

ORIGINAL RESEARCH

Assessment of hepatic manifestations in dengue fever and their correlation with severity

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ABSTRACT

Background: The most significant human arboviral infection is dengue. The incidence of dengue fever (DF) and dengue hemorrhagic fever (DHF) has sharply grown during the past few decades on a global scale. The present study was conducted to assess hepatic manifestations in dengue fever and their correlation with severity of dengue fever.

Materials & Methods: 58 cases of dengue fever of both genders were assessed. Parameters such as hemoglobin, total and differential leukocyte count, hematocrit, platelet count, liver function tests and urine examination was assessed. Complete blood counts including hematocrit were repeated daily during the acute phase of the illness and chest X-ray was taken to demonstrate pleural effusion.

Results: Out of 58 patients, males were 38 and females were 20. Common symptoms in patients with DF, DHF I, DHF II, DHF III and DHF IV was headache was seen in 7, 5, 10, 17 and 6 respectively. Body pain was seen in 6, 7, 6, 16 and 8, vomiting in 5, 3, 8, 12 and 3, retro-orbital pain in 8, 5, 7, 18 and 5 patients respectively. Jaundice in 7, 6, 6, 15 and 7 patients respectively. The difference was significant ($P < 0.05$). In DF, DHF I, DHF II, DHF III and DHF IV, the mean hemoglobin level was 10.3, 10.5, 11.2, 10.7 and 10.5. Haematocrit was 32.9, 31.5, 32., 32.0 and 32.5. Bilirubin was 0.62, 0.52, 0.63, 0.72 and 0.71 respectively.

Conclusion: The frequency of dengue epidemics is rising. There have been reports of varied degrees of hepatic involvement. Early detection of hepatic dysfunction in dengue would help to prevent potentially fatal consequences because the condition is temporary and reversible.

Keywords: dengue hemorrhagic fever, hepatic, Haematocrit

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INTRODUCTION

The most significant human arboviral infection is dengue. The incidence of dengue fever (DF) and dengue hemorrhagic fever (DHF) has sharply grown during the past few decades on a global scale. Epidemics are occurring increasingly frequently in India.¹ Higher infection incidence is indicated by younger age groups being involved and by epidemics occurring more frequently.² Complications from DF can cause death of up to 20% if left untreated; however, if diagnosed early and treated appropriately, mortality drops to less than 1%. The frequency of symptoms in the community is the basis for clinical suspicion, which emphasizes the importance of early diagnosis.³

New information about the illness causes public health initiatives to be implemented or modified. As a result, during each epidemic, it is necessary to record the disease's diverse manifestations and compile

descriptive information about it.⁴ The Flaviviridae family of viruses, which includes the dengue virus DEN 1, DEN 2, DEN 3, and DEN 4, has at least four different antigenic kinds.⁵ Unchecked urbanization, overpopulation, poor health care, increased travel to dengue-affected areas, ineffective vector management, climate change, and low public knowledge are some of the factors contributing to the disease's development. It is well recognized that dengue infections can manifest a wide range of clinical symptoms, from asymptomatic sickness to deadly consequences.⁶ The present study was conducted to assess hepatic manifestations in dengue fever and their correlation with severity of dengue fever.

MATERIALS & METHODS

The present study was conducted in Patna Medical College and Hospital, Patna between June 2022 to

October 2022 on 58 cases of dengue fever of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Parameters such as hemoglobin, total and differential leukocyte count, hematocrit, platelet count, liver function tests and urine examination was assessed.

Complete blood counts including hematocrit were repeated daily during the acute phase of the illness and chest X-ray was taken to demonstrate pleural effusion.

Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table: I Distribution of patients

Total- 58		
Gender	Male	Female
Number	38	20

Table I shows that out of 58 patients, males were 38 and females were 20.

Table: II Assessment of symptoms and signs of dengue

Symptoms	DF	DHF I	DHF II	DHF III	DHF IV	P value
Number	10	8	11	20	9	0.05
Headache	7	5	10	17	6	
Body pain	6	7	6	16	8	
Vomiting	5	3	8	12	3	
Retro-orbital pain	8	5	7	18	5	
Jaundice	7	6	6	15	7	

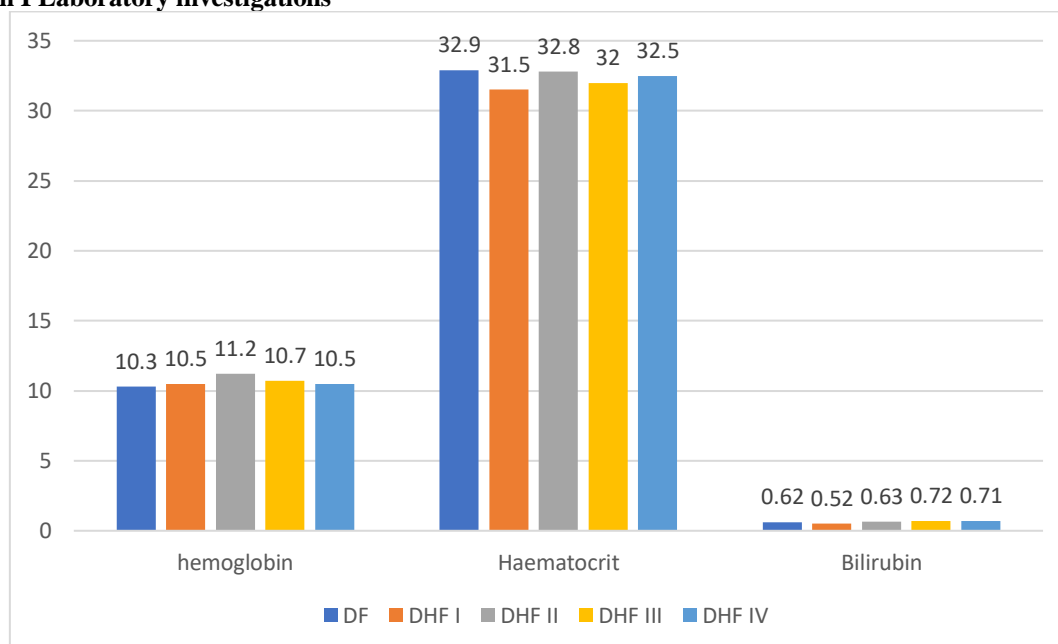
Table II shows that common symptoms in patients with DF, DHF I, DHF II, DHF III and DHF IV was headache was seen in 7, 5, 10, 17 and 6 respectively. Body pain was seen in 6, 7, 6, 16 and 8, vomiting in 5, 3, 8, 12 and 3, retro-orbital pain in 8, 5, 7, 18 and 5 patients respectively. Jaundice in 7, 6, 6, 15 and 7 patients respectively. The difference was significant (P< 0.05).

