

CLINICHAEMATOLOGICAL PROFILE OF MILD DENGUE FEVER IN PEDIATRIC POPULATION OF KANNAUJ DISTRICT AND ADJOINING AREA

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Abstract

Background: Dengue fever is the most rapidly spreading mosquito borne disease worldwide. Dengue causes more human morbidity and mortality globally than any other vector borne disease. The objective is to access the clinical and hematological profile of mild dengue fever patients in children less than 18 years. **Materials and Methods:** A prospective observational time bound study was conducted for duration of 4 month between October 2021 to January 2022 at government medical college tirwa, kannauj. Total of 113 patients were enrolled for the study during the study duration. **Result:** The most common age group was found to be 11-15 years of age and male is to female ratio of 0.9 was found with female predominance. Fever and abdominal pain were most common clinical manifestation. Only 27.4% had leukopenia, 8.8% had severe thrombocytopenia and 2.6% presented with deranged liver enzyme. **Conclusion:** Fever and abdominal pain was the most common presenting symptom. Mild dengue fever does not show deranged hematological profile.

INTRODUCTION

Dengue fever which was first referred as “water poison” associated with flying insects in a Chinese medical encyclopedia. Benjamin Rush coined the term “break bone fever” because of the symptoms of myalgia and arthralgia.^[1] The first dengue fever in India was reported during 1956 from Vellore and the first dengue haemorrhagic fever occurred in Calcutta in 1963.^[2] In India the annual incidence is estimated to be 7.5 to 32.5 million.^[3] According to the WHO the case fatality rate for dengue is roughly 5%.^[4] Aedes albopictus was found to be the most abundant vector in the areas surveyed, followed by Aedes aegypti. DENV-2 is the prevailing serotype.^[5] The case fatality rate in patients with severe dengue infection which consists of dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS) can be as high as 44%.^[6] An estimated 2.5 billion people worldwide are at risk of dengue. More than 50 million dengue infections are estimated to occur annually, of which approximately 5,00,000 result in hospital admissions for severe dengue in the form of dengue haemorrhagic fever (DHF) or dengue shock syndrome (DSS) principally among children.^[7] Dengue viruses (DV) belong to family Flaviviridae and there are four serotypes referred to as DV-1, DV-2, DV-3 and DV-4. DV is a positive-stranded encapsulated RNA virus and is composed of three

structural protein genes, which encode the nucleocapsid or core (C) protein, a membrane-associated (M) protein, an enveloped (E) glycoprotein and seven non-structural (NS) proteins. It is transmitted mainly by Aedes aegypti mosquito and by Ae. albopictus. After an incubation period of 4- 7 days, illness begins.^[8] The clinical presentation of DF is triphasic with the febrile phase typically characterized by high fever, headache, myalgia, body ache, vomiting, joint pain, transient rash and mild bleeding manifestations such as petechiae, ecchymosis at pressure sites and bleeding from venipunctures.^[9] In the next critical phase there is a heightened risk of progression of the patient to severe dengue which is defined by presence of plasma leakage that may lead to shock and/or fluid accumulation such as ascites or pleural effusion with or without respiratory distress, severe bleeding, and/or severe organ impairment.^[10] The risk of severe bleeding in dengue is much higher with a secondary infection and is seen in about 2—4% of cases having secondary infection. Atypical presentations are also encountered with acute liver failure, encephalopathy with seizures, renal dysfunction, lower gastrointestinal bleeding.^[11] Laboratory findings Laboratory investigations in many recent studies suggest thrombocytopenia in many patients, elevated SGPT, elevated SGOT and elevated PTT and PT. Majority of patients had

haemoconcentration. Even few patients were found to have echocardiographic abnormalities in the form of left ventricular dysfunction.^[11]

MATERIALS AND METHODS

This prospective observational study was conducted in Department of Pediatrics of Government Medical College, Tirwa, Kannauj, between October 2021 to January 2022. All children age group of 1year-18 year attending the outpatient department and in patient department of pediatric department with complain of fever, pain abdomen, vomiting, rashes over body, melaena, hematemesis, headache. Children diagnosed with dengue fever according to the WHO GUIDELINE 2011 were enrolled in the study. During the during of the study 113 patients were diagnosed with dengue fever using NS1 antigen-based ELISA test (Bharat Bio-Scan) or dengue serology for IgM and IgG antibodies (Bharat Bio Tech India (P) LTD) during the acute phase and convalescent phase.

Inclusion Criteria

- Children with fever <7 days with atleast one of the specific symptoms (abdominal pain, vomiting, headache, joint pain, body ache, melaena, hematemesis)
- All children <18 years of age whose attendants gave the consent for the study

Exclusion Criteria

- Patients with severe dengue (dengue hemorrhagic fever and dengue shock syndrome) or requiring platelet transfusion
- Children who were positive for malaria, enteric, UTI, meningitis were excluded

- Children with preexisting hematological illness
- Attendant who refused to give consent

A detailed history and physical examination was conducted. Complete blood count including hemoglobin, total leucocyte count, differential leucocyte count, platelet count, packed cell volume, hematocrit, total serum protein, serum albumin, serum globulin, liver function test (LFT), kidney function test (KFT), prothrombin time (PT), partial prothrombin time (PTT) were done for all patients as baseline investigation.

