Original Research Paper

General Medicine

SPECTRUM OF BLEEDING MANIFESTATIONS IN DENGUE FEVER PATIENTS IN A TERTIARY CARE HOSPITAL – THREE YEARS RECORD BASED STUDY.

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ABSTRACT

Background: Dengue is a major public health concern present in almost all parts of India. It presents with myriad of clinical findings. Many of the dengue fever cases are self-limiting, but the severity ranges from mild fever to life threatening complications, such as hemorrhage and shock. The current study is undertaken with an objective of describing the demographic profile and various bleeding manifestations as noted in the admitted dengue infected patients during the study period.

Methods: This is a three year case series study from 2015 to 2017 among 210 dengue serology positive patients aged >18 years, admitted in the department of General Medicine, Hanagal Shri Kumareshwar Hospital and Research Centre, S. Nijalingappa Medical College, Bagalkot during the months of June to September. Data was entered in MS excel and analysed using SPSS statistical package student version 23.

Results: Out of the 210 patients, maximum number of cases belonged to the age group of 18-40 years. Young population were the ones who are commonly affected with dengue illness. There were 58.57% males and 41.42% females. Thrombocytopenia is seen in 109 patients while Bleeding manifestations occurred only in 18 patients with less than 20,000/cumm. Regarding the presentation of warning signs in the patients, abdominal pain was the most common sign, followed by Malena.

Conclusions: Patients admitted with dengue fever were mostly young and males were predominantly seen. Thrombocytopenia was reflected as a major laboratory investigating finding observed in almost half of the patients, but bleeding manifestations were minimal. Considering the spread of the disease and its complications, it is recommended that special preventive measures should be undertaken prior to the monsoon period.

BACKGROUND:

Dengue fever is the most prevalent mosquito-borne arboviral disease, which is a major international public concern worldwide which has emerged as a global public health issue in recent decades. It is present in about 128 countries and around 4 billion individuals are at risk. [1] In the recent years, dengue virus has crossed the geographic borders and has spread to many new countries affecting the urban as well as rural areas. At present, the Southeast Asia and western pacific regions are the most endemic regions.[2] It caused by four dengue virus strains (DENV-1, DENV-2, DENV-3 and DENV-4) of the family *Flaviviridae*; genus *Flavivirus* and transmitted by the *Aedes aegypti* mosquito. [3] The disease is characterized by increased capillary permeability causing the leakage of fluid from the bloodstream through the wall of small blood vessels into body cavities and abnormal bleeding occurs, sometimes from the teeth gums, nose and underneath the skin, causing petechial rashes. As a result, the volume of blood circulating in the blood vessels is reduced leading to hypovolemia and the blood pressure also becomes so low that it cannot supply sufficient blood to vital organs, leading to a critical conduction known as dengue shock syndrome. Furthermore multi organ damage sets in.

Abdominal pain or tenderness, persistent vomiting, clinical fluid accumulation, mucosal bleeding, lethargy and restlessness, hepatomegaly (liver enlargement > 2 cms), and laboratory increase in haematocrit concurrently with rapid drop in platelet count are all listed as warning signs in severe dengue fever.[4]

Dysfunction of the bone marrow leads to deterioration in the number of platelets, which are required for effective blood clotting, thereby the risk of bleeding is increased and other major complication of dengue fever. Pregnant women, Infants, young children and those exposed to the virus multiple times are at increased risk of severe dengue disease. [5, 6] With this background, this study was undertaken with an objective of describing the demographic factors and various bleeding manifestations as noted in our cohort of dengue infected patients.

METHODOLOGY:

A record based observational case series study is conducted among the dengue serology positive patients, admitted in the department of General Medicine, Hanagal Shri Kumareshwar Hospital and Research Centre, S.Nijalingappa Medical College, Bagalkot.

Study period: During 2015-2017 in the months of June to September.

Study population: A total of 210 patients were obtained from the case records.

Inclusion criteria:
* Confirmed cases of dengue serology positive for NS1Ag or IgM or both.
* Age more than 18 years.

Exclusion criteria:
* Those patients who were negative for dengue serology
* Cases of mixed infections were excluded from the study.

Study tools: We collected all the patient information sheet, clinical data and reports of hematological investigations of the dengue patients admitted in our teaching hospital.

Data analysis: Data was entered in MS Excel and and analysis was done using SPSS statistical package student version 23. The data is tabulated in the form of tables and graphs. Percentages and proportions were used to represent the data. Z test was applied to proportions.

RESULTS:

Out of the 210 cases obtained from the case records of patients admitted from 2015-2017 in the months of June to September, most of them were found to be young. More than half of them

(59%) were in the age group of 18-40 years, while 30% of the study patients were 41-60 years and only 11% of the patients were above 60 years. Regarding gender distribution, males formed a majority overall (58.57%) as shown in table 1.

Table 1: Distribution of the study population according to age and gender

Variable	2015	2016	2017	Total
Age				
18-40 years	46	38	40	124 (59.05%)
41-60 years	23	25	15	63 (30%)
> 60 years	14	5	4	23 (10.95%)
Gender				
Males	45	43	35	123 (58.57%)
Females	38	25	24	87 (41.42%)

Thrombocytopenia is seen in 109 patients (51.9%) i.e. Platelet counts of less than 10,000/cu.mm was found in 24 patients (11.45%), while 10,000 to 1, 50,000/cu.mm was noted in 85 patients (40.47%). 101 patients (48.08%) had more than 1, 50,000/cu.mm platelet count.

