

Polycythemia Vera and Dengue Fever

Sir,

Thrombocytopenia is a common feature of dengue virus (DENV) infection. I report on a patient with DENV infection-related drop in the platelet count, masking the diagnosis of an underlying chronic myeloproliferative disorder.

A 58-year-old man presented to another hospital with a 4-day history of fever, chills, and an erythematous rash. His serum was positive for DENV NS1 antigen and IgM antibodies to DENV. On admission, his hemoglobin (Hb) was 14.6 g/dL, red blood cell count was $7.25 \times 10^{12}/L$, mean corpuscular volume was 63 fL, leukocyte count was $11.9 \times 10^9/L$, and platelet count was $224 \times 10^9/L$. His platelet count the following day was $400 \times 10^9/L$. Subsequent platelet counts on days 7, 16, and 20 were 609, 800, and $1081 \times 10^9/L$, respectively. He was referred for evaluation of possible post-dengue fever reactive thrombocytosis.

His clinical examination showed truncal obesity and was otherwise normal.

His serum iron was 45 $\mu\text{g}/\text{dL}$, total iron-binding capacity was 405 $\mu\text{g}/\text{dL}$, and ferritin was 21.8 ng/mL. Hb electrophoresis showed HbA₂ of 2.2% and Hb F of 1.5%. Serum erythropoietin level measured 7.1 mIU/mL. Ultrasound scan of the abdomen showed splenomegaly with a span of 19.5 cm. Blood was negative for *BCR-ABL* and positive for *JAK2 V617F* by reverse transcriptase-polymerase chain reaction. He was diagnosed with polycythemia vera (PV) associated with iron deficiency and was begun on hydroxyurea and low-dose aspirin.

Iron deficiency is common in PV and when severe, the Hb level may drop to normal by limiting erythropoiesis and may mask the diagnosis of PV.^[1] The discrepant occurrence of marked microcytosis and near-normal Hb together with erythrocytosis is described in alpha-thalassemia and PV associated with iron deficiency.^[2] Careful attention to red cell parameters can help in recognizing PV associated with severe iron deficiency presenting with normal Hb;^[3] thrombocytosis, leukocytosis, and splenomegaly, when present, can help

in suggesting the diagnosis. The identification of *JAK2* mutation in this setting helps establish the diagnosis of PV.

Thrombocytopenia is a common feature of DENV infection, with both immune and nonimmune mechanisms implicated in its pathogenesis. Recombinant DENV envelope protein domain III (EPIII) has been shown to suppress megakaryopoiesis in humanized mouse model.^[4] DENV EPIII may be a major mediator of thrombocytopenia in DENV infection^[4] and could provide a potential therapeutic target for emergent control of extreme thrombocytosis.

Reactive thrombocytosis during recovery from dengue-thrombocytopenia is uncommon but may rarely reach extremely high levels;^[5] careful follow-up will help establish the nature of the thrombocytosis in such cases and avoid diagnostic error.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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References

1. McMullin MF, Harrison CN, Ali S, Cargo C, Chen F, Ewing J, *et al.* A guideline for the diagnosis and management of polycythaemia vera. A British society for haematology guideline. *Br J Haematol* 2019;184:176-91.
2. Bessman JD. Microcytic polycythemia. Frequency of nonthalassemic causes. *JAMA* 1977;238:2391-2.
3. Parthasarathy V. Myeloid neoplasms in the guise of nutritional deficiency. *Case Rep Hematol* 2012;2012:826939.
4. Sridharan A, Chen Q, Tang KF, Ooi EE, Hibberd ML, Chen J. Inhibition of megakaryocyte development in the bone marrow underlies dengue virus-induced thrombocytopenia in humanized mice. *J Virol* 2013;87:11648-58.
5. Egodage UK, Dissanayake NU, Dahanayake MU, Bodinayake CK. Dengue fever associated with extreme reactive thrombocytosis. *Ceylon Med J* 2016;61:194-5.

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