TEACHING FILE (GRAND ROUNDS)

REFRACTORY IRON DEFICIENCY ANEMIA

Minhajuddin Ahmed, Shweta Goyal, Shweta Anand

Clinical Problem : A 10-year-old male child came to our out-patient department (OPD) for evaluation of refractory anemia. He had received adequate dietary and oral iron supplementation but still required multiple blood transfusions. He had no anorexia, nausea, vomiting, diarrhea, abdominal cramps or bleeding from any site. There was no family history of blood transfusions. Laboratory investigations showed hemoglobin of 6.4 gm/dl, total leucocyte count 7600 cells/cumm, erythrocyte sedimentation rate (ESR) 18 mm/hr at end of 1 hour, packed cell volume 22%, mean corpuscular volume 54.1fL, mean corpuscular hemoglobin concentration (MCHC) 25.4gm/dL, Red blood cell distribution width (RDW) 17.2%, reticulocyte count 1.13%, serum ferritin 2.6ng/dL, serum iron 15ug/dL and Total Iron Binding Capacity (TIBC) 570 mcg/dL suggestive of iron deficiency anemia (IDA). Peripheral film showed microcytic hypochromic anemia. Hemoglobin electrophoresis and thyroid function tests were normal. Routine stool examination was normal and occult blood was negative.

Question : What could be the cause of the iron deficiency anemia?

Expert Opinion : Anti-transglutaminase antibodies IgG (tTG) showed a value of 134 U/ml (Normal =3 U/ml). In view of refractory anemia with high value of tTG a provisional diagnosis of celiac disease (CD) was made. An upper gastrointestinal endoscopy with biopsy sampling of duodenal mucosa was done suggestive of moderate villous atrophy (Modified Marsh Grade 3b), consistent with CD. Patient was started on gluten free diet. Compliance with the treatment was excellent and within 6 months his hemoglobin was 10.2gm/dL and serum iron level increased upto 63ug/dL.

CD is an autoimmune mediated enteropathy with permanent sensitivity to gluten with heterogenous presentation often presenting as refractory anemia. Anemia in CD can be microcytic or macrocytic and due to both iron and folic acid deficiency. Due the involvement of proximal small intestine, where iron absorption occurs, CD causes IDA. Mechanism for CD induced IDA are abnormal iron absorption secondary to villous atrophy of the intestinal mucosa, increased blood loss, correlated with severity of villous atrophy and malabsorption of various micronutrients necessary for normal hematopoiesis. (1) In a study by Kochar et al (2), 84% of 434 children diagnosed with CD had IDA at presentation and 39% of children had anemia as presenting feature. Abd el Dayem et al (3) studied 25 children with refractory iron deficiency anemia and found 44% ofthem had celiac disease. In our patient the only presenting feature was refractory anemia, the patient did not have any gastrointestinal symptoms.

Effective treatment of CD is withdrawal of gluten from diet. Early recognition and treatment may help optimize growth. To conclude celiac disease should be considered in any child with refractory iron deficiency anemia even if no gastrointestinal symptoms are present.

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From: Department of Pediatrics, Chirayu Medical College & Hospital, Bhopal, Madhya Pradesh.

Address for Correspondence: Dr. Minhajuddin Ahmed, Department of Pediatrics, Chirayu Medical College & Hospital, Bhopal, Madhya Pradesh.

Email : minzahmad@yahoo.co.in

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