

Beta-thalassaemia major and coeliac disease occurring concurrently in a patient: A case report

A Rafiq^{1*}, S Fatima¹

Abstract

Introduction

Beta-thalassaemia major is an autosomal recessive disorder caused by the mutation of the HBB gene on chromosome 11. Coeliac disease, on the other hand, is an auto-immune disorder of the small intestine.

Case Report

We hereby report the case of a young patient from Pakistan suffering from Beta-thalassaemia major and Coeliac disease concurrently. The reported case is of an 8 year-old girl who was a diagnosed case of Beta-thalassaemia major and presented to us with symptoms of malabsorption. A diagnostic work-up of the patient revealed that she was suffering from Coeliac disease. The symptoms of malabsorption responded well to a gluten-free diet.

Conclusion

Physicians should look out for symptoms of malabsorption in patients with Beta-Thalassaemia major to rule out the possibility of Coeliac disease.

Introduction

Beta-thalassaemia is most common in Mediterranean countries, parts of Africa, and South-east Asia¹. Amongst inherited disorders, it is regarded as one of the commonest in Pakistan.² According to estimates; around 9000 children with beta thalassaemia are born every year, although no documentary registry is currently available in Pakistan. There are an estimated 9.8 million carriers in the total population, equaling a carrier risk of 5 to 7%³. It is an autosomal recessive disorder of the blood caused by diminished synthesis of the beta-globin chains of hemoglobin. This reduced synthesis leads to severe anemia which manifests 6 to 9 months after birth as hemoglobin synthesis switches from HbF to HbA⁴.

Coeliac disease is also known as coeliac sprue or gluten-sensitive enteropathy. It is an immune-mediated disease that is triggered by the ingestion of gluten-containing cereals, such as wheat and barley, in genetically predisposed individuals. In countries where most people are Caucasians of European ancestry, the estimated prevalence is of 0.5 to 1%⁵. The prevalence of coeliac disease in Pakistan is not known, although it is thought to be a common disorder⁶.

Through literature search (from Pubmed and pakmedinet.com), the authors believe that this is the first reported case of Coeliac disease occurring concurrently in a patient with Beta Thalassaemia major in Pakistani population.

Case report

The patient we report is a female 8 years of age who presented to us in the Out-patient Department for complains off diarrhea for the past one and a half years. The child was born after an uneventful pregnancy and delivered at term. She was fed on her mother's milk till 40 days of age after which the mother stopped producing milk. She was then fed milk that was boiled and purchased from a local milk shop. She weaned at 4 months, crawled at 6 months, spoke her first words at 8 months, began walking at 13 months, and was toilet-trained by 2 and a half years. She drank boiled water and was vaccinated regularly.

The child was diagnosed with Beta Thalassaemia major at 3 months of age. Hb electrophoresis studies revealed absent HbA, HbF of 94% and HbA2 of 6%. She has been receiving regular transfusions from since that age. She was the product of a consanguineous marriage. She received transfusions every 2 to 3 weeks, maintaining a hemoglobin level in excess of 10.5 mg/dL. Iron-chelating therapy with desferrioxamine (DFO), 30 mg/kg 6 days a week, was administered from 8 months of age.

The patient was lost to follow-up from 38 months of age. The patient now presented at 8 years with complains of on and off diarrhea for the past one and a half years. The episodes had increased for the past two weeks. There were around 8 to 10 episodes of diarrhea daily, and was often associated with generalized abdominal pain. The stool was reported to be greenish in color and watery in consistency. The episodes were reported to correspond to ingestion of roti, a wheat based product that is commonly eaten in the sub-continent and the Middle-East. There was no history of fever.

On examination, the patient was vitally stable. She was clinically anemic, with brittle hair and nails. She appeared dehydrated and had a body weight of 40 pounds (18.14 kg). She was 42.5 inches (107.95 cm) tall.

Her complete blood count showed a hemoglobin level of 10.1 g/dL, with the rest of the parameters within normal ranges. A stool detailed report and culture was done and was found to be negative of any pathological organisms. Thyroid and liver function tests were also found to be within normal ranges. Anti-HAV, HBsAg, Anti-HCV and Anti-HEV were all found to be negative. A random blood

*Corresponding author
Email: alirafiq.dr@gmail.com

¹ Civil Hospital, Karachi, Pakistan

sugar showed a value of 137 mg/dL, and a fasting blood sugar showed a value of 82 mg/dL, ruling out the possibility of Diabetes Mellitus.

A provisional diagnosis of Coeliac Disease was made. Tissue transglutaminase antibody (tTG) was found to be positive (112 U/mL). A jejunal biopsy could not be performed due to a lack of resources. A gluten-free diet was started that led to an improvement in the patient's symptoms over the next three months. This work conforms to the values laid down in the Declaration of Helsinki (1964). The protocol of this study has been approved by the relevant ethical committee related to our institution in which it was performed. All subjects gave full informed consent to participate in this study.

