EVALUATING THE BLEEDING TENDENCIES OF DENGUE FEVER PATIENTS HOSPITALIZED TO THE INDIAN MEDICAL CENTER

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ABSTRACT

Background: Dengue is a prevalent cause of fever coupled with thrombocytopenia. The disease can manifest clinically in a variety of ways, although bleeding tendencies are the most common manifestation. Reduced platelet levels are indicated by these bleeding tendencies. The death rates of dengue patients are decreased when these patients receive early and effective management.

Aim: The purpose of this clinical study was to evaluate the bleeding tendencies of dengue fever patients who were hospitalized to the Indian Health Care Center.

Methods: 160 adult patients with a diagnosis of dengue who were evaluated for bleeding tendencies were included in this observational clinical trial. The individuals were all older than 18 years.

Result: Most common bleeding tendency seen in The most common bleeding tendency reported in the study subjects was petechiae/rashes, which were seen in 94.44% (n=51) of the subjects. Gingival bleeding was seen in 27.77% (n=15) of the subjects, followed by conjunctival suffusion in 22.22% (n=12) of the subjects, epistaxis in 14.81% (n=8) of the subjects, malena in 9.25% (n=5) of the subjects, PR (per-rectal) bleed seen in 7.40% (n=4) study subjects, and hematuria in 5.55% (n=3) of the subjects. 5% (n=8) of all participants with epistaxis had platelet counts below 50,000, which is considered serious. In the participants with platelet counts of less than 50,000μl, there were 5.62% (n=9) with conjunctival effusion, 8.75% (n=14) with gingival bleeding, 2.5% (n=4) with 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

The current study reveals that thrombocytopenia, which occurs in individuals who experience bleeding, symptoms that serve as warning indicators for platelet assessment, and the need for regular examination and, if necessary, platelet transfusion, is one of the leading causes of mortality in dengue patients. In these patients, prompt platelet transfusion can help reduce bleeding symptoms and preserve normal platelet counts, which will lower death rates.

First Off

Dengue, an acute viral infection that can be fatal for those afflicted, is a feverish illness brought on by one of the four subtypes of the dengue virus. Female Aedes albopictus or Aedes aegypti mosquitoes bite their hosts when they are feeding on blood.1.

After an 8–10 day incubation period, dengue fever often goes away on its own, with symptoms usually going away in 2–7 days. The clinical manifestation of dengue fever might range from being asymptomatic to having a mid-temperature to potentially fatal shock syndrome. Hemorrhagic signs, sore throat, malaise, generalized weakness, vomiting, nausea, arthralgia, myalgia, retro-orbital discomfort, headache, and/or fever are among the symptoms that dengue victims may experience.2,3

Due to the decreased platelet counts in dengue fever patients, the hemorrhagic symptoms observed in dengue subjects include malena, PR bleed, hematuria, conjunctival suffusion, gingival bleeding, petechiae, and/or rashes. The World Health Organization (WHO) reclassified dengue in 2009, dividing it into three categories: severe dengue, dengue without warning signals, and dengue with warning signs.4

Viral component identification provides a direct diagnosis of dengue virus infection, whereas serology provides an indirect diagnostic. The diagnostic specificity of viral antigen or viral nucleic acid detection is good. Nevertheless, there are several drawbacks, such as labor sensitivity and expense.5

The thrombocytopenia linked to dengue fever is also linked to a number of other illnesses that carry varying degrees of danger, from thrombosis or potentially fatal bleeding to no risk at all.Six Prompt transfusion is necessary to maintain platelet counts more than 50,000/μl in different bleeding scenarios, such as DIC (disseminated intravascular coagulation), and greater than 1,00,000/μl in central nervous system hemorrhage, in people with thrombocytopenia and active bleeding.7.

