Original Article

Thrombocytopenia and Platelets Transfusion in Dengue Fever

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ABSTRACT

Objective: This study was done to see how much prevalent is thrombocytopenia and need and indications of platelets transfusion in patients with dengue fever in our community hospitals.

Place and duration of study: This study was done from 1st, September 2010 to 15th, November 2010 in three different hospitals, two were urban and one was rural and all three were tertiary care hospitals.

Materials and methods: Our study was based on 200 patients who were serologically confirmed cases for Dengue fever (IgM +ive) and had symptoms and signs of dengue fever for more than four to seven days at the time of admission. Clinical data reports of hematological investigations, platelets requirements, and data obtained from daily follow up, were analyzed.

Results: There were 200 serologically confirmed Dengue fever patients, among them 176 were males, 24 females, 183 patients were urban and 17 were rural patients. Thrombocytopenia was found in 174 (87%) on the day of admission. Among them 48 (24%) patients had platelets count in between 20,000 to 40,000/cumm, 46 (23%) had platelets count <20,000/cumm, and 4 (2%) had platelets count <10,000/cumm. Patients having platelets count < 20,000/cumm all have hemorrhage manifestations. Out of 48 (24%) patients having platelets count in between 20,000 to 40,000/cumm, 21(43%) had hemorrhagic manifestations. 98(49%) patients were given platelets transfusion. None of these patients got platelets transfusion with platelets count above 40,000/cumm. 27 patients received platelets therapy inappropriately (platelets count < 40,000/cumm with no hemorrhagic manifestations. There was only 2 mortality in these patients.

Conclusion: Our study suggests that bleeding occurs more often in patients with severe thrombocytopenia (platelets count <20,000/cumm) and these patients need urgent platelets transfusion. Patients having platelets count in between 20,000-40,000/cumm are at moderate risk and these patients require platelets transfusion if they have hemorrhagic manifestation. Platelets count above 40,000/cumm are at low risk and no need of platelets transfusion in these patients, only these patients need careful monitoring.

Key words: Dengue patients, thrombocytopenia, platelets transfusion.

INTRODUCTION

Dengue is one of the most important emerging tropical virus illnesses of humans in the world today and its incidence has grown dramatically around the world in recent decades.[1-3] The disease is endemic in more than 100 countries in Africa, the America, south Asia and the western pacific and it is emerging as a Global health and financial threat.[4] The South Asian countries such as Pakistan, India, Thailand, and Indonesia are at highest risk of Dengue fever, Dengue hemorrhagic fever and Dengue shock syndrome.[5]

There are some typical clinical manifestations of Dengue fever but bleeding and shock are more severe complications and are associated with high morbidity and mortality.[6] Some times bleeding do not correlate with laboratory abnormalities.[7] Most of these patients have hepatic functions derangements and some patients have co-infection also.[8] Severe bleeding is associated with the severity of thrombocytopenia, so these patients need platelets transfusion on urgent basis.[9] There is very less mortality (0.5-1%) in dengue fever.[10,6]

The aim of study is to know about the prevalence of thrombocytopenia in dengue fever and relationship between thrombocytopenia and need for platelets transfusion.

MATERIALS AND METHODS

This study was conducted on patients with high suspicion of Dengue fever who presented either in OPD or in Emergency department in three different hospitals, two urban and one rural tertiary care hospitals. The study was done from 1st, September 2010 to 15th, November 2010. According to specific WHO criteria 218 patients were included with history of fever (presented 4-7days after the onset of fever) above 100°F at the time of admission and blood samples collection. These patients had typical clinical manifestations like headache, retro-orbital pain, backache, sever muscle and joint pains and rash. These patients were included

after fulfilling the case definition criteria of Dengue fever and Dengue hemorrhagic fever (DHF) by WHO.
Clinical data was collected with proper history by the patients and attendants and vigilant physical examination of infected patients. Laboratory reports included complete blood count with differentials, Dengue serology, platelets requirement, record maintained on daily follow up basis was analyzed.