Table: III Laboratory investigations

Investigations	DF	DHF I	DHF II	DHF III	DHF IV	P value
hemoglobin	10.3	10.5	11.2	10.7	10.5	0.05
Haematocrit	32.9	31.5	32.8	32.0	32.5	0.03
Bilirubin	0.62	0.52	0.63	0.72	0.71	0.04

Table II, graph I shows that in DF, DHF I, DHF II, DHF III and DHF IV, the mean hemoglobin level was 10.3, 10.5, 11.2, 10.7 and 10.5. Haematocrit was 32.9, 31.5, 32., 32.0 and 32.5. Bilirubin was 0.62, 0.52, 0.63, 0.72 and 0.71 respectively.

Graph I Laboratory investigations



DISCUSSION

One of the most prevalent diseases in the world spread by mosquitoes is dengue infection.⁷ This study shows a smaller age group afflicted by dengue fever and its consequences than earlier Indian studies.^{8,9} This bolsters the theory that dengue disease is becoming more endemic in India. There is a clear trend among dengue subgroups for DSS to arise at a younger age.^{10,11} The present study was conducted to assess hepatic manifestations in dengue fever and their correlation with severity of dengue fever.

We found that out of 58 patients, males were 38 and females were 20. Dhanwada et al¹² in their found that of 60 serologically confirmed cases hospitalized with dengue, were classified into (i) DF, (ii) DHF I (iii) DHF II (iv) DHF III and (v) DHF IV. The Hematocrit levels were raised 20% from the baseline in four classes of Dengue and not raised in DF. Most commonly occurred in age group of 5-7 years. Hepatomegaly was the commonest clinical sign seen. Thrombocytopenia was seen in 88% of all cases. Serum total bilirubin was raised in 10% of subjects with severe dengue infection in DHF III and DHF IV. Serum SGOT and SGPT was raised in 63.3% and 56.7% of patients with dengue of all classes including DF respectively. Thrombocytopenia occurred in 75% of patients with dengue fever, 98% with warning signs and 100% in severe dengue.

We found that common symptoms in patients with DF, DHF I, DHF II, DHF III and DHF IV was headache was seen in 7, 5, 10, 17 and 6 respectively. Body pain was seen in 6, 7, 6, 16 and 8, vomiting in 5, 3, 8, 12 and 3, retro-orbital pain in 8, 5, 7, 18 and 5 patients respectively. Jaundice in 7, 6, 6, 15 and 7 patients respectively. Shekar GC et al¹³ analyzed the clinical, biochemical and hematological parameters of dengue fever. A total of 100 patients admitted to our hospital with fever and immunoglobulin M dengue positive were studied. Out of 100 patients, 81 (81%) patients were diagnosed to have dengue fever. Most of the patients presented with classical features such as fever myalgias, arthralgias, pain abdomen, vomiting, headache, rash, and bleeding manifestations. The treatment of dengue is mainly supportive. However, appropriate fluid management plays a major role in outcome of the disease.

We found that in DF, DHF I, DHF II, DHF III and DHF IV, the mean hemoglobin level was 10.3, 10.5, 11.2, 10.7 and 10.5. Haematocrit was 32.9, 31.5, 32., 32.0 and 32.5. Bilirubin was 0.62, 0.52, 0.63, 0.72 and 0.71 respectively. Kalayanarooj S et al¹⁴ identified early indicators of acute dengue virus infection. Of 172 evaluable subjects (91% of enrollees), 60 (35%) had dengue, including 32 with dengue fever (DF) and 28 with dengue hemorrhagic fever (DHF). At enrollment, children with dengue were more likely than children with other febrile illnesses (OFI) to report anorexia, nausea, and vomiting and to have a positive tourniquet test, and they had lower total white blood cell counts, absolute neutrophil and absolute

monocyte counts, and higher plasma alanine and aspartate (AST) aminotransferase levels than children with OFI. Plasma AST levels were higher in children who developed DHF than in those with DF. These data identify simple clinical and laboratory parameters that help to identify children with DF or DHF.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that the frequency of dengue epidemics is rising. There have been reports of varied degrees of hepatic involvement. Early detection of hepatic dysfunction in dengue would help to prevent potentially fatal consequences because the condition is temporary and reversible.

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