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PREVALENCE AND SEVERITY OF THROMBOCYTOPENIA IN DENGUE PATIENTS.

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ABSTRACT

Introduction: Dengue fever is one of the most prevalent and fastest spreading mosquito-borne arboviral infection occurring in tropical and sub-tropical regions around the world. Despite considerable efforts to control the mosquito populations, dengue fever has emerged, spread and established itself rapidly. The most serious manifestations of the infection are Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS). Thrombocytopenia is one of the major clinical manifestation and is common in patients with either mild or severe cases of dengue infection.

Objectives: Evaluation of prevalence and severity of thrombocytopenia in dengue infection.

Material and Methods: The present study was conducted retrospectively for a period of one year. Blood samples were collected from 450 patients experiencing febrile illness, clinically consistent with dengue infection. Serological confirmation of dengue infection and evaluation of platelet counts was done in all the serologically positive cases.

Results: A total of 450 fever cases were admitted during the study period and among them, 56 (12.4%) were found to be seropositive for dengue. Among the dengue positive cases, 38 were males and 18 were females. Of the seropositive cases,67.8% had thrombocytopenia while the remaining, 32.1% had platelet counts >1 lakh. Out of 38 patients with thrombocytopenia, 25 (65.7%) had mild thrombocytopenia, 08 (21.0%) had moderate thrombocytopenia and remaining 05 (13.1%) had severe thrombocytopenia.

Conclusion: This study concludes that thrombocytopenia is highly prevalent in dengue infection. However, the incidence of severe thrombocytopenia and hence bleeding manifestations are less in dengue infection.

KEYWORDS : Dengue infection, prevalence, severity, Thrombocytopenia.

INTRODUCTION

Dengue fever is one of the most prevalent and fastest spreading mosquito-borne arboviral infection occurring in tropical and sub-tropical regions around the world and leads to explosive outbreaks in urban areas influenced strongly by rainfall and temperature.[1] According to WHO, about two-fifths of the world's population (2.5 billion people) are currently at risk of dengue fever. Dengue fever is endemic in more than 100 countries. About one in every 40 patients with DHF die from the disease if left untreated, approximately 20% of people with DHF die from the infection.[2] Dengue fever is an acute infectious disease caused by dengue virus. Dengue infection is caused by any one of the four distinct but closely related dengue virus (DENV) serotypes (called DENV-1,2,3, and 4).It is characterized by biphasic fever, headache, body pain, rash, lymphadenopathy and leukopenia. In most cases, dengue fever is self-limited. However, there is a risk of progression to dengue haemorrhagic fever (DHF) or dengue shock syndrome (DSS), especially when cross-infection by different serotypes occurs. DHF is a severe febrile disease characterized by abnormalities of haemostasis and increased vascular permeability, which in some instances results in DSS. DSS is a form of hypovolaemic shock that is associated clinically with haemoconcentration, and it can lead to death.[3]Thrombocytopenia is one of the major clinical manifestation and is common in patients with either mild or severe cases of dengue infection. Studies suggest that the low platelet count is one of the major causes of bleeding in these patients. The platelet counts drop below normal level (150,000–450,000 platelets/μL) and may reach as low as <40000 platelets/μL during day 3–7 of fever in many patients.[4] In some cases, patients have to be transfused with platelets to maintain their normal hemostatic activity. Development of thrombocytopenia in dengue patients mainly rests on two events: decreased production of platelets in the bone marrow and/or increased destruction and clearance of platelets from peripheral blood.[5]Several studies suggest that the activation and dysfunction of platelets is implicated in the prothrombotic complications in DHF and DSS. Studies report that the platelet activation [with elevated surface P-selectin] and apoptosis [with increased caspases and phosphatidylserine (PS) expression] are associated in the early days of dengue infection. Reports also show that the activation of complement factor C3 followed by binding of C5b-9 complex to platelet surface is significantly linked with platelet destruction and thrombocytopenia in these patients. Further an ex vivo report describes a direct correlation between microparticles (MPs) derived from activated platelets in the peripheral blood and the severity of thrombocytopenia in dengue patients.[6] This study was done to evaluate the prevalence and severity of thrombocytopenia in dengue infection.

MATERIALS AND METHODS

The present study was conducted retrospectively for a period of one year. Blood samples were collected from 450 patients experiencing a febrile illness, clinically consistent with dengue infection. Serological confirmation of dengue infection and evaluation of platelet counts was done in all serologically positive cases.

RESULTS AND OBSERVATIONS

A total of 450 fever cases was admitted during the study period and among them, 56 (12.4%) were found to be seropositive for dengue. Of the seropositive cases, 38 (67.8%) had thrombocytopenia (platelet count <1 lakh) while the remaining,18 (32.1%) had platelet counts >1 lakh. Majority of the dengue cases was noted in the age group of 21 – 30 years. Among the dengue cases, 38 were males and 18 were females. The age and sex distribution is given in table 1.

Table-1: AGE AND SEX DISTRIBUTION OF SEROPOSITIVE CASES

AGE	MALE	FEMALE	TOTAL
0-10	01	00	01
11-20	08	01	09
21-30	10	08	18
31-40	08	02	10
41-50	05	04	09
51-60	03	03	06
61-70	02	00	02
71-80	01	00	01
81-90	00	00	00
TOTAL	38	18	56

Out of 38 patients with thrombocytopenia (platelet count <1 lakh), 25 (65.7%) had mild thrombocytopenia (platelet count 51,000 – 1 lakh), 08 (21.0%) had moderate thrombocytopenia (platelet count 20,000 – 50,000) and remaining 05 (13.1%) had severe thrombocytopenia (platelet count <20,000).

DISCUSSION

In the present study, most seropositive cases were in the age group of 21-30 years and this is in accordance with the study by Dost Mohamed Khan et al.[2] In our study Dengue infection was predominant among males (67.8%) than females (32.1%). This is in accordance with the study by Jayashree et al.[7] In the present study 67.8% of seropositive cases had thrombocytopenia and this is in accordance with the study by Dost Mohamed Khan et al where thrombocytopenia was found in 71% of cases.[8] In the study at Belgium, thrombocytopenia was found in 83% of cases.[9] Mild to moderate thrombocytopenia was seen in 86.8 % of cases and similar pattern was seen in the study done by Tamil Selvan et al.[10]

CONCLUSION

According to this study, thrombocytopenia is highly prevalent in dengue infection. However the incidence of severe thrombocytopenia and hence bleeding manifestations are less in dengue infection.

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