INTRODUCTION

Dengue, an important arboviral disease belonging to the genus Flavivirus of the Flaviviridae family, has four circulating serotypes (DENV1, DENV2, DENV3, and DENV4) and is transmitted to humans by an infected female mosquito vector, mainly Aedes aegypti [1,2,3,4]. In the Philippines alone, a total of 192,253 cases and 1,021 deaths were recorded for the year 2016 [5]. Detection of dengue specific IgM and IgG antibodies together with dengue NS1 antigen are used for diagnosing dengue infection; thrombocytopenia is also used to support the diagnosis [6]. Emerging evidence suggests that platelet indices which include mean platelet volume (MPV) and platelet distribution width (PDW) have diagnostic and prognostic value in certain diseases [7]. MPV, a marker of platelet function and activity, elevates during increased megakaryocytic activity whereas the levels are lowered in cases of marrow suppression and increased risk of bleeding. PDW, on the other hand, increases during platelet activation [8]. This study aims to compare the different platelet indices among dengue positive cases and control.

METHODOLOGY

This is a prospective, analytic, cross-sectional study design conducted from June to December 2017. Two population groups were included in the study. The first group includes all admitted pediatric patients who were diagnosed serologically for acute dengue infection. This includes a positive NS1 antigen with or without IgM or IgG antibody and thrombocytopenia. The second group includes randomly selected pediatric patients admitted due to other disease during the same period who have normal serologic antibody and thrombocytopenia. The findings of elevated MPV and PDW indices, in conjunction with thrombocytopenia and positive dengue NS1 antigen, may prove to be useful in diagnosing dengue in its acute phase so that early intervention can be instituted.

RESULTS

A total of 400 patients were included in the study, of which 50.0% were diagnosed dengue cases. The remaining 50.0% were non-dengue patients (Table 1). There was no significant difference in the mean age of both groups (p=0.9290).

Among the dengue patients, a little more than half were male. On the other hand, more than half of non-dengue patients were females (Table 1). There was sex difference observed between the two groups (p=0.0050).

The mean platelet count, mean MPV, and mean PDW of dengue patients were higher than those of non-dengue patients. There was significant difference noted between the means of the two groups (Table 2).

DISCUSSION

In this study, the MPV of patients with dengue was found to be higher than those without the infection which supports the findings of two prospective studies done in India and Sudan [9,10]. This novel platelet index has been investigated as a platelet activation marker and is found to be an independent predictor of bleeding as well as a surrogate marker of bone marrow activity [11]. High MPV values (>9fl) indicate heightened megakaryocyte activity whereas low MPV (<9fl) is tantamount to decreased bone marrow production that may lead to bleeding [12].

The mean PDW between dengue and non-dengue patients was also compared which showed a significant difference between the two groups. This finding is consistent with studies done in India and Sudan [13]. An increase in the PDW of platelets is reflective of the alterations in platelet morphology that occur during platelet activation in dengue infection [8].

CONCLUSION

The findings of elevated MPV and PDW indices, in conjunction with thrombocytopenia and positive dengue NS1 antigen, may prove to be useful in diagnosing dengue in its acute phase so that early intervention can be instituted.

REFERENCES


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