European Journal of Molecular & Clinical Medicine

ISSN 2515-8260 Volume 09, Issue 07, 2022

ORIGINAL RESEARCH

Hematological and biochemical profile of dengue patients attending Pravara Rural Hospital

Rushikesh S Haridas[1], Sheetal Aniruddha Shelke[2]

[1]Assistant Professor Department of Medicine, Vilasrao Deshmukh Government Medical College, Near marwadi rajsthan high school, Latur, Maharashtra 413512, India.
[2]Assistant Professor, Department of ENT, MIMSR Medical College, Latur, Maharashtra, India.

ABSTRACT

Background: Dengue infection is a systemic and dynamic disease. It has a wide clinical spectrum that includes both severe and non-severe clinical manifestations. Often accompanied by typical changes in blood and biochemical profile.

Objectives: To see hematological and biochemical profile of dengue patients attending Pravara Rural Hospital

Material and Methods: This prospective study was conducted in the Department of Medicine, Pravara Rural Hospital, Loni from 2013 to 2015 for a period of 2 years on 128 dengue cases. All the necessary baseline investigations like complete blood count, platelet count, haematocrit, liver function test, kidney function test, coagulation profile like prothrombin time, activated partial thromboplastin time, bleeding time, clotting time, X-ray chest, ultrasound abdomen were done at admission. Data analyzed using Microsoft excel.

Results: Majority of the patients in the study were less than 35 years of age (74.22%). Maximum numbers of patients were in less than 25 years of age group. 1.56% patients has<10000 platelet count. 48.44% patients were having total leukocyte count less than 4000. AST was raised in 35.16% patients whereas ALT was raised in 28.91% patients. Haematocrit was raised in 35.94% patients. It was evident from the above table that NS1Ag was positive in 98.44% patients. IgG was positive in only one patient whereas None was IgM positive.

Conclusions: blood and biochemical profile help us in deciding treatment protocol and assessment of recovery by the patients.

Keywords: Dengue, Leucocyte count, hematocrit

Corresponding Author: Dr. Rushikesh S Haridas, Assistant Professor Department of Medicine, Vilasrao Deshmukh Government Medical College, Near marwadi rajsthan high school, Latur, Maharashtra 413512, India.
Email: rishi.s.haridas@gmail.com

INTRODUCTION

Dengue fever is the most rapidly spreading mosquito-borne viral disease in the world. An estimated 50 million infections per year occur across approximately 100 countries.1 Dengue epidemics were reported throughout the world, but most frequently from the region of South Asia. Most of the studies regarding Dengue infection/virus, epidemiological, clinical and management pattern were studied in the region of South Asia. Cyclic epidemics are increasing in frequency and in-country geographic expansion is occurring in India.

Dengue virus (DEN) is a small single-stranded RNA virus comprising four distinct serotypes (DEN 1 to 4). These closely related serotypes of the dengue virus belong to the genus Flavivirus, family Flaviviridae. The various serotypes of the dengue virus are transmitted to humans through the bites of infected Aedes mosquitoes, principally Aedes aegypti.

Laboratory diagnosis of dengue virus infection depends upon detection of specific antibodies in serum samples by haemagglutination inhibition, complement fixation, neutralization test or Enzyme-Linked Immunosorbent Assay (ELISA). Virus isolation methods are expensive, time consuming and not widely available. Reverse transcriptase PCR and hybridization probes for nucleic acid are other newer tests for diagnosis.

The exact clinical profile is important for patient management and thus crucial for saving life. Early diagnosis and recognition of complication is cornerstone in management. There is no specific antiviral therapy available, so supportive therapy is of utmost importance. Cases with Dengue Fever are treated with antipyretics, rest, good diet and fluid intake.

Intravenous rehydration is the therapy of choice; this intervention can reduce the case fatality rate to less than 1% of severe cases, while mortality rate among untreated cases escalates to 20%.3

Dengue is now widely prevalent in the areas in Maharashtra. So this study is conducted to study the hematological and biochemical profile of dengue patients attending Pravara Rural Hospital in Rural Medical College, Loni.

