



ORIGINAL ARTICLE

Patterns of dengue rash in patients presenting with dengue fever in emergency.

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ABSTRACT... Objective: Patterns of Dengue Rash in Patients Presenting with Dengue Fever in Emergency. **Study Design:** Descriptive study. **Setting:** Emergency Department, Ziauddin Hospital. **Period:** September 2022 to October 2022. **Methods:** The sample size of study was n=250. The study was conducted in dengue endemic months on patients presenting in emergency department with confirmed dengue fever patients with serological testing positive of either gender and age 14yrs-60yrs with different clinical manifestations of dengue fever. All the patients with other febrile illness associated rash like measles, previous dermatological conditions were excluded from the study. **Results:** The mean age of the patients was 35.68±10.7 yrs. The frequency of males and females was n=129:121 (51.6%:48.4%). Mostly the patients presented from 20-35yrs of age were n=137 (54.8%), 36-50yrs n= 86(34.4%), n= 27(10.8%) for 51-60yrs of age. Of total cases enrolled, n=40 patients presented with an atypical rash resembling morbilliform n=10, n= 12 present with itchy rash with red patches of skin and raised border, n= 8 with itchy papular shutter cock resembling rash, and n=10 with isolated rashes involving only palms and soles with moderate to severe pruritus. **Conclusion:** Increasing incidence and emergence of different strains are associated with atypical rash further serotype testing for other types in dengue are required.

Key words: Dengue Fever, Dengue Rash, Morbilliform.

INTRODUCTION

Globally dengue fever has become a major health problem affecting most commonly Southeastern countries with mortality of around forty thousand patients.¹⁻⁵ There has been an increasing trend of reported cases by World health organization since 2019 and half a million requires admission.⁵ In Pakistan according to recent study in 2022 frequency of attack by dengue virus was 3.1%.⁵ Another single center study in 2021 showed 6.5% of patients of dengue progressing to dengue hemorrhagic fever and 10% developed plasma leakage i-e; dengue shock syndrome.⁷ Dengue rash accounts for 16.6%-33% of cases⁸ in a study in Pakistan in 2021 while worldwide rash accounts for about 50-82% of cases.⁸⁻¹²

Different atypical rash has been observed in different outbreaks in various countries and has been reported. This rash varies from typical maculopapular rash i-e; white islands in red

sea to severe itching and wheels, scarlentiform, morbilliform, shuttercock rash and also pruritic rash involving palms and soles only.⁸⁻¹³ Usually rash starts in febrile phase and typically resolve with fever.¹⁰⁻¹¹ Study by Huang et al in 2016 has shown that patients presented with rash has dengue fever caused by type 1 strain. Another case report has also published an atypical rash appearing in women on day 8 of fever.¹¹ Association of rash with pruritus has been seen in 27% of cases.¹¹ The mechanism behind rash is capillary dilatation initially during febrile phase later it can be associated with injury to the blood vessels and increased permeability. Study by Mishra et al has also found atypical involvement of rash and has also found its relation with patients with hemorrhagic manifestations and thrombocytopenia.¹³ Study by Huang et al has also found less association of morbilliform rash with decreasing platelets and transfusion requirement.

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The variability in rash and their outcome in different populations during outbreaks appearing recently in different countries has been concerning and therefore our aim of study was to evaluate the association of this rash with dengue patient's severity and outcome.

METHODS

This descriptive study was conducted in Ziauddin hospital emergency department from September 2022 to October 2022 for the period of two months in outbreak of dengue fever. Ethical committee approval was taken from hospital (09/2022). The sample size of study was calculated by keeping the prevalence of dengue to be % $n=250$. The study was conducted in dengue endemic months on patients presenting in emergency department with confirmed dengue fever patients with nonstructural protein 1 positive or immunoglobulin M positive on serological test, of either gender and age 14yrs-60yrs with different clinical manifestations of dengue fever. All the patients with other febrile illness associated rash like measles, previous dermatological conditions were excluded from the study. The patients presenting with sign and symptoms of dengue and dengue rash which included blanchable rash/exanthematous or maculopapular, morbilliform, petechial rash, itchy rash with red patches of skin and raised border, popular eruptions with shutter stock in appearance, itchy rashes with slightly dark colored patches reddish to brownish colored, diffuse reddish/pinkish rash with slightly swollen palms and soles. Patients clinical condition was stratified into uncomplicated and complicated dengue patients with severe disease and laboratory results were compared too. Patients presenting with rash and pruritus were classified for severity with visual analogue scale 0-10 from no pruritus to severe intractable pruritus.

