

Study the Clinical and Laboratory Profile of Dengue Fever in Rohilkhand Region



Medical Science

KEYWORDS : Dengue; Dengue Day 1 card test; Dengue haemorrhagic fever

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ABSTRACT

Background & Objectives: Dengue is the most common mosquito-borne viral illness in humans. Dengue epidemics were reported throughout the world, but most frequently from the region of South Asia. Dengue infection admissions are common in pediatric age group, but adult patient's admission has also increased in recent years. However, the data of Dengue infection among adults are limited. This study is to get additional data on Dengue infection among adults from Rohilkhand region.

Methods: The total number of patients taken were more than 103 from Rohilkhand Medical College and Hospital from October, 2013 – October 2014. All patients with clinical features of Dengue infection and positive for Dengue Card Test (Dengue Day 1 card Test) were taken up for the study. Their Clinical profile, Laboratory data and Outcome were recorded.

Results: Out of 103 patients, the no. of patients with Dengue fever and Dengue haemorrhagic fever were 88 & 15 respectively. Most cases were seen in post monsoon period. All patients complained of fever with average duration of fever being 4.9 ± 1 days and most common physical sign was lymphadenopathy (22.3%) followed by facial flush (14.6%). Liver enzymes (ALT & AST) were significantly raised in DHF compared to DF. Thrombocytopenia was seen in 42% patients with mean platelet count of 47,176 cells/cumm. Rashes, venepuncture bleed, melaena and hematemesis were the common bleeding manifestations among DHF patients. In Present study, ascites & pleural effusion played a major role in diagnosis of DHF.

Conclusion: A total of 103 cases with Dengue were analyzed. Results show that Dengue fever and Dengue haemorrhagic fever were noted in adults particularly during epidemics. Fluid Therapy is the corner stone of management in Dengue haemorrhagic fever. Early recognition and aggressive management of complications is essential to prevent mortality in adults.

INTRODUCTION

Dengue, a Spanish alteration of the Swahili word Ki-dingapepo, is the most common mosquito-borne viral illness in humans. The earliest known documentation of dengue like symptoms was recorded in the Chinese Encyclopedia of Symptoms during the Chin Dynasty (AD 265-420). The illness was called "the water poison" and was associated with flying insects near water. The dengue virus is transmitted by mosquitoes of the Aedes genus, the most important being Aedes aegypti followed by Aedes albopictus, the latter of which has been reported in the southeastern United States, increasing the possibility for viral transmission in North America.^{1,2} The World Health Organization estimates that 250 million people are at risk of infection from dengue and 50 million contract dengue infection annually. Dengue fever is currently endemic in South-east Asia, the Americas, the Eastern Mediterranean, Africa, and the Western Pacific with the largest number of reported cases corresponding to the Americas and Southeast Asia.³ Dengue virus is classified as part of the Flaviviridae family, which also includes yellow fever virus, chikungunya and West Nile virus. Dengue virus comprises four distinct serotypes with similar clinical manifestations in humans. The Dengue virus is a single-stranded, positive - sense RNA molecule with a diameter of 50 nm and constituted by three structural proteins (capsid, envelope, and membrane) and 7 non-structural proteins.⁴

MATERIALS AND METHODS

This study was done in adult patients admitted to MJP Rohilkhand Medical College & Hospital, Bareilly from October 2013 – March 2014. All patients with clinical features of Dengue infection and positive for Dengue Card Test (Dengue Day 1 card Test) were taken up for the study. Their Clinical profile, Laboratory data and outcome were recorded.

1. All the patients were evaluated for the following -

a). Clinical Features: Fever, Headache, Retro orbital pain (ROP), Myalgia and Arthralgia, Abdominal pain, Nausea/ Vomiting, Diarrhea/ Constipation, Sleeplessness/ Lethargy, Facial flush, Con-

junctival injection, Lymphadenopathy, Hepatosplenomegaly, Bleeding manifestations, Plasma leakage manifestations.

b). Laboratory parameters: Haemogram – TLC, DLC, Platelets, Renal function – Urea, Creatinine, Blood sugar, Liver Function Test, Chest X-ray, Ultra-Sound Abdomen, Dengue Card Test

2. Inclusion criteria

All patients mimicking dengue fever and have dengue card test positive was taken up for the study.