Discussion

Beta-thalassemia is an autosomal recessive disease that results in the reduced production of the beta chain of hemoglobin, resulting in microcytic hypochromic anemia, an abnormal peripheral blood smear with nucleated red blood cells, and reduced amounts of hemoglobin A (HbA) in the blood. Beta-thalassemia major patients are homozygous for the defective gene, coming to medical attention within the first two years of life due to severe anemia and failure to thrive.

Coeliac disease is an immunologically mediated inflammatory disorder of the small bowel. Affected patients show intolerance to wheat gluten and similar proteins. The age of presentation of Coeliac disease is variable. Affected children have growth and pubertal delay, whereas in adults it has a peak onset in the third or fourth decade of life. Coeliac disease has been associated with several other immunological diseases such as insulin-dependent diabetes mellitus, primary biliary cirrhosis, Sjögren's syndrome and myasthenia gravis.

Beta-Thalassemia major and coeliac disease are relatively common and yet isolated diseases of childhood. A total of three cases in which the diseases are present in the same patient have been reported so far in medical literature^{7,8,9}. One more case has been reported in which Beta-Thalassemia minor and porphyria was seen to co-exist with coeliac disease in a patient¹⁰. This is the first reported case in Pakistan.

Coeliac disease in patients with Beta-Thalassemia major might be an under-diagnosed problem. As the hematological manifestations of Beta-Thalassemia major take center stage, the more subtle symptoms of malabsorption might get masked if the patient suffers from Coeliac disease concurrently.

Regular hospital visits for blood transfusions can be distressing for both the patient and his/her guardians. In a study by Haghpanah S et al., patients with Beta thalassemia major showed lower scores when compared to the general population in all scales (except physical functioning) when assessed by SF-36, a well-known self-administered instrument for assessing QoL in the general population, as well as among patients with various diseases¹¹.

The added burden of gastro-intestinal symptoms leading to impaired growth can add morbidity in such children. An association of Thalassemia major with Coeliac disease highlights the need to search for Coeliac disease in Beta Thalassemia major patients who present with short stature and low weight. This can be critical in improving the Quality of Life (QoL) of the child, as mere alterations in dietary habits can improve the symptoms of coeliac disease.

Conclusion

Coeliac disease in patients with Beta-Thalassemia major might very well be an under-diagnosed condition. Physicians should look out for symptoms of malabsorption in patients with Beta-Thalassemia major to rule out the possibility of Coeliac disease. In case the presence of Coeliac disease is noted, dietary restriction can prove to be helpful in improving the patient's quality of life.

References

1. Vinay Kumar, Abul K. Abbas, Nelson Fausto, Jon C. Aster; Pathological Basis of Disease, Eighth edition (2010), p.649
2. Khateeb B, Moatter T, Shaghil AM, Haroon S, Kakepoto GN. Genetic diversity of beta-thalassaemia mutations in Pakistani population. J Pak Med Assoc. 2000; 50:293-96.
3. Lodhi Y. Economics of thalassaemia management in Pakistan. In Thalassaemia Awareness Week, Ed. Ahmed S. Friends of Thalassaemia 2003.
4. Vinay Kumar, Abul K. Abbas, Nelson Fausto, Jon C. Aster; Pathological Basis of Disease, Eighth edition (2010), p.649
5. Vinay Kumar, Abul K. Abbas, Nelson Fausto, Jon C. Aster; Pathological Basis of Disease, Eighth edition (2010), p.794
6. <http://www.coeliac.com.pk/prevalence.php> [Retrieved: 27/08/14]
7. Parakh A, Sudha S, Dubey AP, Gupta A. Coeliac disease in a child with beta-thalassaemia major: a need for improved screening and awareness. J Pediatr Hematol Oncol. 2008 Dec;30(12):913-4.
8. Acquaviva A, Municchi G, Marconcini S, D'Ambrosio A, Morgese G. Coeliac disease in a patient with beta-thalassaemia major. J Pediatr Gastroenterol Nutr. 2003 Apr;36(4):489-91.
9. Mangiagli A, Campisi S. Coeliac disease associated with major thalassaemia. A case report. Minerva Pediatr. 1996 Sep;48(9):401-5.
10. Dal Sacco D, Parodi A, Cozzani E, Biolcati G, Griso D, Rebora A. A case of variegated porphyria with coeliac disease and beta-thalassaemia minor. Dermatology. 2004;209(2):161-2
11. Haghpanah S, Nasirabadi S, Ghaffarpasand F, Karami R, Mahmoodi M, Parand S, Karimi M. Quality of life among Iranian patients with beta-thalassaemia major using the SF-36 questionnaire. Sao Paulo Med J. 2013;131(3):166-72.