

Research Article



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EVALUATING THE BLEEDING TENDENCIES OF PATIENTS WITH DENGUE FEVER ADMITTED TO THE MEDICAL CENTRE IN GHAZIABAD

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ABSTRACT

Background: Thrombocytopenia and fever are common symptoms of dengue. While there are other clinical manifestations of the condition, bleeding tendencies are the most prevalent. These bleeding tendencies are an indication of decreased platelet counts. When dengue patients receive prompt and efficient care, their mortality rates are reduced.

Objective: This clinical study set out to assess the bleeding tendencies of hospitalized dengue fever patients at the Indian Health Care Centre.

Methods: This observational clinical study had 160 adult dengue patients who were assessed for bleeding propensity. All of the people were older than eighteen.

Result: The most frequent propensity to bleed noticed in At 94.44% (n=51) of the research individuals, petechiae/rashes were the most often observed bleeding propensity. 27.77% (n=15) of the subjects experienced gingival bleeding, which was followed by conjunctival suffusion in 22.22% (n=12), epistaxis in 14.81% (n=8), malena in 9.25% (n=5), PR (per-rectal) bleeding in 7.40% (n=4) study participants, and hematuria in 5.55% (n=3) of the subjects. A significant proportion of patients (n = 8) with epistaxis had platelet counts < 50,000. Among the subjects whose platelet counts were below 50,000 μ l, 5.62% (n = 9) had conjunctival effusion, 8.75% (n = 14) had gingival bleeding, and 2.5% (n = 4) had PR bleed, 3.12% (n=5) with malena, 1.25% (n=2) with hematuria, and 24.37% (n=39) with petechiae/rashes.

Keywords: Bleeding, Dengue, Platelet counts, platelet transfusion, Thrombocytopenia

INTRODUCTION

According to the current study, one of the main reasons why dengue patients die is thrombocytopenia, which is seen in those who bleed, have symptoms that should be taken seriously for platelet evaluation, and require frequent testing and, if required, platelet transfusion. Prompt platelet transfusion can assist these patients avoid mortality by preserving normal platelet counts and reducing bleeding symptoms. First off, dengue is a feverish sickness caused by one of the four subtypes of the dengue virus. It is an acute viral infection that can be fatal for individuals who contract it. When they are feasting on blood, female *Aedes albopictus* or *Aedes aegypti* mosquitoes bite their hosts.¹

Dengue fever often clears up on its own after an 8–10 day incubation period; symptoms typically disappear in 2–7 days. Dengue fever can present clinically in a variety of ways, from a fever to a mid-temperature to possibly lethal shock syndrome. The symptoms that dengue patients may encounter include hemorrhagic signs, sore throat, malaise, generalised weakness, vomiting, nausea, arthralgia, myalgia, retro-orbital pain, headache, and/or fever.^{2,3}

The hemorrhagic symptoms seen in dengue subjects include malena, PR bleed, hematuria, conjunctival suffusion, gingival bleeding, petechiae, and/or rashes. This is because dengue fever patients have lowered

platelet counts. In 2009, dengue was categorised by the World Health Organisation (WHO) and was divided into three categories: severe dengue, dengue without warning indicators, and dengue with warning indications.⁴ Serology offers an indirect diagnosis of dengue virus infection, whereas viral component identification offers a direct diagnosis. Viral antigen or viral nucleic acid detection has a strong diagnostic specificity. However, there are a number of disadvantages, including labour sensitivity and cost.⁵ In addition to being associated with dengue fever, the thrombocytopenia connected to these disorders also carries a range of additional risks, ranging from thrombosis to potentially deadly haemorrhage to no risk at all.⁶ For patients with thrombocytopenia and active bleeding, prompt transfusion is required to maintain platelet counts more than 50,000/ μ l in various bleeding situations, such as DIC (disseminated intravascular coagulation), and greater than 1,00,000/ μ l in central nervous system haemorrhage.⁷

In addition to being used therapeutically to prepare the body for an invasive procedure that will produce bleeding and then actively manage the haemorrhage, prophylactic platelet transfusion can be used to halt severe bleeding. The threshold for prophylactic transfusion varies depending on the patient and the clinical context.

People with ITP, for instance, do not bleed, even with extremely low platelet counts. The use of platelets for both treating ongoing bleeding and preparing for invasive operations that may result in bleeding is referred to as therapeutic transfusion.⁸ Prophylactic transfusion is used to prevent spontaneous bleeding in afebrile individuals whose bone marrow suppression results in platelet counts below 10,000/ μ l; in septic and afebrile participants, the threshold is higher, with values between 20,000 and 30,000/ μ l.⁹

Evaluating the bleeding tendencies of dengue fever patients who were admitted to the Indian Health Care Centre was the aim of the current clinical trial.