3. Exclusion criteria

Patients with malaria, Enteric fever, Leptospirosis and Pneumonia were excluded by doing appropriate investigations. Patients tested negative for Dengue Card Test. Patients <15yrs of age.

4. Statistical Analysis

The relationship between the frequencies of clinical parameter of Dengue Fever (DF) and Dengue Haemorrhagic Fever (DHF) were analyzed after construction of 2x2 table and applying the Statistical Test of significance Chi-Squared Test of significance WHO criteria were adopted to define DF/DHF/DSS. Level of significance - "p" is level of significance.

CASE DEFINITION FOR DENGUE FEVER

Probable: an acute febrile illness with two or more of the following manifestations: Headache, Retro-orbital pain, Myalgia, Arthralgia, Rash, Haemorrhagic manifestations; Leukopenia & Supportive serology (a reciprocal haemagglutination-inhibition antibody titre ≥ 1280 , a comparable IgG enzyme-linked immunosorbent assay titre or a positive IgM antibody test on a late acute or convalescent-phase serum specimen) or occurrence at the same location and time as other confirmed cases of dengue Fever

Confirmed: case confirmed by laboratory criteria

Reportable: any probable or confirmed case should be reported

CASE DEFINITION FOR DENGUE HAEMORRHAGIC FEVER

The following must all be present: Fever, Haemorrhagic tendencies, evidenced by at least one of the following: A positive tourniquet test, Petechiae, ecchymosis or purpura, Bleeding from the mucosa, gastrointestinal tract, injection sites or other locations, Haematemesis or melaena, Thrombocytopenia (≤ 100000 cells per mm³).

Evidence of plasma leakage due to increased vascular

permeability, manifested by at least one of the following:

- Rise in the haematocrit equal to or greater than 20% above average for age, sex and population.
- Drop in the haematocrit following volume-replacement treatment equal to or greater than 20% of baseline.
- Signs of plasma leakage such as pleural effusion, ascites and hypoproteinemia.

CASE DEFINITION FOR DENGUE SHOCK SYNDROME

All of the above four criteria for DHF must be present, plus evidence of circulatory failure manifested by: Rapid and weak pulse, Narrow pulse pressure (≤ 20 mmHg), Hypotension for age and cold clammy skin and restlessness.

RESULT

The present study was conducted in 103 patients who presented with clinical feature of dengue fever in Rohilkhand Region. The patient were evaluated for the clinical profile laboratory data and outcome. The positive dengue patient then evaluated for find out the clinical complication associated with dengue infection. Out of total 103 no of patients no of Dengue Fever (DF) were 88, no of Dengue Hemorrhagic Fever were 15. There were total 103 patients of dengue fever out of them 64(62%) was male and 39(38%) female. maximum patients were 26 in age –group 21-30 in male and 11 in female.

Comparison of different studies

| Parameters | Present study n=103 | Malavige <i>et al</i> Srilank ⁵ n=108 | NP Singh <i>et al</i> Delh ⁷ n=185 | Janak Kishore <i>et al</i> Lucknow ⁶ n=100 | Adriana O <i>et al</i> Brazil ⁸ n=185 |
|--------------|---------------------|--|---|---|--|
| DF | 85.50% | 30.60% | - | 46% | - |
| DHF | 14.50% | 69.40% | - | 54% | - |
| Mean Age | 31.6 yrs | 26.6yrs | 26±10yrs | 30±14yrs | 32±12yrs |
| Age | | | | | |
| Distribution | 15-60yrs | 13-56yrs | 12-29yrs | 15-30yrs | - |
| M:F | 1.64:1 | 1.4:1 | 3:01 | 2:01 | 1.7:1 |

There was 103 patients out of which 85.50% patients had DF and 14.50% patient had DHF. Mean age was 31.6 yrs in present study. Age group was 15-60 yrs. The M:F was found out to be 1.64:1.

Comparison of clinical signs

| Parameters | Present study n=103 | Malavige <i>et al</i> Srilanka n=108 | Jagdeep <i>et al</i> | Janak Kishore <i>et al</i> Lucknow n=100 |
|-----------------|---------------------|--------------------------------------|----------------------|--|
| Lymphadenopathy | 22% | - | 26% | - |
| Facial flush | 15% | 42 | 42% | 53% |
| Hepatomegaly | 8% | 45 | 45% | - |
| Splenomegaly | 12% | 2.7 | 13% | - |

In Present study done in 103 patients showing clinical signs as Lymphadenopathy of 22%, Facial flush of 15%, Hepatomegaly of 8% and Splenomegaly of 12% patients.

