



## STUDY OF CLINICO LABORATORY PROFILE AND OUTCOME OF DENGUE CASES IN A TEACHING HOSPITAL IN BAGALKOT, KARNATAKA

**Appu Patil**

Assistant Professor, Department of General Medicine, SNMC, Bagalkot, Karnataka, India. - Corresponding Author

**Sai Sudha Harika Dasari**

Post Graduate, Department of General Medicine, SNMC, Bagalkot, Karnataka, India.

### ABSTRACT

**OBJECTIVE:** Dengue is an arboviral disease endemic in India with considerable morbidity and mortality. This study was done to assess the clinicolaboratory profile and outcome of patients with dengue in northern Karnataka region.

**METHODS:** The study was a prospective observational study performed at S Nijalingappa Medical College, a tertiary care and teaching hospital in Bagalkot. Study period was six and half months from 1<sup>st</sup> February 2017 to 16<sup>th</sup> August 2017. Patients of age above 13 years who were dengue NS1/IgM positive were included in the study. Clinical features, laboratory profile and outcome of these patients were noted.

**RESULTS:** Dengue infection was identified in 61 patients. Fever was the commonest clinical feature. Thrombocytopenia was the commonest laboratory abnormality and mortality was seen in one patient.

**CONCLUSION:** Conclusion of the study was that Dengue is an important cause of considerable mortality and morbidity in Bagalkot region. Early diagnosis may help in reducing mortality.

**KEYWORDS :** Dengue, Clinico-laboratory profile, Outcome.

### INTRODUCTION

Dengue fever is an arthropod borne virus transmitted to humans by Aedes mosquito<sup>1</sup>. It is the most rapidly spreading mosquito borne viral disease of mankind, with a 30 fold increase in global incidence over last five decades. According to World Health Organization (WHO) about 50-100 million new dengue infections are estimated to occur annually in more than 100 endemic countries with a steady increase in the number of countries reporting the disease<sup>2</sup>.

The WHO 2009 classification divides dengue fever into two groups: uncomplicated and severe<sup>3</sup>; though the 1997 WHO classification is still widely used, classifying dengue in to 3 groups: dengue fever (DF), dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS)<sup>4,5</sup>.

Severe dengue (Dengue hemorrhagic fever and dengue shock syndrome) is due to plasma leakage, fluid accumulation, respiratory distress, severe bleeding or organ impairment. Complications include myocarditis, encephalitis, acute motor weakness, GB like syndrome, acute liver failure, lupus, hemophagocytic syndrome, acute kidney injury and so on<sup>6</sup>.

### Objectives

1. To study the clinical profile of dengue cases.
2. To identify the laboratory profile of dengue cases.
3. To note the outcome of dengue patients attending SNMC.

### MATERIALS AND METHODS

#### Setting

This prospective observational study was conducted in SN Medical College and HSK hospital Bagalkot, Karnataka. The study period was from 1<sup>st</sup> February 2017 to 16<sup>th</sup> August 2017.

#### Design

The study design was prospective, observational, analytical.

#### Participants

All patients above 13 years of age who were dengue NS1/IgM positive were included. Study included 61 human subjects fulfilling inclusion and exclusion criteria. Subjects received appropriate specific treatment including platelet transfusion whenever necessary.

#### Study size

Sixty one patients admitted in the department of General Medicine were taken up for study. Detailed history taking and clinical examination was performed on each patient. Laboratory examinations done were hemoglobin, total and differential count, platelet count, hematocrit, liver function test, blood urea and serum creatinine. Chest X ray, Ultrasound abdomen and additional investigations like lipase were done whenever deemed necessary.

#### Method of collection of data

**Inclusion criteria:** Patients more than 13 years of age who were dengue NS1/IgM or both positive were included in the study.

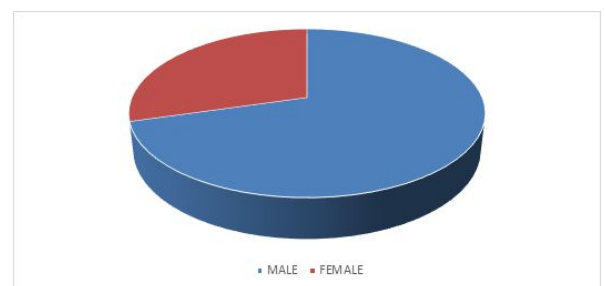
#### Exclusion criteria:

- 1) Patients with preexisting liver disease.
- 2) Patients with preexisting kidney disease.
- 3) Patients receiving chemoradiotherapy.