MATERIAL AND METHODS

The present prospective study was conducted in the Department of Medicine, Dr Balasaheb Vikhe Patil Rural Medical College, Loni from 2013 to 2015 for a period of 2 years on 128 dengue cases. All patients with clinical features of Dengue infection and positive for Dengue Card Test were taken up for the study. All cases aged >12 years and those diagnosed as dengue fever were included in this study. Other systemic infections, congenital blood diseases were excluded from this study. Informed written consent was taken from patients enrolled in study. Detailed history was taken, general, systemic examinations were carried out using predesigned proforma. Baseline investigations like complete blood count, platelet count, haematocrit, liver function test, kidney function test, coagulation profile like prothrombin time, activated partial thromboplastin time, bleeding time, clotting time, X-ray chest, ultrasound abdomen were done at admission. All the case definitions and severity grads were as according to severity criteria based on the technical guidelines from the WHO which is as follows[4,5] Data was entered and analyzed using Microsoft excel. Study was approved by ethical committee.

RESULTS

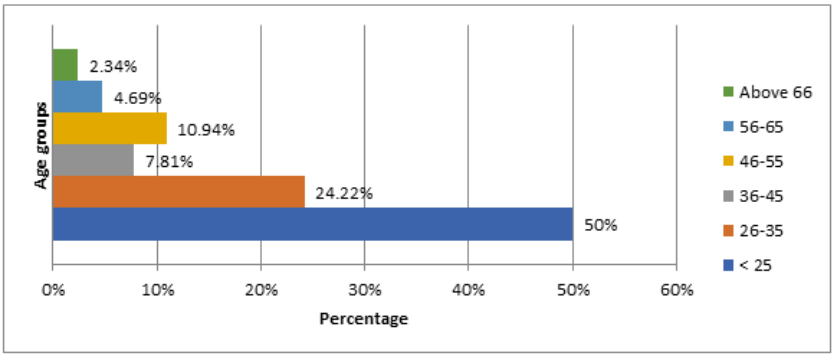

Diagram 1: Age wise distribution of study subejcts

It was observed that majority of the patients in the study were less than 35 years of age (74.22%). In present study the maximum numbers of patients were in less than 25 years of age group.

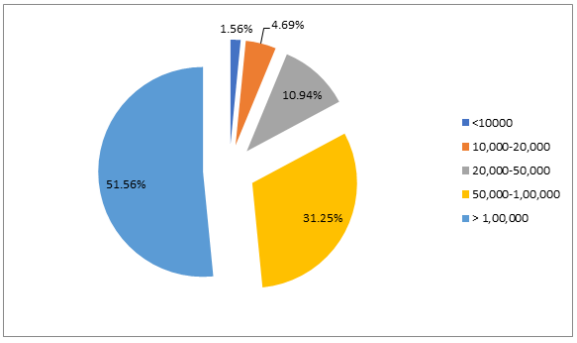

Diagram 2: Distribution as per platlet count

1.56% patients has<10000 platelet count, 4.69% patients has 10,000 – 20,000 platelet count, 10.94% patients has 20,000 – 50,000 platelet count. 51.56% patients were having platelet count more than one lakh.

Table 1: Distribution as per leukocyte count, liver function test, haematocrit.

Variables	Total	Percentage
Leukocyte count		
< 4000	62	48.44%
4000-11000	58	45.31%.
>11000	08	6.25%
Liver function test		
AST	83 (64.84%)	45 (35.16%)
ALT	91 (71.09%)	37 (28.91%)
Haematocrit		
Normal	82	64.06%
Raised	46	35.94%

It was seen that 48.44% patients were having total leukocyte count less than 4000 whereas 6.25% patients were having total leukocyte count more than 11000. AST was raised in 35.16% patients whereas ALT was raised in 28.91% patients. Haematocrit was raised in 35.94% patients.

