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Study of Dermatological manifestations of Dengue fever in Andhra Population

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Abstract

Background: Dengue fever is a major health problem in all age groups especially in tropical countries like India. Dengue fever (DF) may present with dermatological manifestations but enough data is not available for justification hence this study was conducted to correlate DF with dermatological manifestation.

Method: 80 (Eighty) patients aged between 16 to 60 years having DF positive by ELISA test were studied to evaluate dermatological manifestation.

Results: 44 (55%) had only cutaneous involvement, 19 (23.7%) had muco-cutaneous involvement, 17 (21.7%) had no dermatological involvement. Among those with skin involvement, 38 (47.5%) had generalized rash, 27 (33.7%) truncal, 15 (18.7%) had rash in the extremities. Out of 80, 55 (68.7%) had pruritus and 25 (31.7%) had no pruritus.

Conclusion: Dermatological manifestations are common clinical feature in DF patients but not observed in all DF patients. Identification of skin involvement help the clinician in early diagnosis and better management of patients to avoid morbidity and mortality.

Keywords: DF, Petechiae, ELISA IgM, NS1 antigen, Muco-cutaneous

Introduction

It is said that, skin is the window to within the body. Hence skin can provide important clues to systemic diseases enabling the practitioner to make a tremendous contribution to the patients care if cutaneous manifestations of the disorder can be identified. As Dengue is a viral fever focus on various muco-cutanous manifestations becomes a challenge to the dermatologist apart from the physician.

Dengue fever (DF) is a flu-like illness that affects all population. The incubation period of DF after mosquito bite is between 2 to 8 days. The clinical features vary according to the age of patients. Infants and young children usually have only a non-specific febrile illness with rash that is difficult to distinguish from other viral illness [(1)]. The body

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temperature rapidly increases. Above 39ºc (>39ºc) and lasts approximately 5 to 6 days and sometimes biphasic. During the febrile period, the patient may experience severe headache, retro-orbital pain, myalgia, arthalgia, nausea, and / or vomiting. More than 50% of infected patients report rash [2]. During this period initially macular or maculopapular rash appears which eventually diffusely erythematous [3] becomes. Minor hemorrhagic manifestations such as petechiae, epistaxis and gingival bleeding occur in some patients. Skin lesions could be due to viral host interaction inducing release of un-identified chemical mediators in the skin [4] and rash has nothing to do with the direct viral invasion or presence of immune complexes. Hence attempt is made to evaluate the skin manifestation in DF [5] so that dermatologist can help the clinician to confirm DF and severity of DF because many viral diseases have ambiguous manifestations.

Material and Methods

80 (Eighty) patients of different of age group admitted at Emergency ward NIMRA Institute of Medical sciences, Ibrahimpatnam, Jupudi, Vijayawada, Andhra Pradesh-521456

Inclusive Criteria: Patients aged between 16 to 60 years, having positive dengue fever test and having skin rash were selected for study.

Exclusion Criteria: Patients with negative dengue fever test, urticaria, allergy, or immune compromised patients below 16 years and above 60 years were excluded from the study.

Method: The clinical presentations were febrile illness, laboratory findings were progressive thrombocytopenia, elevated hepatic transminase and presence of detectable dengue IgM and detectable virus-expressed soluble main-structural protein (NSI) by means of Enzyme linked immune sorbent assay (ELISA) (Panbio, Dengue duo-cassette) with other serologic being negative and blood cultures sterile or sero conversion of cavelesent sera were carried out diagnosed dengue fever (DF).

The Duration of study was August-2019 to September-2020

Statistical analysis: Dermatological involvement, distribution of rash with or without pruritis were classified with percentage. The statistical analysis was carried out in SPSS software. The ratio of male and female was 2:1

Observation and Results

Table-1: Dermatological involvement of DF patients – 44 (55%) had cutaneous involvement only, 19 (23.7%) had Muco-cutaneous involvement, 17 (21.2%) had no dermatological involvement.

Table-2: Distribution of rash in DF – 38 (47.5%) generalized rash, 27 (33.7%) truncal rash, 15 (18.7%) extremities

Table-3: Rash with or without pruritis – 55 (68.7%) DF with pruritis, 25 (31.7%) without pruritis.

Table 1: Dermatological involvement in Dengue fever patients

Sl. No	Dermatological Involvement	No. of patients (80)	Percentage (%)
1	Cutaneous involvement only	44	55
2	Muco-cutaneous involvement	19	23.7
3	No dermatological Involvement	17	21.2

Table 2: Distribution of rash in patient's dengue fever

Sl. No	Distribution	No. of patients (80)	Percentage (%)
1	Generalised	38	47.5
2	Truncal	27	33.7
3	Extremities	15	18.7

Table 3: Rash with or without pruritis in patient with Dengue fever

Sl. No	Details	No. of patients (80)	Percentage (%)
1	With pruritis	55	68.7
2	Without pruritis	25	31.2

Discussion

Present study of demagogical manifestations in DF in Andhra Population 44 (55%) had only cutaneous involvement, 19 (23.7%) muco-cutaneous, 17 (21.7%) had no dermatological involvement (Table-1). 30 (47.5%) had generalized rash, 27 (33.7%) had truncal rash, 15 (18.7%) had rash in extremities (Table-2), Out 80 DF patients 55 (68.7%) had pruritis 25 (31.2%) were without pruritis (Table-3). These findings are more or less in agreement with previous studies (6)(7)(8).

Dengue fever is characterized by high grade fever, myalgia, arthalgia, headache, retro bulbar pain, skin rash. It is reported that there are four serotypes DF (DEN 1-4). Dengue virus has a single stranded RNA virus transmitted mainly through Mosquito Aedes aegypti. The viral replication occurs primarily in the microphages. Although dendritic cells (Langerhans cells) present in the skin may be the early target of infection [(9)]. Dengue virus may directly infect the skin. It is hypothesized that, absence of direct viral involvement or immune complexes in the skin lesions could be due to release of interaction inducing release of un-identified chemical mediators in the skin and the rash nothing to do with the direct viral invasion or with the presence of immune complexes. Presence of DF cause Dengue hemorrhagic Fever (DHF), Dengue shock syndrome (DSS).

Tourniquet test is performed by inflating blood pressure cuff on the upper aspect of arm to point mid way, between systolic and diastolic blood pressure for five minutes. The test is considered positive when > 20 petechiae, 2.5 cm2 are observed in patients having symptoms of DF. This test certainly indicates involvement of has dermatological manifestation has significant role in DF[(10)]. As DF is a viral infection commonly affects conjuctival and sclera, mucosa small vesicles on soft palate, erythema, such involvement of mucous membrane is observed in 50% of DF patients[(11)]. It was interesting to note that, local skin epithelium was not involved rather small blood vessel and endothelium was involved with edema. In DF patient's immune-fluorescence test was negative. The skin was predominantly involved due to intra-dermal hemorrhage or petechae, otherwise skin or skin appendages have no etiological signs in DF[(12)]. It is only due to involvement of sub-mucosal or sub-dermal capillaries.

Summary and Conclusion

The present study of dermatological manifestations in DF and related dermatological involvement, i.e., intra-dermal capillaries, Petechiae, pruritis will certain help to correlate. Positive test of ELISA IgM, other clinical signs and symptoms in DF are diagnostic factors for dermatologist or clinician. But this study demands further genetic, angiological, neurological, immunological, nutritional, patho-physiological studies because exact pathogenesis DF is still unclear.

Limitation of study – Due to tertiary location of research centre, small number of patients and lack of latest techniques we have limited findings and results.

- This research paper is approved by Ethical committee of Nimra Institute of Medical

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