Iron Deficiency Anemia Induced Thrombocytopenia: A Report of Two Cases

Sir,

Iron deficiency anemia (IDA) mostly causes reactive thrombocytosis.[1] However, thrombocytopenia has also been reported rarely, especially when the hemoglobin (Hb) level is < z7 g/dL.[1] Thrombocytopenia may also be observed in various other conditions such as infections, malignancies, drugs, connective tissue diseases, idiopathic thrombocytopenic purpura, and megaloblastic anemia.[2] Thrombocytopenia may be corrected after iron supplementation in an isolated IDA.[3] In this report, we present two patients with thrombocytopenia associated with IDA, and review the relevant literature.

A 25-year male was admitted with complaints of fatigue, weakness, and purpuric lesions on extremities. He had no history of previous illness or medication. In physical examination, blood pressure was 120/70 mmHg, and the heart rate was 100 bpm. He looked pale. Lymphadenopathy or organomegaly was not detected. Other system examinations were normal. In laboratory findings, Hb was 6.5 g/dL platelets 13×10^9/L, mean corpuscular volume (MCV) 63fL, red cell distribution width (RDW) 30.6, serum iron 10µg/dL, total iron-binding capacity 336µg/dL, and serum ferritin 1.5 µg/dL. Vitamin B12 and folate levels were normal. Anti-nuclear antibody (ANA), rheumatoid factor (RF), and viral markers were normal. Other biochemical parameters were normal. The peripheral blood smear showed anisocytosis, and microcytic-hypochromic cells with thrombocytopenia. No platelet clumping was noticed. We started oral administration of ferrous sulfate (270 mg) once a day. In five days, platelet count increased gradually towards normal. On the 30th day of treatment, platelet count was normal and Hb increased to 13.1 g/dL.

The second case comprised of a 34-year female, who presented with weakness and tiredness. Physical examination revealed facial palor. Lymphadenopathy or organomegaly was not detected. In laboratory findings, Hb was 4.1 g/dL, platelets 59×10^9/L, MCV 57.2 fL, white blood cell count (WBC) 4.8 k/uL, serum iron 27 µg/dL, iron-binding capacity 664 µg/dL,

and serum ferritin 2.9 µg/mL. Vitamin B12 and folate levels were normal. Anisocytosis and microcytic hypochromic erythrocytes were observed in the peripheral blood smear. ANA, RF, and viral markers were normal. Active bleeding was not detected. Three units of packed red cells and intravenous iron ferroximaltose were administered. On the second and third days, platelet count was 33 and 38×10^9 /L. The peripheral blood smear was consistent with 70×10^9 /L platelets. After two weeks, Hb increased to 11.2 g/dL, and platelet count increased to 75×10^9 /L.

Thrombocytopenia can be detected concurrently with IDA.[2] The study conducted by Kadıköylü *et al*. detected thrombocytopenia in 2.3% of 86 patients with IDA. They reported that a Hb value below 6.5 g/dL could cause higher erythropoietin levels, which, in turn, could cause thrombocytopenia.[2] The fact that our patients' Hb levels were below 6.5 g/dL supports this idea. Kuku *et al*., studied platelet values of 615 patients with IDA, and thrombocytopenia was found in 13 patients.[4] The platelet counts of patients with thrombocytopenia ranged from 10.5×10^9/L to 14.5×10^9/L. In these cases, thrombocytopenia was severe (grade 3 and 4). It is important to show that there may be severe thrombocytopenia in IDA. In the literature, the number of cases with IDA presenting with severe thrombocytopenia (grade 3-4) is quite low.[2,3]

Perlman *et al*. shared the data of six patients with IDA presenting with thrombocytopenia. All the cases were found to have normal platelet values within a few days of starting oral iron therapy. It was hypothesised that iron is necessary to form any biological reactions and plays a critical role in cell growth, proliferation, and DNA synthesis. This has been implicated in human hematopoietic cells, including platelets.[3]

To the best of our knowledge, IDA and thrombocytopenia have been reported concurrently in almost all female cases. On the other hand, only a few male patients with IDA with concurrent thrombocytopenia have been reported, as in one of these cases.[5] The lower incidence of IDA-induced thrombocytopenia in males may be due to the fact that iron deficiency is much less common in males; as well as due to the differences in iron metabolism, in females and males.[6]

Although IDA often causes thrombocytosis, it can rarely cause thrombocytopenia. In IDA-associated thrombocytopenia, we suggest that it is appropriate to first determine whether thrombocytopenia improves with the administration of iron therapy. However, the cause of iron deficiency should also be investigated.

CONFLICT OF INTEREST:
The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:
MB: Data collection, manuscript writing.
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