The data was analyzed by statistical software SPSS version 24. The frequencies and percentages of demographic variables like age, gender, duration of symptoms was computed. While the qualitative variables like presenting complaints of dengue fever with rash and without rash.

RESULTS

The mean age of the patients was 35.68 ± 10.7 yrs. The frequency of males and females was $n=129:121$ (51.6%:48.4%). Mostly the patients presented from 20-35yrs of age were $n=137$ (54.8%), 36-50yrs $n= 86$ (34.4%), $n= 27$ (10.8%) for 51-60yrs of age (table 1). The male to female ratio was 1.06: 1. The patients presenting in emergency had typical symptoms of break bone fever with body aches, vomiting's and abdominal pain in almost all the patients. The pattern of fever in patients was variable from initial mild fever lasting for 3-5 days and then settling down itself with generalized weakness, body aches and vomiting's presenting feature in emergency. However, some presented with high grade fever not settled on oral pyretics i-e; oral paracetamol. Vomiting's was another common symptom with nausea and decreased appetite and increasing generalized weakness in most of the patient however it was seen most commonly in elderly and in patients with comorbids like diabetes mellitus, hypertension and ischemic heart disease.

The pattern of rash mostly seen in almost all the patients was diffuse blanchable rash also called as white islands in red sea. The other types of rash mostly found in patients were either with early symptoms of fever, and intractable itching not settling on antihistamines and remaining half were patients with intractable pruritus developing after one week of diagnosis of dengue.

Out of 300 cases presented during endemic in September and October in emergency department $n=40$ patients presented with an atypical rash resembling morbilliform $n=10$ patients, $n= 12$ patients present with itchy rash with red patches of skin and raised border, $n= 8$ patients with itchy popular shutter cock resembling rash, and $n=10$ patients with isolated rashes involving only palms and soles with moderate to severe pruritus (Figure-1). All these patient's rash reduced in intensity to intravenous hydration in emergency and for patients with severe intractable itching were managed with local momemtasone furaote twice a day mixed with moisturizing lotion after discussion with dermatologist and follow up in outpatient department. The duration of rash was

3-4 days and in n=5 patients one week. The patients usually presented with this atypical rash had uncomplicated dengue fever which resolved after symptomatic and supportive treatment of dengue fever and discharged from ER.

Demographic Variables	Frequency (Percentages)
Age in yrs. Mean ±SD	35.68±10.7
Gender	
Male	129 (51.6%)
Female	121(48.4%)
Rash	
Typical rash	210(80%)
Atypical rash	40(20%)

Table-I

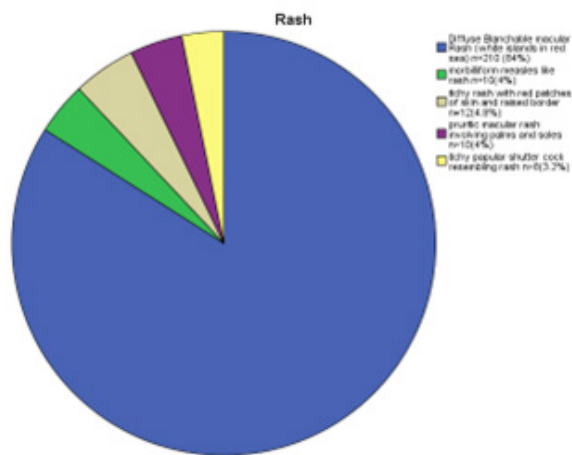


Figure-1. Patterns of dengue rash

DISCUSSION

Recently the Dengue fever is increasing dramatically to 40-50% of cases as per WHO estimates.^{12,13,14} It is a self-limited disease with mortality rate of 2-5% in severe dengue cases and if not treated mortality can be as high as 20%.¹⁵⁻¹⁹ Globally studies have found an increased incidence of Dengue in Southeast Asia with factors like economic expansion, hyper-endemicity and global travelling to contribute to spread of virus.¹⁹ In Pakistan, studies have shown incidence of dengue rash to be 16.6-33% compared to worldwide stats of 50-82%.⁸⁻¹⁰ The typical dengue rash has been a common finding but emergence of different strains has shown variations of rash with other strains. In our study different patterns