Bleeding manifestations occurred only in 18 patients (8.57%), among whom 13 patients had platelet count of less than 10,000/cu.mm, and 5 patients had platelet count of 10,000 to 1, 50,000/cu.mm. Males had more bleeding manifestations (55.5%) when compared to females (44.4%).

Table 2: Distribution of the study population according to platelet count and bleeding manifestations

Variable	2015	2016	2017	Total
Platelet count				
< 10,000	4	6	14	24 (11.45%)
10,000 to 1.5 lakh	51	17	17	85 (40.47%)
> 1.5 lakh	28	45	28	101 (48.08%)
Bleeding manifestations				
Yes	6	8	4	18 (8.57%)
No	77	60	55	192 (91.42%)

Table 3: Distribution of the study population showing the bleeding manifestations with respect to gender

Bleeding manifestations	Males	Females	Total
Yes	10 (55.5%)	8 (44.4%)	18 (8.57%)
No	113 (58.85%)	79 (41.14%)	192 (91.42%)

Regarding the presentation of warning signs in the patients, abdominal pain was the most common sign, seen in 26 patients, followed by Malena noted in 10 patients. Other warning signs included Petechiae, bleeding gums, subconjunctival haemorrhage and haematuria as shown in table 4.

Table 4: Distribution of the study population according to warning signs

Warning signs	2015	2016	2017	Total
Petechiae	2	1	2	5
Abdominal pain	12	11	3	26
Subconjunctival haemorrhage	1	1	1	3
Malena	5	3	2	10
Bleeding gums	1	2	2	5
Haematuria	1	0	0	1

DISCUSSION:

Dengue illness in humans causes a spectrum of illnesses ranging from in apparent febrile illness to severe and fatal haemorrhagic disease. It is considered one of the most important arthropod borne viral diseases in humans in terms of morbidity and mortality. The present study was carried out from 2015 to 2017 among 210 dengue serology positive patients aged >18 years, admitted in in the department of General Medicine, S Nijalingappa Medical College, Hanagal

Shree Kumareshwar Hospital, Bagalkot, and Karnataka during the months of June to September to describe the clinical manifestations of the dengue fever. This study showed that the majority of dengue cases were young adults with the largest proportion in the age group of 18-40 years (59%). This is in accordance to the findings of Chajhlana SPS et al and Mehta SR et al.[7,8] This shows that young population are the ones who are commonly affected with dengue illness. There was a male preponderance in our study (58.57%), as compared to the study findings of Pawar A et al in North Maharashtra (58.9%) and Chajhlana SPS et al in Hyderabad, Telangana (56.3%).[9,7] Even studies conducted in countries outside India, showed that incidence of dengue was high in males in a study at Sri Lanka conducted by PDNN Sirisena and others, who stated that there were 186 males and 86 females in their study.[10]

This could be due to the fact that males are more frequently exposed to the risk of acquiring dengue than females because of the outdoor life they lead. Further, females are usually better clothed than males. Thrombocytopenia is seen in almost half of the patients i.e. Platelet counts of less than 10000/cu.mm was found in 11.45% patients, while 10,000 to 1, 50,000/cu.mm was noted in 40.47% patients. This is in contrast to the findings of Chajhlana SPS et al, where thrombocytopenia is found in 84.0 % patients.[7] While the study findings of Mehta SR et al showed that 79% had thrombocytopenia with 3.01% having platelet count of < 10, 000/cu.mm, and 33.44% of less than 50,000/cu.mm, 32.77% had < 1 lakh/cu.mm and 30.76% had more than 1 lakh/ cu.mm platelet count on laboratory investigations.[8]

PDNN Sirisena and others of Sri Lanka stated that the platelet count of < 100,000 was seen in 65.3% cases.[10] Thrombocytopenia observed in dengue fever could be due to reduced production of platelets because of suppression of the bone marrow by the dengue virus and also due to the binding of dengue antigens to platelets and increased antibody mediated immunological destruction of platelets. In the current study, bleeding manifestations were noted only in 8.57% patients having less than 20,000/cu.mm, rest all were free from bleeding manifestations. This is very less compared to the findings of Chajhlana SPS et al, where bleeding manifestations were found in 58.8% patients[7] and 20% mainly in the form of gastrointestinal bleed as reported by Mehta SR et al.[8] Regarding the presentation of warning signs in the patients, abdominal pain was the most common sign, seen in 26 patients, followed by Malena noted in 10 patients. Other warning signs included Petechiae, bleeding gums, subconjunctival haemorrhage and haematuria. This findings were quite different when compared with the findings of Mehta SR et al, where abdominal pain was found in 42% patients, nausea/vomiting's in 56%, rash in 23%, Malena in 20% patients and Hepatosplenomegaly in 65% patients.[8]

Another study at North Maharashtra showed the presence of complications like Skin rash and bleeding tendency were present in 32.1% and 17.8% respectively while abdominal pain is seen in 10.7% patients, pleural effusion is seen in 10.7% and Hepatomegaly in 10.7% cases.[9]

Limitations:

In the present study, ELISA test, which is more appropriate has not been used for the diagnosis of dengue fever patients due to high cost burden, instead the antibody card test is used. And also the stool occult blood test is not done for confirmation of Malena.

Conclusion and recommendations:

Patients admitted with dengue fever were mostly young and males were predominantly seen. Thrombocytopenia was reflected as a common laboratory finding observed in almost half of the patients, but bleeding manifestations were

minimal. More attention should be given to patients with very less platelet counts, as they are the ones who land up in bleeding manifestations. Considering the spread of the disease and its complications, it is recommended that special preventive measures should be undertaken prior to the monsoon period. Providing health education campaigns about the fever, their warning signs and early referral may help prevent complications and deaths.

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