In all patients detailed history was taken. Complete examination was done searching for alterations in pulse and blood pressure, hepatosplenomegaly, crepitations in lung fields. Investigations were done as described above.

### RESULTS

Total of 61 patients who attended the hospital between 1<sup>st</sup> February 2017 to 16<sup>th</sup> August 2017 were analyzed. Majority of the reported cases coincided with rainy season. Sex distribution is as shown below.



Thirty six patients were in the age group of 14-24, eighteen in the age group of 25-49 years and seven were more than 49 years of age.

Month wise distribution is as shown below

MONTH	NO. OF PATIENTS
February	2 (3.21%)
March	4 (6.55%)
April	8 (13.11%)
May	13 (21.31%)
June	13 (21.31%)
July	14 (22.95%)
August (16 days)	7 (11.47%)

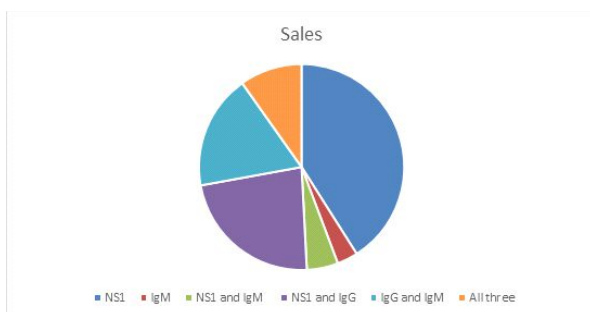
Fever was the most consistent clinical feature seen in 59 of 61 patients (96.72%). 2 of the patients were immunosuppressed, one was diabetic and other was on immunosuppressant for rheumatoid arthritis. Headache was seen in 28 (45.9%) patients, myalgia and vomiting were seen in 32 (52.45%) and 26 (42.62%) patients respectively. Abdominal pain was seen in 7 (11.47%) patients of which one had pancreatitis as evidenced by presence of abdominal pain and elevated lipase. 4 (6.55%) patients had loose stools, 3 (4.91%) had rash and itching was the feature in 2 (3.27%). Sore throat and bleeding tendencies were seen in 5 (8.19%) and 4 (6.55%) patients respectively.

Examination wise 6 (9.83%) patients had tachycardia, 5 (8.19%) had bradycardia, and 2 (3.27%) were in hypotension. Hepatomegaly was seen in 2 (3.27%) patients and splenomegaly in 19 (31.15%) patients. Ascites and bilateral pleural effusion was seen in 9 (14.75%) and 4 (6.55%) respectively.

Lab parameters are tabulated as below.

Parameter	Number of patients
Bicytopenia (leucopenia and thrombocytopenia)	31 (50.81%)
Thrombocytopenia	14 (22.95%)
Pancytopenia	6 (9.83%)
Increased hematocrit	2 (3.27%)
Proteinuria	11 (18.03%)
Hematuria	2 (3.27%)
Increased creatinine	3 (4.91%)
Increased SGOT/SGPT	18 (29.50%)
Increased lipase	1 (1.63%)

Seropositivity of dengue fever



Out of 61 patients studied there was one mortality and rest all improved with supportive treatment.

### DISCUSSION

Dengue is an emerging major health problem in India, regular outbreaks have been occurring throughout India with more number of deaths.

