Thrombotic microangiopathy in a patient with primary dengue fever

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Introduction

Thrombotic microangiopathy (TMA) is a broad term which includes thrombotic thrombocytopenic purpura (TTP), haemolytic uraemic syndrome (HUS) and other diseases characterised by common clinical and pathological features. Clinical features include thrombocytopenia, microangiopathic haemolytic anaemia (MAHA) and organ injury. Pathological features include arteriolar and capillary thrombosis due to abnormalities in the vessel wall and endothelium [1]. Bacterial infections like *Shigella dysenteriae* type I and *Escherichia coli* O157:H7 are well known to produce HUS. Viral infections including dengue virus leading to TMA are reported in the literature. We report a case of dengue fever presenting with TTP.

Case report

A 27-year-old sailor with acute febrile illness with headache and arthralgia for two days was admitted to Navy Hospital, Welisara. His white cell count was 4.6x103/µl (N-63%, L-25%, E-2%, M-10%), haemoglobin (Hb) was 12.7 g/dl and platelet count was 32x103/µl. Serum bilirubin was 3.4 mg/dl (normal range 0.2-1.2) with a high indirect fraction 2.75 mg/dl. Mild to moderate elevation of liver transaminases and albuminuria were detected. On fourth day of the disease schistocytes, polychromasia, thrombocytopenia and reactive lymphocytes were found in the peripheral blood smear and TTP/HUS was suspected. Purpuric patches were noted on the back of the chest. By the sixth day the Hb became 10.9 g/dl with a platelet count of 22x103/µl. Packed cell volume (PCV) remained low. Serum creatinine rose to 2.25 mg/dl and LDH was 6250 U/l (normal range 230-460). There was no clinical evidence of active bleeding. Abdominal ultrasonography did not show any fluid leakage and non-contrast CT scan of brain was normal. He was haemodynamically stable. A diagnosis of TTP was made and the patient was transferred to National Hospital, Sri Lanka (NHSL) for plasmapharesis. In NHSL, fresh frozen plasma (FFP) was given and one cycle of plasmapharesis was performed. Since his blood picture indicated MAHA with reactive lymphocytosis, a viral aetiology was sought. On the eighth day of the illness, Ig M antibody for dengue was detected. Dengue IgG antibody, and antibodies against CMV, Hanta virus and HIV were negative. On the fifteenth day of the illness, both dengue IgG and IgM antibodies were positive. The serum creatinine and platelet count became normal at the time of discharge from hospital.

Discussion

This young man had dengue fever and the clinical picture was complicated with microangiopathic haemolytic anaemia in the early phase of the illness. He had fever, headache, thrombocytopenia, MAHA, and elevated serum creatinine with albuminuria suggesting a diagnosis of TTP. Multiple viruses are capable of inducing thrombotic microangiopathy either through stimulation of endothelial cells or activating alternative pathways (complement mediated). In flaviviridae family dengue and hepatitis C are known to produce TMA [2]. Suggested pathogenesis of TMA in dengue fever includes direct endothelial injury, formation of ADAMTS13 inhibitors and immune complex mediation [3].

In this case acute seroconversion against dengue virus was shown by the initial presence of IgM antibodies followed by positive IgG during convalescence. There was no leakage of fluids and patient responded to plasma transfusions and plasmapharesis. When the Hb level and PCV are low in a patient with dengue fever, it would be appropriate to entertain the possibility of TMA and to perform blood picture and LDH level.

Ethics

Patient gave informed, written consent for publication of his clinical details.

Conflicts of interests

There are no conflicts of interest.

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