# Evaluation of Platelet Count in Pediatric Patients with Dengue Fever: A Hospital based Study

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## ABSTRACT

**Introduction:** Dengue fever is the most frequently occurring mosquito-borne viral disease worldwide. Over the last 50 years, the incidence of dengue has increased 30-fold, with the highest rates occurring among infants. The main objective of present study was to determine the platelet count and the severity of the dengue fever in paediatric patients.

**Materials and Methods:** Children below 15 years with seropositivity for DF admitted to hospital, were assessed for platelet check and seriousness of the sickness. ELISA was performed for the identification of dengue NS1, Ig M and Ig G. Information were gathered in the wake of getting assent in due arrangement. Information was gathered by utilizing meeting, physical examination, sputum examination, and lab discoveries.

**Result:** Out of total 65 confirmed cases of Dengue, 79% had thrombocytopenia while remaining 21% had normal platelet count. 53% of the cases were noted in the age group of 7-12 years, 40% had platelet counts between 51,000 and 1 lakh. Majority of the cases with severe thrombocytopenia presented with DF with or without warning signs.

**Conclusion:** It is one of the most common vector-borne diseases worldwide and one of the dreaded fevers for the paediatric age group. Platelet consider is a prescient well as a recuperation parameter of DF/DHF/DSS.


**Keywords:** Dengue Fever (DF), Dengue Haemorrhagic Syndrome (DHF), Dengue Shock Syndrome (DSS), Platelet Count, Thrombocytopenia

## INTRODUCTION

Dengue viral disease is right now among the most basic arthropod-borne diseases from general society wellbeing view point. Concerning the occurrence of dengue all over the world, the diagram has ascended observably in later decades and more than 40% of the total populace is presently at chance from dengue.[1] It has been evaluated that there may be 50 to 100 million dengue contaminations all around per year.[2] Viral transmission happens by means of a blood feast by tainted mosquitoes. In spite of the fact that diseases of nonhuman primates do happen, viremic people are the most critical supply for dengue infections. After vector-borne transmission, the infection at first taints macrophages and dendritic cells. At that point, it recreates in provincial lymph hubs. Contamination with the infection is trailed by a brooding time of 4 to 10 days, amid which the infection moves toward becoming dispersed by means of blood and lymphatic vessels, in this manner bringing on systemic ailment. By far most of patients with dengue disease is either asymptomatic or indicates just mellow side effects.[3]

If dengue diseases end up noticeably symptomatic, 3 phases can be recognized: First, a febrile stage; second, a basic stage amid defervescence; and third, a recuperation arrange. The starting febrile stage starts with fast onset, high-review fever, which is joined by retro-orbital cerebral pain, serious myalgia and arthralgia ("break-bone fever "), nausea, vomiting (more typical in youngsters) and generaexhaustion. A blended maculopapular rash,more regular in youngsters shows up amid the finish of the febrile stage.[4]

Dengue disease can be analyzed specifically through discovery of infection parts or else in a roundabout way through serological techniques. The sort of analytic test utilized relies on the phase of the malady. Due to the intense onset and seriousness of the side effects, patients with dengue typically display inside the initial 2 days of ailment at social insurance offices. At this organize, finding just can be built up by direct popular location tests. Be that as it may, once hemorrhagic fever or dengue stun disorder has created, determination can as it were be set up by serology on the grounds that the viremic stage is over.[5]

Because of the nonappearance of both particular treatment choices and an immunization, prophylaxis by evasion of mosquito chomps by Aedes mosquitos remains the foundation of dengue counteractive action. This is particularly valid for kids who have had a first dengue disease and are coming back to dengue endemic territories. The main objective of present study was to determine the platelet count and the severity of the dengue fever in paediatric patients.