RESULTS

Out of 218 clinically suspected cases, 200 patients were found positive for anti-dengue antibodies. Out of 200 cases there were 176 males, 24 females, 183 were urban and 17 were rural patients. Age of patients ranges from 16 to 51 years, 126(63%) patients were in between 16 to30 years, 74(37%) patients were in between 30 to 51 years) and greatest proportion was in the age group of 16 to 30 years. At time of presentation 174 (87%) had thrombocytopenia <100,000/cumm. Among them, 48 (24%) patients had platelets count in between 20,000 to 40,000/cumm, 46 (23%) had platelets <20,000/cumm, and 4 (2%) had platelets <10,000/cumm. Hemorrhagic manifestations from different sites were noted in 71(35.5%) patients which mainly included petechie all over body in 47(23.5%), gum bleed in 11 (5.5%), epistaxis in 08 (4.0%), malena in 04(02%) and disseminated intravascular coagulation in 01(0.5%). As platelets count came down chances of hemorrhagic manifestations increased and with severe thrombocytopenia (platelets count < 20,000/cumm) bleeding occurred more commonly.
98(49%) received platelets transfusion. Among them 87 patients were male and 11 patients were females. Out of 98 patients, 48 (24%) had platelets count in between 20,000 to 40,000/cumm, 46 (23%) had platelets count < 20,000/cumm, 04(2%) had platelets count < 10,000/cumm. All patients who got platelets transfusion had platelets count less than 40,000/cumm, and none of patients received platelets transfusion with platelets count greater than 40,000/cumm. It was also noted that out of 98 (49%) patients who got platelets transfusion, 88.9% patients received only one mega unit of platelets and they recovered while 17.1% got more than one unit of platelets transfusion.
Besides platelets transfusion FFP and packed RBCs were also transfused in 10 dengue cases. Out of these 10 patients, 7 patients had abnormal PT, aPTT, and INR, these patients got FFP along with platelets transfusion, 8 patients received packed RBC transfusion whose hemoglobin level was below 8gm/dl. 2 (1%) patients died out of 200 dengue positive patients. These had sepsis and multi organ failure along with severe thrombocytopenia. They did not respond to platelets transfusion, one patient was quite young at age 27 years and other one was 51 years old. 27 patients received platelets transfusion having platelets count in the range of 20,000 to 40,000/cumm without hemorrhagic manifestations only due to social stress from family and fear of further worsening platelets count.

DISCUSSION

Dengue fever becoming one of the major public health problem in the world but especially more common in South-Asian countries like Pakistan. It became as an endemic in thickly populated big cities like Lahore and also other cities of the country. This study showed that urban population was more commonly infected than rural population. Majority of dengue fever cases were adults with great proportion in the age group of 16 to 30 years. This in accordance with the findings of Pervin et al.[11] Thrombocytopenia was found in 87% of serologically confirmed dengue cases on admission. These findings were comparable with the findings of Chairl fatah et al. who had incidence of thrombocytopenia in 83% hospitalized dengue patients. Bleeding was significantly more in patients who had platelets count <20,000/cumm which is similar to the findings of Chairul fatah and Shivbalan et al. [12,6] who found significant bleeding in patients with platelets count <15,000/cumm.
The DHS guidelines also recommends that platelets transfusion should be given to patients having platelets count <20,000/cumm.[13] In this study 98(49%) patients got platelets transfusion followed the recommendations laid down by DHS for the hospitalized dengue patients, 48 patients had platelets count in between 20,000-40,000/cumm. 21(43.75%) had hemorrhagic manifestations in our study. These hemorrhagic manifestation are more than found in the study of Kumar ND et al. who had (23.75%) hemorrhagic manifestations.[14]
There were 2 (1%) mortalities out of 200 patients. These patients had abnormal coagulation profile and one of them had sepsis along with thrombocytopenia.
So, on the basis of close monitoring of 200 dengue admitted patients it was noted that as more severe thrombocytopenia there is high risk of bleeding in these patients. High risk was categorized when platelets count was <20,000/cumm, moderate risk when platelets count was in the range of 20,000 to 40,000/cumm, and low risk when the platelets count <100,000/cumm. In these patients it was also noted that out of 98(49%) who got platelets transfusion, 88.9% patients received only one mega unit of platelets and they recovered while 17.1% got more than one unit of platelets transfusion. However 27 (13.5%) patients got platelets transfusion inappropriately due to social/family stress and fear of further worsening of platelets count which is comparable to Chaudhry R, et al. in which 21.5% inappropriate platelets transfusion was given.[15] Dengue

shock syndrome occurs more commonly in patients who were previously exposed to dengue virus but in our study we could not have any record for previous infection of dengue virus. Also role of antiviral therapy in dengue patients could not be studied as Antiviral therapy may ameliorate the severity of dengue fever symptoms and possibly reduce the risk of progression to dengue hemorrhagic fever and dengue shock syndrome and administration of an antiviral agent targeting dengue RNA-dependent RNA polymerase significantly reduced viremia in a dose dependent manner.[16]

PCR/isolation of dengue virus should be done in patients who had symptoms and signs similar to dengue fever but they had negative anti dengue antibodies because detection of dengue viral RNA by RT-PCR provides the most definite confirmation of dengue infection.[17-19]

CONCLUSION

Urban population was more commonly affected with dengue fever as compared to rural population. All patients who had thrombocytopenia <20,000/cumm should be admitted and platelets transfusion should be considered. These admitted patients should be categorized as high, moderate, and low risk patients depending upon platelets count. High risk patients should also be evaluated for other coagulation derangements to check additional complications. Moderate risk patients should be observed carefully and managed with supportive care.

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