of atypical rash was found among 20% of patients presenting in patients in emergency department during peak of dengue fever.

In our study the age group mostly affected was 20-35yrs with slight gender predilection among males compared to females. Study by Miniallah et al in Peshawar has shown increased incidence among age group of 21-30yrs with increasing males being affected compared to females with ratio of 8:1.⁵ In our study the male to female percentage was 51.6% 48.4%. Wazir et al has also found increasing incidence 73.4% compared to females 26.1%.¹⁴

Associations of dengue rash has also been seen with low platelet count and severity of dengue fever.¹³ However, our study has shown occurrence of atypical rash especially among patients with uncomplicated dengue fever which resolved with symptomatic treatment. Another study in 2018 by Khan et al has also found skin manifestations in 75.87% patients with pruritus present in 32.8% which was associated with maculopapular rash in 20.6% patient's purpura in 7.4% and burning sensation in 8.7% with some other manifestations of skin like ecchymosis, purpura and desquamation in 6.1% of cases. In our study too itchy rash has been seen in 4.8% of patients presenting with red patches of skin and raised border, while 3.2% with itchy papular shutter cock resembling rash, and 4% patients with isolated rashes involving only palms and soles with moderate to severe pruritus. Patient's rash responded in emergency to intravenous hydration and then home treatment in severe pruritus associated with rash to local steroid application after consultation with dermatologists. No patient with atypical rash required hospital admission and discharged with outpatient follow-up advised and followed with dermatology review.

Atypical Dengue rash has been seen increasing with growing incidence of dengue and increasing outbreaks among Asians countries as evident from studies, therefore further more studies are required to see association of rash with different strains if any is present.

CONCLUSION

Atypical dengue rash has been seen among patients presenting in emergency department in association with uncomplicated dengue fever. Awareness of dengue atypical rash and its management and its association with particular strains needs more studies especially among endemic seasons.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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

