Thrombocytopenia secondary to iron deficiency anemia respond to Iron with a transient drop in platelets.

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Abstract

We are reporting an African female patient who is found to has thrombocytopenia secondary to iron deficiency anemia (IDA), and she responded to iron replacement therapy initially with a transient drop in platelets, followed by a gradual rise in platelets till platelets reached to the normal level.

Thrombocytopenia secondary to iron deficiency anemia respond to Iron with a transient drop in platelets

A case report

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Abstract

Usually, IDA is associated with thrombocytosis or normal platelets; however, in rare cases, IDA can be associated with thrombocytopenia; even though thrombocytopenia that occurs with IDA responds to Iron therapy. Iron therapy rarely causes transient thrombocytopenia per se.

A broad spectrum of diseases can cause anemia and thrombocytopenia. Some of these diseases are a hematological emergency; others are benign diseases, so early and accurate diagnosis is crucial in managing such patients.

We are reporting an African female patient who is found to has thrombocytopenia secondary to iron deficiency anemia (IDA), and she responded to iron replacement therapy initially with a transient drop in platelets, followed by a gradual rise in platelets till platelets reached to the normal level.

Keywords:

Iron deficiency anemia, thrombocytopenia, Anemia , Iron

Key Clinical Message

IDA can be associated with thrombocytopenia. It should be thought of after ruling out other differential diagnosis.it respond to iron replacement therapy, which can cause a transient drop in platelets initially then normalize.

Introduction:

Anemia is a global public health problem that affects about 24% up to 49% of the population worldwide 29% of all women of reproductive age have anemia globally, [1] Approximately 50% of cases of anemia are considered to be due to iron deficiency, but the proportion probably varies among population groups and in different areas [2]

The anemia cut-offs vary based on age, sex, and pregnancy-specific Table 1. Severe anemia (defined by WHO as Hb <70 g/L in pregnant women and children under five years of age and Hb <80 g/L in all other age groups [3],

In chronic anemia usually, body accommodate, and patients might be asymptomatic or have mild symptoms, on the other hand, acute anemia typically present with more apparent symptoms [4]

IDA can affect the quality of life as previously reported to affect Glucose Metabolism, Thyroid function, And spermatogenesis.[5][6], [7]

IDA is reported to affect other blood parameters, e.g., neutropenia and lymphocytopenia [8]

The association between IDA and platelet is complex; iron deficiency is usually associated with either normal platelet counts or thrombocytosis. In rare conditions, IDA can be associated with thrombocytopenia, and there if IDA corrected the thrombocytopenia correct concurrently. [9] Rarely, with the correction of IDA, some patients develop transient thrombocytopenia or neutropenia. [10]

Anemia and thrombocytopenia can be seen together in various disease; some of this diseases need urgent intervention, such as thrombotic microangiopathy and marrow replacement disorders, e.g., leukemia others are cold cases such as paroxysmal nocturnal hemoglobinuria, Evan's syndrome, and aplastic anemia, so it is always challenging to narrow the differential diagnosis early upon patient presentation as early intervention in some of this diseases has mortality benefit such like in case of thrombotic microangiopathy and leukemia, Blood peripheral smear is always the first step that usually can guide the management plan

Heavy menstrual bleeding (HMB) is a common gynecologic problem that affects around 27% of women. Chronic heavy or prolonged uterine bleeding is a common cause of severe anemia in women.[11]

Case Report

A 32 Years old Kenyan Female patient not known to have any chronic illness admitted to our institute in August 2019 with the chief complaints of colicky abdominal pain for two days; this complaint was unrelated to this case. Also, she reported tiredness, fatigue, and shortness of breath that worsen with exertion. She gave a history of heavy menstrual bleeding for the past two years.

Initial laboratory workup for her revealed platelet count 54,000/mm k/μL (150,000–450,000/mm^3 k/μL) hemoglobin 6.5 g/dL(13–17 g/dL). Peripheral blood smear revealed a Dimorphic blood picture with the majority of cells markedly hypochromic and microcytic. Other laboratories are shown in Table 2

On the first day, the patient received intravenous 750 mg of ferrous carboxy maltose based on her iron profile, and in the second day, after ruling out TTP by blood peripheral smear findings, one unit of packed red blood cells transfused to the patient after that patient symptoms improved.

Discussion

We are describing a young adult African woman who was found to have severe iron deficiency anemia and thrombocytopenia. Iron deficiency mostly secondary to heavy menstrual bleeding and nutritional deficiency based on the patient history and economic status as she works as a maid. The patient presentation was not related to the anemia, and her anemia symptoms were not severe despite having very low hemoglobin " Grade 4 anemia, life-threatening"[12], all of this is pointing toward that this anemia is chronic.

IDA is usually associated with either normal platelets or thrombocytosis. The association between IDA and thrombocytopenia is rare. And it is best diagnosed retrograde after correcting the anemia; the platelets will rise.

Initiation of Iron replacement therapy in a patient with IDA can sometimes cause transient thrombocytopenia, and that is what happened with our patient; she had dropped in platelets from 54,000 mm^3 k/μL to 34,000 mm^3k/μL (150,000–450,000 mm^3 k/μL) for two days then after that platelets continue to rise till it reached to normal ranges.

Based on the iron study and the peripheral smear patient was started on treatment for iron deficiency anemia by IV iron and transfusion of one unit of packed RBCs. After the patient received the IV iron, her platelets counts dropped more from 54,000 mm^3 k/μL to 34,000 mm^3 k/μL for two days then started to pick up.

Conclusion

IDA can be associated with thrombocytopenia. It should be thought of after ruling out serious differential diagnosis like TTP, thrombocytopenia caused by IDA respond to iron replacement therapy, which can cause a transient drop in platelets initially.

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Ethics approval

Ethical approval for this study was obtained from The Medical Research Center At Hamad Medical Corporation (ABHATH) ID: **MRC-04-20-445**

Author contribution

Mahmoud S Eisa took the lead in writing the manuscript, literature review as well as created the legends. Mustafa A Al-Tikrity and Mohamed A Yassin revised manuscript critically for important intellectual content. All took care of the patient, contributed to and approved the final version of the manuscript.

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List of Table legends :

Table 1 : Hemoglobin (g/L) concentrations to diagnose anemia at sea level [3].

Table 2 : Complete Blood Count and iron profile before and after iron transfusion.

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`Table 1.docx` available at https://authorea.com/users/360446/articles/482149-thrombocytopenia-secondary-to-iron-deficiency-anemia-respond-to-iron-with-a-transient-drop-in-platelets

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