MATERIALS AND METHODS

Evaluating the bleeding tendencies of dengue fever patients who were admitted to the Indian Health Care Centre was the aim of the current clinical trial. The relevant ethics committee gave its clearance for the study to be carried out at the Department of General Medicine. The study population consisted of those hospitalized at the institution and diagnosed with dengue fever. All research participants provided their informed consent after receiving a thorough explanation of the complex study designs.

160 people of both sexes with a mean age of 34.6 \pm 6.28 years and a verified diagnosis of dengue fever were included in the current study. Individuals who fulfilled the subsequent criteria might partake in the research, they had to be at least eighteen years old, have a verified diagnosis of dengue fever, be admitted to the facility, and exhibit willingness to participate. Individuals with drug-induced cirrhosis (DIC), blood-thinning medicines, substances that might generate bleeding symptoms and those who were hesitant were among the exclusion criteria for the investigation.

After all research participants were finally included, a comprehensive history was collected for each patient, and a clinical examination was performed. For laboratory testing, blood was taken from every research participant in an aseptic and sterile environment to confirm the diagnosis of dengue fever. Complete blood counts were also assessed. Testing for bleeding tendencies, such as petechiae, rashes, conjunctival suffusion, hematuria, epistaxis, per-rectal bleeding, and/or hematuria, was done on the research subjects.

The collected data were analysed using SPSS software version 21 (Chicago, IL, USA) for statistical evaluation and one-way ANOVA and t-test for result formulation. The information was displayed as a number, percentage, mean, and standard deviation. The significance level was upheld at $p < 0.05$.

RESULTS

An observational clinical study was conducted to assess the bleeding tendencies of dengue fever patients hospitalised to the Indian Health Care Centre. 160 people of both sexes with a mean age of 34.6 \pm 6.28 years and a verified diagnosis of dengue fever were included in the current study.

A list of the research subjects' demographic and medical characteristics may be found in Table 1. The age range of the bulk of research participants (31.87%; $n = 51$) was 21–30 years old. 18.75% ($n = 30$) in the 41–50 year age group, 16.87% ($n = 27$) in the 31–40 year age group, 16.25% ($n = 26$) in the <20 year age group, 11.25% ($n = 18$) in the 51–60 year age group, and 3.12% ($n = 5$) in the >60 year age group followed in age range. There were 61.87% ($n=99$) male participants and 38.12% ($n=61$) female participants in this study. Of the research participants, 33.75% ($n=54$) had bleeding incidents recorded. In terms of platelet counts, 44.37% ($n=71$) and 27.5% ($n=44$) of the participants had severe levels (<50,000 μ l) had moderate counts (50,000–1 lakhs), and 28.12% ($n=45$) had mild counts (≥ 1 lakh).

It was found that petechiae/rashes were the most prevalent, occurring in 94.44% ($n=51$) of the research individuals after analysing their bleeding tendencies. In the study subjects, gingival bleeding was the least common bleeding tendency reported at 27.77% ($n=15$), followed by conjunctival suffusion at 22.22% ($n=12$), epistaxis at 14.81% ($n=8$), Malena at 9.25% ($n=5$), PR (per-rectal) bleeding at 7.40% ($n=4$), and hematuria at 5.55% ($n=3$).

In reference to the correlation between bleeding tendencies and platelet counts in research participants, it was shown that 5% (n=8) of those with epistaxis had platelet counts below 50,000, a threshold that is regarded as dangerous.

Of the individuals whose platelet counts were below 50,000 μ l, 5.62% (n = 9) had gingival bleeding, 8.75% (n = 14) had conjunctival effusion, 2.5% (n = 4) had PR bleed, 3.12% (n = 5) had Malena, 1.25% (n = 2) had hematuria, and 24.37% (n = 39) had petechiae/rashes. In the platelet range of 50,000-1 lakhs μ l, there were 1.87% (n = 3), 0.62% (n = 1), and 7.5% (n = 12) of individuals with conjunctival suffusion, gingival bleeding, and rashes, respectively. No person with bleeding tendencies had platelet counts in the range of \geq 1 lakh, as Table 3 demonstrates.

DISCUSSION

An observational clinical study was conducted to assess the bleeding tendencies of dengue fever patients hospitalized to the Indian Health Care Centre. In the current investigation, 160 individuals of both sexes, with a mean age of 34.6 ± 6.28 years and a confirmed diagnosis of dengue fever, were included. The age range of the bulk of research participants (31.87%; n = 51) was 21–30 years old. 18.75% (n = 30) in the 41–50 year age group, 16.87% (n = 27) in the 31–40 year age group, 16.25% (n = 26) in the <20 year age group, 11.25% (n = 18) in the 51–60 year age group, and 3.12% (n = 5) in the >60 year age group followed in age range.