In our study male to female ratio was 2.4:1, suggesting a male preponderance. Similar pattern was observed in studies conducted by Md Yousuf Khan et al<sup>7</sup>, Seema Avasthi et al<sup>8</sup>, Ritu Karoli et al<sup>9</sup>, Mohamed Murtuza Kauser et al<sup>10</sup> and G Lepakshi et al<sup>11</sup>. Fever was the universal symptom in studies conducted by Swathi et al<sup>12</sup>, Ragini Singh et al<sup>13</sup> and Rajesh Deshwal et al<sup>14</sup>. But in our study two patients did not have fever and were tested for dengue as our area is endemic for dengue and patients presented with systemic symptoms. These

patients were immunocompromised. Headache was found in 46% of patients which was 76.77% in study conducted by Md Yousuf Khan et al<sup>7</sup>, 25% in Munde D et al<sup>15</sup> and 80% in Ragini Singh et al<sup>13</sup>. Myalgia was seen in 52.45% patients whereas it was 73.6% in study conducted by Ragini Singh et al<sup>13</sup>. Abdominal pain was seen in 11.47% patients which was 19% in Ragini Singh et al<sup>13</sup> and 52% in study by Rachel Daniel et al<sup>16</sup>. One of the patients had elevated lipase with abdominal pain suggestive of pancreatitis. 6.55% of patients had loose stool and 4.91% patients had rash. 3.21% patients had itching whereas sore throat and bleeding tendencies were seen in 8.19% and 6.55% of patients respectively.

In our study tachycardia was noted in 9.83% of patients. Bradycardia was noted in 8.19% of patients, whereas Md Yousuf Khan et al<sup>7</sup> noted this in 11.33% of patients and Rachel Daniel et al<sup>16</sup> noted it in 16.8% of patients. Hypotension was noted in 3.27%, Mohamed Murtuza Kauser et al<sup>10</sup> noted the same in 5.47% of patients. Splenomegaly was found in 31.15% and hepatomegaly in 3.27%. Md Yousuf Khan et al<sup>7</sup> found hepatomegaly in 12.66% of patients which was comparable with the studies by Ashwin Kumar et al<sup>17</sup>, Gupta E et al<sup>18</sup> and studies of Thailand<sup>19,20</sup>. Ascites was found in 14.75% comparable to that found by Md Yousuf Khan et al<sup>7</sup> (14.66%), Rajesh Deshwal et al<sup>14</sup> (16.33%) and Nandini Chatterjee et al (17.7%)<sup>21</sup>. Bilateral pleural effusion was seen in 6.55%. Pleural effusion was noted in 11.33% by Md Yousuf Khan et al<sup>7</sup>, 13.69% by Mohamed Murtuza Kauser et al<sup>10</sup> and 20% by Rajesh Deshwal et al<sup>14</sup>. Dengue shock syndrome was found in 3.27%.

On laboratory examination, hematologically bicytopenia (leucopenia and thrombocytopenia) was the predominant finding followed by thrombocytopenia seen in 50.81% and 22.95% patients respectively. Pancytopenia was noted in 9.83% and raised hematocrit was noted in 3.27%. However thrombocytopenia was the predominant finding in studies conducted by Mohamed Murtuza Kauser et al<sup>10</sup> (86%) and Rashmi KS et al<sup>22</sup> (72.77%). Urine examination showed proteinuria in 18.03% and hematuria in 3.27%. Creatinine was elevated in 4.91% of patients. Study conducted by Farhad Vasanwala<sup>23</sup> et al revealed that onset and peak proteinuria predicted subsequent development of dengue hemorrhagic fever. Increases SGOT and SGPT levels were seen in 29.50% and elevated lipase levels were seen in 1.63% of patients. Other studies reported around 45% patients with raised SGOT and SGPT.

Serological profile of dengue fever was marked by 25 (41%) NS1 positivity, 2 (3%) IgM positivity, 14 (23%) NS1 and IgG positivity, 11 (18%) IgM and IgG positivity, 3 (5%) NS1 and IgM and all three in 6 (10%) of patients. In study conducted by Mohamed Murtuza Kauser<sup>10</sup> et al as well the predominant serological positivity was NS1 similar to our study.

Outcome in our study was marked by improvement in 60 patients including the patient of pancreatitis and one mortality. Mortality was seen in 24 year age group and was due to Acute Respiratory Distress Syndrome (ARDS). He was seropositive for NS1 antigen.

### CONCLUSION

Dengue fever is a multisystem disease affecting predominantly males associated with significant morbidity and considerable mortality. It is characterized by fever and systemic symptoms. High degree of suspicion is required. However with the appropriate management mortality and morbidity can be reduced.

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