Statistical Analysis

The data were processed statistically using SPSS Trial version 23. The Chi2 test was used to identify the association between the different independent variable and the significance level. p value <0.05 was considered as significant. Written consent was taken from parents/attendants of all children before enrolling for studies. The study protocol was approved by the institutional ethical committee of government medical college, tirwa, Kannauj.

RESULTS

Out of total 113 included for assessment, 54 were males (47.8%), and 59(52.2%) were females with Male: Female ratio of 0.9 showing female predominance. Majority of patients were in age group 11-15 years of age (43.3%) followed by 6-10 years (38.9%) followed by >15 years (12.3%). There were only 5.3% in children less than 5 years. The most affected male was of 11-15 years (26.5%) and female 6-10 years (23.8%) whereas the least affected age group was <5 years patients.

Table 1: Distribution of cases according to age and sex

SN	Age Group (years)	Total patients		Male		Female	
		No	%	No	%	No	%
1	≤5	6	5.3	3	2.6	3	2.6
2	6-10	44	38.9	17	15	27	23.8
3	11-15	49	43.3	30	26.5	19	16.8
4	≥15	14	12.3	4	3.5	10	8.8
5	Total	113		54	47.7	59	52.2

p value =0.069 at 5% level of significance

Table 2: Distribution of cases by clinical history

SN	Clinical feature	No of patient		Male		Female	
		No	%	No	%	No	%
1	Fever	102	90.2	49	43.3	53	46.9
2	Pain abdomen	51	45.1	24	21.2	27	23.8
3	Malena	2	1.7	1	0.8	1	0.8
4	Haematemesis	3	2.6	2	1.7	1	0.8
5	Diarrohea	2	1.7	1	0.8	1	0.8
6	Petechiae	22	19.4	11	9.7	11	9.7
7	Headache	31	27.4	15	13.2	16	14.1

p value=0.945 at 5 % level of significance

Overall, fever (90.2%), pain abdomen (45.1%), headache (27.4) was recorded as clinical symptoms with patients of dengue fever. The pattern was same for male and female population. Only 1.7% had melaena and diarrhea and 2.6 had hematemesis.

Table 3: Comparison of Hematological Investigation

SN	Investigation	Range	No	%
1	TLC (/mm ³)	<4000	31	27.4
		4000-11,000	63	55.7
		>11000	10	8.8
2	PLT (/mm ³)	<20,000	10	8.8
		20,000-50,000	25	22.1
		>50,000-1,00,000	36	31.8
		>1,00,000	42	37.1
3	SGPT (mg/dl)	<75	93	82.3
		75-150	17	15
		>150	3	2.6
4	PCV	<36.5	3	2.6
		>36.5	110	97.3

The hematological parameter showed leukopenia (27.4%), thrombocytopenia in (8.8%) and hemoconcentration in (97.3%). Ten children (8.8%) had platelet count <20,000/mm³, twenty-five children (22.3%) were between 20,000-50,000/mm³,

Thirty-six patients (31.8%) were between 50,000- 1,00,000/mm³, and 42 patients (37.1%) were >1 lakh.

DISCUSSION

Majority of patients were observed to be 61% which belonged to the age group 11 to 15 years which was similar to study done by Peter P Vazhayil et al,^[12] who conducted retrospective observational study on dengue patients in tertiary care centre in kerala to study the clinical feature and hematological profile in all cases of dengue patients. Hemant Jain et al,^[13] studied the clinical profile and outcome of dengue fever in hospitalized children in south Rajasthan in a prospective observational study. He found that majority were males 53% which is on the contrary to our study where majority are female (52.2%). K S sahana et al,^[14] conducted a study during dengue outbreak in 2012 in southern india to study cilinical profile of dengue among children. The study showed leukopenia in 34.5% of cases which is very similar to our study which had leukopenia in 27.4%. Contrast study was done by Rajesh joshi et al,^[15] they found 96% patient had platelet count less than 50000 but in this study only 22% patients having platelet count <50000. In our study 90.2 % patients had fever and these findings are almost equal to Kamrunnaher sultana et al,^[16] they found fever in 100% of patients and Mendez A gonzalez G et al,^[17] also had the similar results. In this study 45% patients were presented with pain abdomen which is almost similar to ABM Shahidul alam et al,^[18] and 1.8% patients had malena which is contrast to Saba ahmad Yusuf et al,^[19] al they observed 61% patients having history of malena. Ashwini kumar et al,^[20] found petechial hoemorrhages in 67% of their patients but this observation is quite contrast to our study with 19.4% patients had petechial hemorrhages. WHO guidelines-based management should be applied in assessing and managing dengue cases to reduce mortality rate.

So most of the studies showed leukopenia and fever which could be seen in our study as well.

Strength of our study was pin point approach to study only dengue positive patient clinical and

hematological parameter in kannauj and its adjoining area. Owing to being in plain area it had very different finding to those of costal region.

Limitation of our study was we studies only the cases of mild dengue fever and the severe cases were excluded from the study due to resource limitation.

CONCLUSION

Most of the children in the study were males presented with fever and abdominal pain, history of petechial hemorrhage and malena is less. Patients were managed mostly by antipyretics because of mild dengue cases.

There was paucity of literature of dengue study in our area.

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