Prophylactic platelet transfusion can be used to stop severe bleeding, or it can be used therapeutically to prepare the body for an invasive operation that will cause bleeding and then actively control the bleeding. The prophylactic transfusion threshold varies according to the clinical setting and individual. For example, no bleeding occurs in people with ITP, even at very low platelet counts. Therapeutic transfusion refers to the use of platelets to treat current bleeding and to prepare for invasive procedures that may cause bleeding.8 When bone marrow suppression results in platelet counts below 10,000/μl in afebrile people, prophylactic transfusion is used to prevent spontaneous bleeding; however, in septic and afebrile subjects, the threshold is greater, with values between 20,000 and 30,000/μl.9.

The goal of the current clinical investigation was to evaluate the bleeding tendencies of dengue fever patients who were hospitalized to the Indian Health Care Center.

MATERIALS AND METHODS

The goal of the current clinical investigation was to evaluate the bleeding tendencies of dengue fever patients who were hospitalized to the Indian Health Care Center. The study was conducted at Department of General Medicine, with approval from the relevant ethical committee. The individuals hospitalized to the institute with a confirmed diagnosis of dengue fever made up the study population. All study participants gave their informed permission after being fully briefed about the intricate study designs.

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. Subjects who met the following requirements were eligible to participate in the study: they had to be at least eighteen years old, have a confirmed diagnosis of dengue fever, be admitted to the institute, and be willing to participate. The research's exclusion criteria included those with DIC, drug-induced cirrhosis, blood-thinning medications, drugs that might cause bleeding symptoms, and anyone unwilling to submit to the trial.

Following the research subjects' final inclusion, each patient had a thorough history taken, and then a clinical examination was conducted. To confirm the diagnosis of dengue fever, blood was drawn from each research participant under aseptic and sterile settings for laboratory tests. Additionally, full blood counts were evaluated. The research participants were evaluated for bleeding tendencies, including petechiae, rashes, conjunctival suffusion, hematuria, epistaxis, per-rectal bleeding, and/or hematuria.

Using SPSS software version 21 (Chicago, IL, USA) for statistical assessment and one-way ANOVA and t-test for result formulation, the gathered data were examined. The data were presented as a mean, standard deviation, percentage, and number. At $p<0.05$, the significance threshold was maintained.

RESULTS

In order to evaluate the bleeding tendencies of people with dengue fever admitted to the Indian Health Care Center, an observational clinical research was carried out. 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.

Table 1 provides a list of the research individuals' demographic and illness characteristics. The majority of research participants (31.87%; n = 51) were between the ages of 21 and 30. Next in age range were 18.75% (n = 30) in the 41–50 years, 16.87% (n = 27) in the 31–40 years, 16.25% (n = 26) in the <20 years, 11.25% (n = 18) in the 51–60 years, and 3.12% (n = 5) in the >60 years. In this study, there were 38.12% (n=61) female participants and 61.87% (n=99) male participants. Incidence of bleeding was recorded in 33.75% (n=54) of the research participants. With regard to platelet counts, 27.5% (n=44) of the individuals had severe counts (<50,000 µl), 44.37% (n=71) had moderate counts (50,000–1 lakhs), and 28.12% (n=45) had mild counts (≥1 lakh).

After evaluating the bleeding tendencies of the research subjects, it was observed that petechiae/rashes were the most common, occurring in 94.44% (n=51) of the subjects. Gingival bleeding was the least common bleeding tendency reported in the study subjects, occurring in 27.77% (n=15), conjunctival suffusion in 22.22% (n=12), epistaxis in 14.81% (n=8), Malena in 9.25% (n=5), PR (per-rectal) bleed observed in 7.40% (n=4) study subjects, and hematuria in 5.55% (n=3) study subjects, respectively.

Regarding the relationship between the research participants' platelet counts and bleeding tendencies, it was observed that 5% (n=8) of the individuals with epistaxis had platelet counts that were below 50,000, which is considered serious. In the participants with platelet counts of less than 50,000 µl, there were 5.62% (n=9) with conjunctival effusion, 8.75% (n=14) with gingival bleeding, 2.5% (n=4) with PR bleed, 3.12% (n=5) with Malena, 1.25% (n=2) with hematuria, and 24.37% (n=39) with 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 µl. As shown in Table 3, no participant exhibiting bleeding tendencies had platelet counts within the ≥1 lakh range.