## MATERIAL AND METHODS

Present study was done in the Department of pathology, Heritage Institute of Medical Sciences. Children beneath 15 years with seropositivity for DF admitted to healing facility, were assessed for platelet number and seriousness of the illness. Kids who were sure for intestinal sickness, meningitis, and enteric fever were rejected from the review. The entire number of patients incorporated into our review was 65. Clinical discoveries also, research center tests including hematocrit and platelets numbers were enrolled. The relationship between extreme thrombocytopenia and the nearness of confusions, such as hemorrhagic appearances were assessed. Tests were handled inside 6 hours of the underlying example gathering and Platelet checks were performed on entirety blood of those people who were discovered seropositive for dengue contamination. Cases were followed up day by day for the clinical and research

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**How to cite this article:** Praveen A Shinde. Evaluation of platelet count in pediatric patients with dengue fever: a hospital based study. International Journal of Contemporary Medical Research 2017;4(5):1175-1177.

facility parameters. Blood parameters were checked each day till wonderful change seen
clinically and haematologically. Composed assent was taken from the guardians before selecting in the review. Ethical committee clearance was taken. The information was entered and broke down by utilizing recurrence and rates were figured for subjective factors.

## STATISTICAL ANALYSIS

The data was entered and analyzed by using frequency and percentages were calculated for qualitative variables. The platelet count was repeated regularly during the hospital stay and also at the time of discharge for the confirmed dengue cases.

## RESULT

During the study period there were 114 pediatric cases admitted with fever. Of these 65 were found to be seropositive for dengue. Of these seropositive cases 79% had thrombocytopenia while the remaining 21% had normal platelet counts. A total of 65 youngsters, analyzed as dengue in view of NS1, IgM and IgG energy and hematological parameters with LFT and coagulation profile were finished. Among them 36 were boys and 29 were girls. Dominant part of the dengue cases were noted in the age gathering of 7–12 years and in the same age group there was a boy's predominance. Demographic details are given in table no 1.

Mean platelet count of children is 0.76lakhs/mm$^3$. 12 children were having undifferentiated fever, 39 were having DF with or without warning signs and 14 with Dengue Haemorrahagic fever.

Fever was present in all cases and abdominal pain, vomiting, retroorbital pain, and abdominal distension were seen commonly. Two patients in the DF group had convulsion after having DSS. Majority of the children tourniquet test was found to be negative.

40% had platelet counts between 51,000 and 1 lakh. Majority of the cases with severe thrombocytopenia presented with DF with or without warning signs. Of the patients with thrombocytopenia 13 (21%) had platelet count >1 lakh, 2 6(40%) patients had platelet checks in the vicinity of 51,000 and 1 lakh (mild thrombocytopenia), 21 (31%) patients had platelet countin the vicinity of 21,000 and 50,000 (moderate thrombocytopenia) while the rest of the 5 patients (8%) had platelet numbers <20,000 (serious thrombocytopenia). A critical affiliation was seen between the seriousness of thrombocytopenia and the age gatherings. Thrombocytopenia was observed to be serious in age gatherings of 7–12 years than in the more seasoned age gathering and this distinction was critical.

## DISCUSSION

Dengue is an imperative arboviral contamination in tropical nations. Worldwide rate of dengue fever has expanded significantly in the current decades.[6] It is assessed that there are as of now 50–100 million instances of dengue consistently around the world, including more than 5 00,000 announced instances of dengue hemorrhagic fever and dengue shock syndrome (DHF/DSS).[7] Thrombocytopenia has dependably been one of the criteria utilized by WHO rules as a potential pointer of clinical severity.[8] Out of 65 patients with thrombocytopenia 13 (21%) had platelet tally >1 lakh, 26 (40%) patients had platelet number

| Variables | Value |
|---|---|
| Boys: girls | 36:29 |
| Mean age | 8.7±2.4 years |
| Mean platelet count | 0.76 lakhs/mm$^3$ |
| Having thrombocytopenia | 51 |
| Average duration of hospital stay | 4.1 days |
| Classification of dengue | |
| Undifferentiated fever | 12 |
| DF(with or without warning signs) | 39 |
| DHF | 14 |
| Dengue Serology | |
| NS1 | 39 |
| IgM | 19 |
| IgG | 2 |
| IgM& IgG | 3 |
| IgM& NS1 | 2 |

