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LETTER TO THE EDITOR

Autoimmune hemolytic anemia: an uncommon cause of elevated fetal hemoglobin

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To the Editor,

Fetal hemoglobin (HbF) is the main hemoglobin throughout the fetal life and at birth, accounting for approximately 80% in newborns, but subsequently the value drops to less than 1% and is maintained throughout adult life [1]. Functionally, HbF differs from hemoglobin A (HbA) because it has slightly higher oxygen affinity, explained by the low interaction of HbF with 2,3-DPG. This characteristic makes the delivery of oxygen through the placenta easy, giving the fetus better access to oxygen from the mother's bloodstream.

Case

A 32-year-old female presented with pallor for 3 weeks. She had no other significant past, personal or obstetric history. On examination, she had moderate pallor and mild icterus and had moderate splenomegaly (4 cm below the left costal margin). Her complete hemogram revealed hemoglobin of 67 g/L, PCV of 21.1%, MCV of 115.6 fL, MCH of 34.9 pg and MCHC of 31.3 g/dL, total leukocyte count of 5.7×10^9/L, and platelets of 180×10^9/L; reticulocyte count was 34% and corrected reticulocyte count was 15.4%. Peripheral smear revealed moderate anisocytosis with macrocytes and polychromasia. Total leucocyte count with differentials was essentially normal. Liver function test revealed unconjugated hyperbilirubinemia with absolute normal transaminases. Direct Coombs' test was strongly positive. Serum vitamin B_{12} and folate were normal. The diagnosis of autoimmune hemolytic anemia was made and the patient was started on oral steroids. Meanwhile, we received the HPLC (high-performance liquid chromatography) report (already done outside) of HbA0—88.9%, HbA2—2.7%, and HbF—6.7%, thus showing a high value of HbF without any apparent explanation. The patient received 4 weeks of full-dose oral steroid to which she responded, and her hemoglobin improved to 112 g/L without any transfusions. Then, the repeat HPLC was done which showed normal HbA0—89.6% and HbA2—2.6% and reduced HbF level of 1.3% when compared to the previous one.

Discussion

It is reported that stem cells from adult individuals grown in culture produce considerable amount of HbF because of stress conditions present in culture [1]. Similarly, any erythropoietic stress in vivo may be associated with high HbF. Thus, accelerated erythropoiesis can be sufficient to produce more HbF (6–10%), or no HbF at all, depending upon enhancing factors such as Xmn-I polymorphism [1].

As described in the literature, acquired hematological conditions associated with high HbF include pernicious anemia, paroxysmal nocturnal hemoglobinuria (PNH), sideroblastic anemia, pure red cell aplasia, aplastic anemia, pregnancy, recovery from bone marrow transplant, leukemia chemotherapy and transient erythroblastopenia and treatment with hydroxyurea, 5-aza-2′-deoxycytidine, butyrates, and erythropoietin [2].

Parikh NS et al. [3] reported a 16-year-old girl, who presented with a long-standing anemia and normal blood screening tests except an elevated HbF (16%); diagnosis of unstable hemoglobinopathy (Hb Hradec Kralove) was made after gene sequencing of the beta-globin chain. The interesting finding in the case report was reticulocytosis at the time of presentation, which is an indicator of erythropoietic stress in a case of hemolytic anemia which can be correlated with the present case and hence causing a rise in HbF levels.

So an increased HbF is an indirect indicator of stress hematopoiesis. Treatment with steroid eliminated the

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immunological stress due to autoantibodies on the red cells. Henceforth, there was a reduction in the HbF values after treatment with steroids. The present case is an eye-opener that stressed hematopoiesis in AIHA may sometimes give rise to increased HbF levels.

Compliance with ethical standards

Conflict of interest The authors declare that they have no competing interests.

Informed consent Informed consent was obtained from the individual participant included in the study.

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