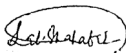

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REFERENCES

- Roth GA, Abate D, Abate KH. **Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: A systematic analysis for the Global Burden of Disease Study 2017**. *Lancet*. 2018; 392(10159):1736-88. doi:10.1016/S0140-6736(18)32203-7
- Rana R, Kant R, Kaul D, Sachdev A, Ganguly NK. **Integrated view of molecular diagnosis and prognosis of dengue viral infection: future prospect of exosomes biomarkers**. *Mol Cell Biochem*. 2022 Mar; 477(3):815-32. doi: 10.1007/s11010-021-04326-8. Epub 2022 Jan 21.
- Mathur D, Patel M, Vyas P, Kaushal R, Dash GC, Goel AD, et al. **Revitalising community engagement and surveillance challenges for strengthening dengue control in Jodhpur, Western Rajasthan, India - A mixed method study**. *J Infect Public Health*. 2020 Nov; 13(11):1755-61. doi: 10.1016/j.jiph.2020.08.005. Epub 2020 Sep 2.
- Shumaila Shabbir, Shaista. **Congenital Dengue Infection: A Novel Case of vertical transmission of Dengue virus in Karachi, Pakistan**. *Pak J Med Dentistry*. 2021; 10(3):98-101.
- Minallah A, Azam N, Mansoor E, Akram F, Niazi S, Baig MA. **Investigation of dengue fever cases with associated risk factors at suburbs of Peshawar in 2018**. *Pak Armed Forces Med J*. 2022; 72(S-2):S337-40.
- Bandeira IP, Chara SB, Meneguzzi de Carvalho G, Gonçalves MV. **Diffuse skin rash in tropical areas: Dengue fever or COVID-19? An Bras Dermatol**. 2021; 96(1):85-87. doi: 10.1016/j.abd.2020.10.001. Epub 2020 Nov 17.
- Ahmad S, Khan MSA, Babar MZU, Shah IA, Mahmood A. **Clinical Spectrum of Dengue Fever: A Single Center Study**. *Int J Pathol*. Oct-Dec 2018;16(4):90-5.
- Mehmood A, Khalid Khan F, Chaudhry A, Hussain Z, Laghari MA, Shah I, et al. **Risk Factors associated with a dengue fever outbreak in Islamabad, Pakistan: case-control study**. *JMIR Public Health Surveill*. 2021 Dec 30; 7(12):e27266. doi: 10.2196/27266.
- Hsin-Wei Huang, Han-Chi Tseng, Chih-Hung Lee, Hung-Yi Chuang, Shang-Hung Lin. **Clinical significance of skin rash in dengue fever: A focus on discomfort, complications, and disease outcome**. *Asian Pacific Journal of Tropical Medicine*. 2016; 9(7):713-18. ISSN 1995-7645. <https://doi.org/10.1016/j.apjtm.2016.05.013>.
- Gregory E Rauscher, William D James. **Dermatologic manifestations of dengue**. Updated: May 26, 2022.
- Tan BH, Stacey S. **Case Report: An atypical dengue rash involving the soles**. *Proceedings of Singapore Healthcare*. 2021; 30(1):51-55. doi:10.1177/2010105820941876
- Veeresh, Jogin; Murthy, Sambasiviah Chidambara; Vishwanath, Banavasi1. **Mucocutaneous manifestations in dengue: A study among children at a Tertiary Care Center in South India**. *Indian Journal of Paediatric Dermatology*. 22(3):231-35, Jul-Sep 2021. | DOI: 10.4103/ijpd.IJPD_37_20
- Mishra AK, George AA, Abhilash K. **The relationship between skin rash and outcome in dengue**. *J Vector Borne Dis [serial online]* 2018 [cited 2023 Feb 11]; 55:310-4.
- Schaefer TJ, Panda PK, Wolford RW. **Dengue fever**. 2022 Nov 14. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. 2022 Jan-. PMID: 28613483.
- Aliya Batool, Bushra Anwar, Amina Rasul, Sadaf Khalid, Naghmi Asif, Hijab Shah. **Clinicopathological features of dengue fever-a single center study**. *Int J Pathol*. Apr - Jun 2020; 18(2):53-7.
- Taimoor Ashraf Khan, Shazia Nisar, Muhammad Mahad Qureshi, Muhammad Samiullah, Muhammad Israr. **Dengue fever outbreak in twin cities; A tertiary care center experience**. *Pak Armed Forces Med J*. Oct 2021; 71(5):1524-28.
- Nauman Wazir, Ayesha Malook, Shafaq Naz, Mohammad Arshad, Shafqat-ur Rehman, Adnan Mumtaz. **Thrombocytopenia; frequency and association at the time of diagnosis in dengue fever, Peshawar**. *J Gandhara Med Dent Sci*. Sep 2019; 6(2):10-5.

18. Khan AR, Khan SR, Sohail M. **Frequency of mucocutaneous manifestations in dengue fever patients KJMS.** 2018; 11:118-21.
19. Swain S, Bhatt M, Pati S. **Distribution of and associated factors for dengue burden in the state of Odisha, India during 2010-2016.** Infect Dis Poverty. 2019; 8:31. <https://doi.org/10.1186/s40249-019-0541-9>.

AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Muhammad Saad Usmani	Manuscript writing, Proof reading, Data interpretation, Literature search.	
3	Shua Nasir	Proof reading, Data collection & interpretation.	
4	Mariam Muhammad Sharif	Manuscript proof reading, Data interpretation, Patients interpretation.	 
5	Lal Shehbaz	Final layout, Data entry, Data complication.	
6	Arifa Haque	Data entry, Final layout, Literature help, Data ocmplication.	