**Table-1:** Demographic variables in children having dengue fever

| | Platelet count | | | |
|---|---|---|---|---|
| Age (years) | <20,000 | 21-50,000 | 51-1lakhs | >1 lakhs |
| 0-2 | - | - | 2 | 1 |
| 3-6 | - | 5 | 5 | 2 |
| 7-12 | 4 | 13 | 11 | 7 |
| 13-15 | 1 | 3 | 8 | 3 |

**Table-2:** Age-wise distribution of platelet counts

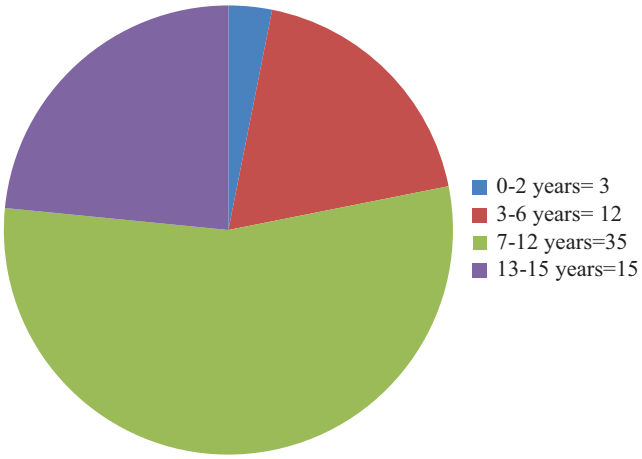


**Figure-1:** Age distribution of children having Dengue fever

in the vicinity of 51,000 and 1 lakh (mild thrombocytopenia), 21(31%) patients had platelet tallies in the vicinity of 21,000 and 50,000 (moderate thrombocytopenia) while the rest of the 4 patients (8%) had platelet tallies <20,000 (severe thrombocytopenia).

In our review most extreme quantities of cases were found in the gather 7-12 years old (53%) and the slightest influenced age gathering was newborn children. Different reviews have noticed that 5-9 years is the most pervasive age bunch in pediatric dengue patients.[9,10] More association in immature kids can be clarified by diurnal adjustment of Aedes mosquito in put away water. These kids work in open field. This makes them inclined to rehashed assaults by Aedes mosquitoes. There was noteworthy contrast in male : female proportion in our review though in different reviews there were no such noteworthy differences.[11] In the present study about DF was more typical in boys (55%) and among the pediatric age gather the biggest extent was seen in the age gathering of 7–12 years. This is as

per the learn at Belgium by Chairulfatah A.[12] the most punctual hematological variation from the norm is a dynamic decrease in add up to WBC check in patients of dengue. In our review fever was available in all cases. Stomach pain, regurgitating, retroorbital agony, and stomach distension were seen normally. This runs with past study.[13]

Convulsion because of disease is extremely uncommon. Two patients in the serious dengue bunch had writhing in the wake of having DSS, similar finding was likewise noted in other studies.[14] In our review, in most of the patients tourniquet test was observed to be negative, while considers in different nations, particularly Southeast Asian countries, report tourniquet test positivity as the commonest draining sign.[15]

In the present review 79% of the instances of DHF/DSS had thrombocytopenia. However, prevalence of thrombocytopenia has been uncovered in different reviews which ranges from 58-83%.[16] The clinical result and platelet numbers recorded over the span of hospitalization have demonstrated that a recuperation from thrombocytopenia was related with clinical change while additionally fall in platelet numbers was related with casualty. This is in standard with the discoveries of the review by Mourao and others.[17,18]

However, main limitation in this review is that no noteworthy affiliation was found of leukopenia with bleeding signs; and death rate is most certainly not recorded.