There were 61.87% (n=99) male participants and 38.12% (n=61) female participants in this study. Of the research participants, 33.75% (n=54) had bleeding incidents recorded. Of the participants, 27.5% (n = 44), 44.37% (n = 71), and 28.12% (n = 45) had platelet counts that were classified as severe (<50,000 μ l), moderate (\geq 1 lakh), and mild (\geq 1 lakh), respectively.

The demographics and characteristics of the illnesses of these research participants were comparable to those assessed by the authors of the 2011 study by Hottz E et al. and the 2012 study by Gupta G et al. Regarding the assessment of bleeding tendencies in research participants, it was found that, encompassing 94.44% (n=51) of the individuals, petechiae/rashes were the most often seen bleeding tendency. The least frequent bleeding tendency among the study participants was gingival bleeding, which was reported by 27.77% (n=15), conjunctival suffusion by 22.22% (n=12), epistaxis by 14.81% (n=8), Malena by 9.25% (n=5), PR (per-rectal) bleeding by 7.40% (n=4), and hematuria by 5.55% (n=3) of the participants. These findings aligned with the research conducted by Jacob K. Jacob et al. in 2017 and Radhika BV et al. in 2019, whose authors noted comparable bleeding tendencies with the same incidence as this study.

It was shown that 5% (n=8) of the research individuals with epistaxis had platelet counts in the range of <50,000 (severe), indicating a link between bleeding tendencies and platelet counts. Of the individuals whose platelet counts were below 50,000 μ l, 5.62% (n = 9) had gingival bleeding, 8.75% (n = 14) had conjunctival effusion, 2.5% (n = 4) had PR bleed, 3.12% (n = 5) had Malena, 1.25% (n = 2) had hematuria, and 24.37% (n = 39) had petechiae/rashes.

There were 1.87% (n=3), 0.62% (n=1), and 7.5% (n=12) of participants with conjunctival suffusion, gingival bleeding, and rashes, respectively, in the platelet range of 50,000-1 lakhs μ l. There was not a single patient in the \geq 1 lakh platelet count category who had bleeding tendencies. These results were in agreement with the findings of Changa K et al¹⁴ in 2011 and Sellahewa KH¹⁵ in 2011 where authors reported that In dengue individuals, there is a correlation between reduced platelet counts and increased bleeding tendencies.

CONCLUSION

Within the limitations of the research, the present study concludes that one of the main causes of death in dengue subjects is thrombocytopenia, which is seen in bleeding subjects and acts as an alert for platelet evaluation, frequent evaluation, and, if required, platelet transfusion. Prompt platelet transfusion can assist these patients avoid mortality by preserving normal platelet counts and reducing bleeding symptoms. Geographical biases, a small sample size, and a brief monitoring period were among the study's shortcomings. Consequently, larger sample numbers and longer observation periods in future long-term studies will help arrive at a definitive conclusion.

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S. No	Characteristics	Percentage (%)	Number (n)
1.	Mean age (years)	34.6±6.28	
2.	Age range (years)		
a)	<20	16.25	26
b)	21-30	31.87	51
c)	31-40	16.87	27
d)	41-50	18.75	30
e)	51-60	11.25	18
f)	>60	3.12	5
3.	Gender		
a)	Males	61.87	99
b)	Females	38.12	61
4.	Bleeding incidence		
a)	Reported	33.75	54
b)	Not-reported	66.25	106
5.	Platelet counts (µl)		
a)	<50,000 (severe)	27.5	44
b)	50,000-1 lakhs (moderate)	44.37	71
c)	≥1 lakh (mild)	28.12	45

Table 1: Demographic and disease characteristics of the study subjects

S. No	Bleeding tendencies	Percentage (%)	Number (n=54)
1.	Epistaxis	14.81	8
2.	Conjunctival suffusion	22.22	12
3.	Gingival bleeding	27.77	15
4.	PR (per-rectal) bleed	7.40	4
5.	Malena	9.25	5
6.	Hematuria	5.55	3
7.	Petechiae/rashes	94.44	51

Table 2: Bleeding tendencies in the study subjects

Bleeding tendencies	<50,000 (severe)		50,000-1 lakhs		≥1 lakh	
	%	n	%	n	%	n
Epistaxis	5	8	-	-	-	-
Conjunctival suffusion	5.62	9	1.87	3	-	-
Gingival bleeding	8.75	14	0.62	1	-	-
PR (per-rectal) bleed	2.5	4	-	-	-	-
Malena	3.12	5	-	-	-	-
Hematuria	1.25	2	-	-	-	-
Petechiae/rashes	24.37	39	7.5	12	-	-

Table 3: Correlation of the platelet counts to bleeding tendencies in the study subjects