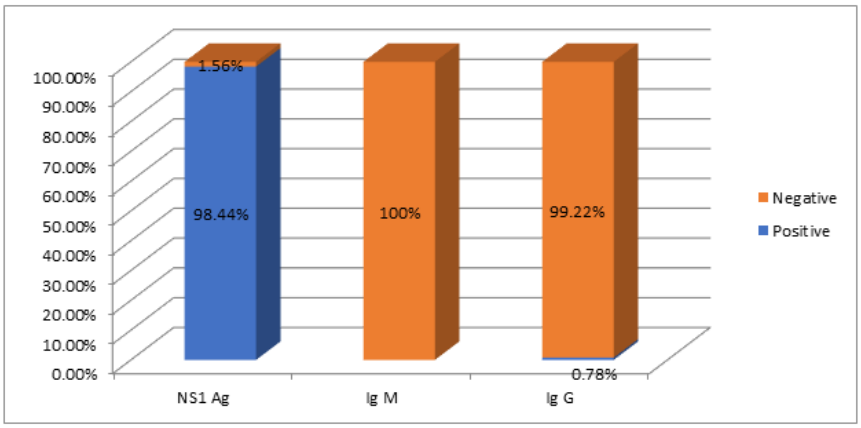

Diagram 3: Distribution as per immunoglobulin tests

It was evident from the above table that NS1Ag was positive in 98.44% patients. IgG was positive in only one patient whereas None was IgM positive.

DISCUSSION

The present study was done in department of medicine of Rural Medical College and Pravara Rural Hospital, Loni to study the hematological and biochemical profile of patient with dengue fever admitted in the hospital. Total 128 cases of dengue were diagnosed during the study duration formed study sample.

Majority of the cases were of dengue fever (60.16%). 35.16% cases were of DHF and 4.69% cases were suffering from DSS. Harris E et al[6] study found 268 (44%) as dengue fever (DF), 267 (43%) as DF with haemorrhagic manifestations, 40 (7%) as dengue haemorrhagic fever (DHF), 20 (3%) as dengue shock syndrome (DSS) and 17 (3%) as dengue with signs associated with shock (DSAS).

In this study we found that most cases were less than 35 years of age (74.22%). Adriana O et al[7], Kishore J et al[8] and Malavige GN et al[9] study findings were in accordance with our study.

It was seen that 50.78% patients were male and 49.22% patients were female. The males with female ratio were 1.03:1. As compared to present study higher male to female ratio was observed by Agarwal et al[10] in which male to female ratio was 1.9:1.

It was observed that 1.56% patients has <10000 platelet count, 4.69% patients has 10,000 – 20,000 platelet count, 10.94% patients has 20,000 – 50,000 platelet count. 51.56% patients were having platelet count more than one lakh. Malavige GN et al[9] Singh NP et al,[11] Kishore J et al[8] also observed similar findings in their study.

In Chairulfatah A et al[12] study conducted in Indonesia in 2003 observed 59 cases with platelet count less than 25,000 /mm^3 out of which 11 had bleeding manifestations. 164 patients had platelet count 25000 to 50000 /mm^3 out of which 14 had bleeding manifestations, 205 patients had platelet count of 50,000 to 74,000 out of which 22 cases had bleeding manifestations, 209 cases had platelet count 75,000 to 100,000 /mm^3 out of which 16 had bleeding manifestations and 663 patients had platelet count more than 100,000 /mm^3 out of which nine had bleeding manifestations.

It was seen that 48.44% patients were having total leukocyte count less than 4000 whereas 6.25% patients were having total leukocyte count less than 11000. Thus leucopenia was associated with dengue and similar findings were also observed by Krishnamurthy K. et al[13] and Qiuet FX et al[14] Krishnamurthy K. et al[13] in Visakhapatnam observed that out of 89 cases, 28 (31.46%) had leukopenia (<5,000/ mm^3), remaining 61 (68.54%) cases had normal leukocyte count and there was no leukocytosis in any of the cases. Qiuet FX et al[14] observed leucopenia in 94% cases and Sharma S et al[15] observed leukopenia in 30.13% of cases.

