Dengue fever associated with extreme reactive thrombocytosis

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Introduction

Dengue is an important viral illness which has the potential to progress into dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS). Leucopenia and throm-bocytopenia are the hallmarks of acute dengue which normalise with recovery [1]. Progression from thrombo-cytopenia to severe thrombocytosis is uncommon. We describe a patient presenting with acute dengue, who developed extreme reactive thrombocytosis.

Case report

A 22-year old female was admitted with fever, headache, myalgia and arthralgia of 5 days duration. There was no evidence of fluid leak or bleeding. The patient was stable throughout illness. There was leucopenia (WBC $3.5 \times 10^3/\mu l$) with a hemoglobin level of (Hb)12.2 g/dl and packed cell volume of 38%. Dengue IgM antibodies were positive and dengue IgG antibodies were negative. The platelet count progressively declined from $249 \times 10^3/\mu l$ on 2nd day to $104 \times 10^3/\mu l$ on 7th day of illness. The patient recovered and went home on the 9th day of illness with a platelet count of $154 \times 10^3/\mu l$.

One week later, the patient presented with fatigue and breathlessness. The body temperature was 37°C, pulse rate was 94/bpm, blood pressure was 110/70 mm Hg and oxygen saturation was 98%. There was no lymphadeno-pathy or organomegaly. The platelet count was $903 \times 10^3/\mu l$, white cell count was $9.5 \times 10^3/\mu l$ and Hb was 10g/dl. The chest radiograph, ECG, echocardiogram, abdominal ultra-sound and the arterial duplex of the lower limbs were normal. The platelets remained persistently elevated for two weeks with the maximum recorded at $1015 \times 10^3/\mu l$. A diagnosis of reactive thrombocytosis was made. The patient was well hydrated and was kept under observation. Clopidogrel 75 mg was commenced to prevent possible thrombosis. The platelets remained elevated above $500 \times 10^3/\mu l$ for 14 more days, gradually declined and normalised to $452 \times 10^3/\mu l$. Clopidogrel was discontinued after normalisation of platelets. On follow up, the patient was asymptomatic and had normal blood counts.

Discussion

Kinetic description of platelet count in dengue shows that platelet count progressively decrease from 3rd day to 7th day of illness and increase to normal levels around the 8th day of illness [2]. The mechanisms involved in thrombocytopenia and bleeding during dengue virus (DENV) infection is not fully understood. It is postulated that DENV directly or indirectly affect bone marrow progenitor cells by inhibiting the proliferative capacity of hematopoietic cells [3].

Thrombopoietin (TPO) specifically regulates mega-karyocytopoiesis and platelet production by activating the TPO receptor c-MPL (myeloproliferative leukemia virus oncogene). The concentration of circulating TPO is abnor-mally high in reactive thrombocytosis similar to auto-immune diseases, infections, or malignancies. TPO levels are shown to be significantly increased in dengue with severe thrombocytopenia and are inversely related to the platelet count [4]. Increased levels of TPO occur at the same period as the disease reaching a peak at the defervescence, when platelet nadir occurs, and decline to normal levels with remission of thrombocytopenia [5]. Rebound thrombocytosis is proportionate to the severity of the preceding thrombocytopenia and follow-up platelet counts are significantly higher in adults with DSS compared to adults with DF [6]. There is no concordance with regard to management of reactive thrombocytosis. According to British guidelines on treatment for reactive thrombocytosis 75 mg of aspirin is suggested, but there is no published data to support this practice [10].

Consent

Informed, written consent was obtained from the patient for publication of the details.

Conflicts of interest

There are no conflicts of interest.

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