Comparison of Liver enzymes

| Parameters | Present study n=103 | NP Singh <i>et al</i> Delhi n=185 | Janak Kishore <i>et al</i> ; Lucknow n=100 |
|-------------|---------------------|-----------------------------------|--|
| SGOT >40 IU | 33% | 16% | 48% |
| SGPT >40 IU | 19% | 17% | 49% |

In present study done in 103 patients showing liver enzymes as SGOT > 40 IU in 33% of the patients and SGPT > 40 IU in 19% of the patients.

Comparison of Platelet counts

| Thrombocytopenia | Present study n=103 | Malavige <i>et al</i> Srilanka n=108 | NP Singh <i>et al</i> Delhi n=185 | Janak Kishore <i>et al</i> Lucknow n=100 |
|----------------------------|---------------------|--------------------------------------|-----------------------------------|--|
| Total | 42% | 74% | 61% | 70% |
| Mean platelet count in DHF | 45,180 | - | 66,000 | 43,210 |

In Present study showing Decreased platelet count in 42% out of total 103 patients and Mean platelet count in DHF was 45,180 thousands.

Comparison of Haemorrhagic manifestations

| Bleeding manifestation | Present study n=15 | Malavige <i>et al</i> Srilanka n=108 | NP Singh <i>et al</i> Delhi n=185 |
|------------------------|--------------------|--------------------------------------|-----------------------------------|
| Total | 14.5% | 39% | 40% |
| Epistaxis | 16% | 24% | 14% |
| Melaena | 47% | 34% | 16% |
| Bleeding gums | 35% | 17% | - |
| Hematemesis | 37% | 40% | 22.20% |
| Rashes | 67% | 54% | 31.90% |
| Venae puncture bleed | 61% | - | - |
| Hess test | 8% | - | 21% |

In Present study showing haemorrhagic manifestation in 15% out of total 103 patients. In 16% of patients showing Melaena in 47% of patients, Bleeding gums 35% of patients, Hematemesis 37% of patients, Rashes 67% of patients, Venae puncture bleed 61% patients and Hess test 8% of patients.

DISCUSSION

In India, 15,535 cases of Dengue were reported in 2009 with 96 deaths. In 2010, 28,292 cases of Dengue were reported with 110 deaths. In 2011, 18,860 cases were reported with 169 deaths followed by 50,222 case and 242 deaths in year 2012. In 2013 the no. of cases increased to 75,808 with 193 deaths and 40,571 cases and 137 deaths in year 2014. Till October 2015 the no. of cases reported are 64,058 and deaths are 135. Uttar Pradesh contributed to 1.86% cases in 2013. In Bareilly district 74 cases were reported in 2013 as per NVDCP Bareilly district data. Researchers are considering these data as only tip of the iceberg of the actual situation. This study was done in Rohilkhand Medical College and Hospital, Bareilly which is highly endemic for most infectious diseases. In this study, we have taken into consideration only those who were admitted cases in Medical ward.

Here, we want to analyze present study by comparing with other Dengue adult studies. Indian and other South Asian region studies are taken up for the discussion. Out of total 103 patients DHF commonly presented in the Age group of 15– 30 yrs., same as Dengue Infection. Elderly Patients were not affected with DHF. Most of the other Dengue studies were comparable with present study.

CONCLUSION

The present study was carried out to study the clinical and laboratory profile of dengue fever in Rohilkhand Region for this purpose for the total of 103 cases with clinical features of dengue infection were taken up for study. Male to female ratio of study subjects were 1.6:1 and majority of patients were found to be male. Most of the cases were found to be from the month October to November. Conjunctival infection, facial flush and lymphadenopathy occurred among statistically significant population with dengue haemorrhagic fever. In terms of haemorrhagic manifestation rashes out to be the most prominent manifestation followed by venepuncture bleed and malaena. In terms of plasma leakage manifestation ascites (88%) and pleural effusion (66.6%) were common manifestation.

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