It was observed that liver function test were normal in majority of the patients. AST was raised in 35.16% patients whereas ALT was raised in 28.91% patients. Sharma S et al[15] observed elevation of SGOT in 88.4% of cases and SGPT in 76.7% of the cases. Qiuet FX al[14] observed mild to moderate elevation of SGOT in 29.4% of cases and overall abnormal LFT in 68 (44.2%). Haematocrit was raised in 35.94% patients. Sharma S et al[15] showed a epidemic of DHF in adults in Delhi during 1996 that raised Haematocrit were present in 14 (14.28%) cases. Malavige GN et al[9], Singh NP et al[11] also observed similar findings in their study. It was evident from the above table that NS1Ag was positive in 98.44% patients. IgG was positive in only one patient whereas None was IgM positive.

CONCLUSION

The hematological and biochemical investigations form key to proper assessment of dengue cases also for successful outcome. They help us to reduce morbidity in dengue cases by

providing basis for line of treatment. Hence they are important part of dengue case management.

REFERENCES

1. Simmons CP, Farrar JJ, Nguyen v V, Wills B.Dengue. N Engl J Med, 366 (15); 1423-1432.
2. World Health Organization. Dengue: Guidelines for Diagnosis, Treatment, Prevention and Control. Geneva, Switzerland: WHO, 2009.
3. World health Organization. Dengue and dengue haemorrhagic fever. Fact Sheet.No.117, 2002.
4. Dengue haemorrhagic fever. Diagnosis, treatment and control. Geneva: World Health Organization; 1986.
5. Dengue haemorrhagic fever, Diagnosis, treatment, prevention and control. Geneva: World Health Organization; 1997.
6. Harris E, Videa E, Perez L, Sandoval E, Tellez Y, Perez ML, et al. Clinical, Epidemiological and Virologic Features of Dengue in the 1998. Epidemic in Nicaragua. Am J Trop Med Hyg 2000; 63 (1,2): 5-11.
7. Adriana O. Guilarde, Marilia D. Turchi et al; Dengue and Dengue Haemorrhagic Fever among Adults: Clinical Outcomes Related to Viremia, Serotypes, and Antibody Response; JID 2008:197; 817 – 823.
8. Kishore J, Singh J, Dhole TN, Ayyagari A; Clinical and Serological Study of First Large Epidemic of Dengue in and around Lucknow, India, in 2003; Dengue Bulletin – Volume 30, 2006; 72-79.
9. Malavige GN, Velathanthiri VG et al; Patterns of disease among adults hospitalized with dengue infections; Srilanka; Q J Med 2006; 99:299–305.
10. Agarwal R, Kapoor S, Nagar R, Misra A, Tandon R, Mathur A, et al. A clinical study of the patients with dengue haemorrhagic fever during the epidemic of 1996 at Lucknow, India. Southeast Asian J Trop Med Public Health. 1999; 30 (4): 735- 40
11. Singh NP, Rajat J *et al;* The 2003 outbreak of Dengue Fever in Delhi, India; Vol No. 5 September 2005. Agarwal R, Kapoor S, Nagar R, Misra A, Tandon R, Mathur A, et al. A clinical study of the patients with dengue haemorrhagic fever during the epidemic of 1996 at Lucknow, India. Southeast Asian J Trop Med Public Health. 1999; 30 (4): 735-40.
12. Chairulfatah A, Setiabudi D, Agoes R, Colebunders R. Thrombocytopenia and Platelet Transfusions in Dengue Haemorrhagic Fever and Dengue Shock Syndrome. Dengue Bull 2003; 27: 138-43.
13. Krishnamurthy K, Kasturi TE, Chittipantulu G. Clinical and pathological studies of an outbreak of Dengue like illness in Visakhapatanam. Ind J Med Res 1965; 53 (8): 800-12.
14. Qui FX, Gubler DJ, Liu JC, Chen QQ. Dengue in China. A clinical review. Bull World Health Organ 1993; 71 (3/4): 349-59.
15. Sharma S, Sharma SK, Mohan A. Clinical profile of Dengue haemorrhagic fever in Adults during - 1996 outbreaks in Delhi, India. Dengue Bull 1998; 22: 1-7.