	1 (7.1%)	4 (4.8%)
Heart Rate (MEAN + SD)	101 + 16	96 + 14
Mean systolic BP, mmHg (SD)	104 + 13	106 + 14
Mean diastolic BP, mmHg (SD)	69 + 11	69 + 12
Mean RR, per minute (SD)	22 + 4	20 + 4
Mean SpO2, % (SD)	96.6 + 2.31	96.4 + 4.8
Mean Hb, g% (SD)	14.5 + 2.3	14.5 + 2.1
Mean WBC/mm3	5489	5338
Day 1 Mean Platelet/mm3	65,364	78,445
Mean Creatinine, mg%	1.18 + 0.5	1.17 + 0.4
Mean Urea, mg%	24 + 14	26 + 15
Mean Protein, g/dl	6.91 + 0.9	6.92 + 0.8
Mean Albumin, g/dl	3.8 + 0.6	3.9 + 1.8
Mean SGOT, U/L	240	238
Mean SGPT, U/L	190	101
Mean Alkaline phosphate, U/L	108	93

Table-2: Outcome of dengue patients in relation to skin rash

Variables		Skin rash present	Skin rash absent	p-value
Inpatient stay	Yes	2 (14.2%)	33 (39.7%)	**0.002**
	No	12 (85.8%)	50 (60.3%)	
Platelet transfusion	Yes	2 (14.2%)	5 (6.2%)	**0.024**
	No	12 (85.8%)	78 (93.8%)	
Oxygen (O2) supplementation	Yes	1 (7.1%)	2 (2.4%)	**0.356**
	No	13 (92.9%)	81 (97.6%)	
Requirement of NIV	Yes	1 (7.1%)	3 (3.6%)	**0.098**
	No	13 (92.9%)	80 (96.4%)	
Requirement of inotropes	Yes	1 (7.1%)	3 (3.6%)	**0.098**
	No	13 (92.9%)	80 (96.4%)	
Requirement of dialysis	Yes	1 (7.1%)	0	-
	No	13 (92.9%)	83 (100%)	
Death	Yes	0	3 (3.6%)	-
	No	14 (100%)	80 (96.4%)	

DISCUSSION

In dengue fever, skin may be commonly involved which was found in about 50–82 p.c patients.[12] Thomas EA et al[13] study reported skin involvement among more than 50 p.c of patients, in the present study skin involvement was seen among 14.4 p.c of the patients. In the similar study conducted by Huang et al[9] only a total of 45 patients included, patients without shin rash were older than that of present study, mean age of patients in both the groups were similar to that of present study. In the study conducted by Huang et al[9] patients without skin rash had thrombocytopenia and required more platelet transfusion, contrasting our findings of patients with skin rash who had lowest level of platelet and required more platelet transfusion. In the study conducted by Huang et al[9] only 5 (11 p.c) patients received platelet transfusion while in the present study 7 (7.2 p.c) patients had received platelet transfusion. Platelet transfusions across both the groups were statistically significant. Among the patients with skin rash platelet transfusion requirement, O_2 requirement, non-invasive ventilation (NIV) requirement, inotropes requirement and dialysis requirement were of higher percentage but requirement of platelet

transfusion had a statistically significant association with skin rash. Percentage of deaths was high among patients without skin rash was not statistically significant.

CONCLUSION

Cutaneous involvement may facilitate clinical diagnosis but it may not be present among all the patients.

CONFLICT OF INTEREST: None to declare

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REFERENCES
1. Dengue and severe dengue. Available from: https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue. (Last accessed on 08.02.2020).
2. Mitra S, Gautam I, Jambugulam M, Abhilash KP, Jayaseeelan V. Clinical score to differentiate scrub typhus and dengue: A tool to differentiate scrub typhus and dengue. Journal of global infectious diseases. 2017 Jan;9(1):12. (Last accessed on 09.02.2020).
3. Koshy M, Mishra AK, Agrawal B, Kurup AR, Hansdak SG. Dengue fever complicated by hemophagocytosis. Oxford medical case reports. 2016 Jun 1;2016(6):121-4. (Last accessed on 19.02.2020).
4. Gubler, D. J. 1988. Dengue, p. 223–260. In T. P. Monath (ed.), Epidemiology of arthropod-borne viral diseases. CRC Press, Inc., Boca Raton, Fla. (Last accessed on 10.02.2020).
5. Anonymous. 1986. Dengue hemorrhagic fever, diagnosis, treatment and control. World Health Organization, Geneva, Switzerland. (Last accessed on 09.02.2020).
6. Hayes, E. B., and D. J. Gubler. 1992. Dengue and dengue hemorrhagic fever. Pediatr. Infect. Dis. J. 11:311–317. (Last accessed on 08.02.2020).
7. Siler, J. F., M. W. Hall, and A. Hitchens. 1926. Dengue, its history, epidemiology, mechanism of transmission, etiology, clinical manifestations, immunity and prevention. Philipp. J. Sci. 29:1–304. (Last accessed on 19.02.2020).
8. Simmons CP, Farrar JJ. Nguyen v V, Wills B. Dengue. N Engl J Med. 2012 Apr 12;366(15):1423-32. (Last accessed on 09.02.2020).
9. Huang H-W, Tseng H-C, Lee C-H, Chuang H-Y, Lin S-H. Clinical significance of skin rash in dengue fever: A focus on discomfort, complications, and disease outcome. Asian Pac J Trop Med 2016; 9(7): 713–8. (Last accessed on 10.02.2020).
10. Bhatt S, Gething PW, Brady OJ, Messina JP, Farlow AW, Moyes CL et.al. The global distribution and burden of dengue. Nature; 496:504-507. (Last accessed on 09.02.2020).
11. Brady OJ, Gething PW, Bhatt S, Messina JP, Brownstein JS, Hoen AG, Moyes CL, Farlow AW, Scott TW, Hay SI. Refining the global spatial limits of dengue virus transmission by evidence-based consensus. PLoS neglected tropical diseases. 2012 Aug 7;6(8):e1760. (Last accessed on 19.02.2020).
12. Waterman SH, Gubler DJ. Dengue fever. Clin Dermatol. 1989;7:117–22. (Last accessed on 19.02.2020).
13. Thomas EA, John M, Kanish B. Mucocutaneous manifestations of dengue fever. Indian journal of dermatology. 2010 Jan;55(1):79. (Last accessed on 09.02.2020).