Iron Deficiency Thrombocytopenia: A Case Report

Binay Kumar Shah^a Tara Shah^b

^aSt. Joseph Regional Medical Center, Lewiston, Idaho, and ^bUniversity of Illinois at Chicago, Chicago, Ill., USA

Key Words

Iron deficiency · Thrombocytopenia · Thrombocytosis · Anemia

Abstract

Objective: To describe a rare case of thrombocytopenia secondary to iron deficiency. **Clinical Presentation and Intervention:** A 34-year-old woman presented with severe microcytic hypochromic anemia and thrombocytopenia. Her ferritin was 1 ng/dl. A diagnosis of iron deficiency anemia and thrombocytopenia was made and the patient was treated with packed red blood cell transfusion and intravenous iron. Thrombocytopenia rapidly improved to normal. **Conclusion:** This case showed that iron deficiency should be considered as a cause of thrombocytopenia in the appropriate setting after ruling out common causes.

Copyright © 2011 S. Karger AG, Basel

Introduction

Iron deficiency is a common cause of thrombocytosis [1] but can rarely cause thrombocytopenia [2–5]. We present a case of thrombocytopenia secondary to iron deficiency.

Case Report

A 34-year-old multiparous African American woman presented to the emergency room with complaints of palpitation, shortness of breath and fatigue for 2 months. The patient denied having fever, joint pain or skin rash. She had a history of iron deficiency anemia but was not taking oral ferrous sulfate because of gastrointestinal side effects. She had been treated with intravenous iron and blood transfusion 3 years ago. She denied the use of any other medications. Her personal history was negative for the use of tobacco, alcohol or recreational drugs. Examination was significant for pallor and systolic flow murmur. There was no hepatosplenomegaly or lymphadenopathy.

The hematologic data at the time of admission revealed a white blood cell count of $4 \times 10^3/\text{mm}^3$ (normal: $4\text{--}11 \times 10^3/\text{mm}^3$), hemoglobin 6.4 g/dl (normal: 12–15 g/dl), platelet count $18 \times 10^3/\text{mm}^3$ (normal: $150\text{--}450 \times 10^3/\text{mm}^3$), reticulocyte count 1.1% and mean corpuscular volume 61 fl. Serum iron was 27 $\mu\text{g/dl}$, ferritin 1 ng/dl and total iron binding capacity 454 $\mu\text{g/dl}$. Peripheral blood smear showed microcytosis, hypochromia and anisocytosis. Her bone marrow examination showed megakaryocytopenia, erythroid hypoplasia and absence of stainable iron but no other evidence of a primary bone marrow disorder. The patient was treated with two units of packed red blood cells on day 1 and one dose of intravenous iron dextran on day 3. The patient's platelet count improved to normal by day 10 (fig. 1). Since then, the patient's platelet count has been stable.

Fig. 1. Rise in platelet count after iron supplementation.

Discussion

Although thrombocytosis is common in iron deficiency [1], few cases of thrombocytopenia have been reported [2–5]. In a recent retrospective study [6], thrombocytopenia was detected in 2.1% patients with iron deficiency anemia. The exact mechanism of this is not well understood and may be related to the alteration in the activity of iron-dependent enzymes in thrombopoiesis [7]. Using experimental animal models, Karpatkin et al. [8] showed that iron is required for platelet production.

Following iron supplementation, our patient had thrombocytosis before normalization of platelet count, a

phenomenon reported previously [5]. Since it is a very treatable condition, ‘iron deficiency thrombocytopenia’ should be kept in mind in patients with iron deficiency and thrombocytopenia after common causes of thrombocytopenia have been ruled out.

Conclusion

This case showed that iron deficiency should be considered as one of the differential diagnoses of thrombocytopenia in the appropriate setting after ruling out common causes.

References

- Schloesser LL, Kipp MA, Wenzel FJ: Thrombocytosis in iron deficiency anemia. *J Lab Clin Med* 1965;66:107–114.
- Lopas H, Rabiner SF: Thrombocytopenia associated with iron deficiency anemia. *Clin Pediatr* 1966;5:609–616.
- Berger M, Brass LF: Severe thrombocytopenia in iron deficiency anemia. *Am J Hematol* 1987;24:425–428.
- Mubarak AA, Awidi A, Rasul KI, Al-Homsi U: Thrombocytopenia responding to red blood cell transfusion. *Saudi Med J* 2004;25:106–109.
- Gupta MK, Joseph G: Severe thrombocytopenia associated with iron deficiency. *Hosp Physician* 2001;54:49–51.
- Kuku I, Kaya E, Yologlu S, Gokdeniz R, Baydin A: Platelet counts in adults with iron deficiency anemia. *Platelets* 2009;20:401–405.
- Ganti AK, Shonka NA, Haire WD: Pancytopenia due to iron deficiency worsened by iron infusion: a case report. *J Med Case Rep* 2007;1:175.
- Karpatkin S, Garg SK, Freedman ML: Role of iron as a regulator of thrombopoiesis. *Am J Med* 1974;57:521–525.