## CONCLUSION

Majority of the patients were 7-12 year age with thrombocytopenia. There was positive correlation between severity of thrombocytopenia and development of DHF.

## REFERENCES


1. World Health Organization (WHO). Dengue and severe dengue. Fact sheet 117, 2013.
2. Simmons CP, Farrar JJ, van Vinh Chau N, Wills B. Current concepts: dengue. New Eng J Med. 2012;366:1423-32.
3. Nijora Deka, Satish Talikoti. Outbreak of dengue in Vijayapur, North Karnataka- retrospective analysis of clinical profile and outcome. International Journal of Contemporary Medical Research. 2017;4:1076-1078.
4. De Souza LJ, Bastos Pessanha L, CarvalhocMansur L, et al. Comparison of clinical and laboratoryccharacteristics between children and adults with dengue. Braz J Infect Dis. 2013;17:27–31.
5. Special Programme for Research. Dengue: Guidelines for Diagnosis, Treatment, Prevention and Control. Geneva, Switzerland: World Health Organization; 2009.
6. World Health Organization. WHO report on global surveillance of Epidemic prone infectious diseases.
7. F. R. F. G. Azin, R. P. Gonçalves, M. H. D. S. Pitombeira, D. M. Lima, and I. C. Branco. Dengue: profile of hematological and biochemical dynamics. Revista Brasileira de Hematologia e Hemoterapia. 2012;34:36–41.
8. WHO, Dengue Haemorrhagic Fever: Diagnosis, Treatment, Prevention and Control, World Health Organization, Geneva, Switzerland, 2009.
9. Harun SR. Clinical aspects of dengue hemorrhagic fever in children. In: Proceedings of the seminar and workshop on dengue hemorrhagic fever and its control, Jakarta, 1990;p. 62–68.
10. Md. Yousuf Khan, C.Venkateshwarlu, N. Sandeep, A Hari Krishna. A study of clinical and laboratory profile of dengue fever in a tertiary care hospital, Nizamabad, Telangana State, India. International Journal of Contemporary Medical Research. 2016;3:2383-2387.
11. Basuki P. S., Budiyanto, Puspitasari D., et al. Application of revised dengue classification criteria as a severity marker of dengue viral infection in Indonesia. Southeast Asian Journal of Tropical Medicine and Public Health. 2010;41:1088–1094.
12. Chairulfatah A, Setiabudi D, Agoes R, Colebunders R. Thrombocytopenia and platelet transfusions in dengue haemorrhagic fever and dengue shock syndrome. Dengue Bull. 2003;27:141–143.
13. Ahmed S., Arif F., Yahya Y., et al. Dengue fever outbreak in Karachi 2006-a study of profile and outcome of children under 15 years of age. Journal of the Pakistan Medical Association. 2008;58:4–8.
14. Joshi R., Baid V. Profile of dengue patients admitted to a tertiary care hospital in Mumbai. The Turkish Journal of Pediatrics. 2011;53:626–631.
15. Krishnamurti C., Kalayanarooj S., Cutting M. A., et al. Mechanisms of hemorrhage in dengue without circulatory collapse. American Journal of Tropical Medicine and Hygiene. 2001;65:840–847.
16. Chairulfatah A, Setiabudi D, Agoes R, Colebunders R. Thrombocytopenia and platelet transfusions in dengue hemorrhagic fever and dengue shock syndrome. Dengue Bull. 2003;27:141–143.
17. Mourao MP, Lacerda MV, Macedo VO, Santo JB. Thrombocytopenia in patients with dengue virus infection in Brazilian Amazon. Platelets. 2007;18:605–612.
18. Deepali Danave, Vijay Kulkarni. Sero-prevalence of dengue in a sub-urban region. International Journal of Contemporary Medical Research. 2016;3:1021-1022.


**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 30-04-2017; **Accepted:** 01-06-2017; **Published:** 12-06-2017