DISCUSSION

In order to evaluate the bleeding tendencies of people with dengue fever admitted to the Indian Health Care Center, an observational clinical research was carried out.

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 majority of research participants (31.87%; n = 51) were between the ages of 21 and 30. Next in age range were 18.75% (n = 30) in the 41–50 years, 16.87% (n = 27) in the 31–40 years, 16.25% (n = 26) in the <20 years, 11.25% (n = 18) in the 51–60 years, and 3.12% (n = 5) in the >60 years. In this study, there were 38.12% (n=61) female participants and 61.87% (n=99) male participants. Incidence of bleeding was recorded in 33.75% (n=54) of the research participants. Platelet counts were found to be severe (<50,000 µl) in 27.5% (n = 44), moderate (≥1 lakh) in 44.37% (n = 71) and mild (≥1 lakh) in 28.12% (n = 45) of the individuals, respectively. These study participants' demographics and illness features were similar to those evaluated by the authors of the 2011 study by Hottz E et al. and the 2012 study by Gupta G et al.

In relation to the evaluation of the bleeding tendencies in the research subjects, it was observed that petechiae/rashes were the most common bleeding tendency observed in the study subjects, accounting for 94.44% (n=51) of the subjects. Gingival bleeding was the least common bleeding tendency reported in the study subjects, accounting for 27.77% (n=15) of the subjects, conjunctival suffusion for 22.22% (n=12) of the subjects, epistaxis for 14.81% (n=8), Malena for 9.25% (n=5), PR (per-rectal) bleed observed in 7.40% (n=4) study subjects, and hematuria for 5.55% (n=3) of the subjects. These results were consistent with the studies of Jacob K Jacob et al[12] in 2017 and Radhika BV et al[13] in 2019 where authors reported similar bleeding tendencies with a comparable incidence as in the present study.

Regarding the relationship between bleeding tendencies and platelet counts in the research participants, it was observed that 5% (n=8) of the subjects with epistaxis had platelet counts in

the range of <50,000 (severe). In the participants with platelet counts of less than 50,000 μl, there were 5.62% (n=9) with conjunctival effusion, 8.75% (n=14) with gingival bleeding, 2.5% (n=4) with PR bleed, 3.12% (n=5) with Malena, 1.25% (n=2) with hematuria, and 24.37% (n=39) with 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 μl. There was not a single patient in the ≥1 lakh platelet count category who had bleeding tendencies. These results were in agreement with the findings of Changa K et al[14] in 2011 and Sellahewa KH[15] in 2011 where authors reported that In dengue individuals, there is a correlation between reduced platelet counts and increased bleeding tendencies.

CONCLUSION

Within the constraints of the study, the current investigation concludes that thrombocytopenia, which occurs in subjects who experience bleeding, serves as a warning sign for platelet assessment, and necessitates frequent evaluation and, if necessary, platelet transfusion, is one of the primary causes of death in dengue subjects. In these patients, prompt platelet transfusion can help reduce bleeding symptoms and preserve normal platelet counts, which will lower death rates. A few drawbacks of the current study included biases related to geographic areas, a limited sample size, and a short monitoring time. Therefore, further long-term research with bigger sample sizes and longer observation periods will aid in coming to a conclusive result.

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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

S. No	Bleeding tendencies	<50,000 (severe)		50,000-1 lakhs		≥1 lakh	
		%	n	%	n	%	n
1.	Epistaxis	5	8	-	-	-	-
2.	Conjunctival suffusion	5.62	9	1.87	3	-	-
3.	Gingival bleeding	8.75	14	0.62	1	-	-
4.	PR (per-rectal) bleed	2.5	4	-	-	-	-
5.	Malena	3.12	5	-	-	-	-
6.	Hematuria	1.25	2	-	-	-	-
7.	Petechiae/rashes	24.37	39	7.5	12	-	-

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