Congenital HaemolyticAnaemia with early onset and uncommon presentation: A Case Report

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Abstract

Haemolyticanaemias result from an increase in the rate of red cell destruction. The lifespan of the normal red cell is 100-120 days; in the haemolyticanaemias it is shortened by varying degrees, and in very severe cases may be only a few days. Here we described a male child of 1½ months presented with yellow coloration of whole body and sclera since birth, progressive pallor since birth & gradual abdominal distention for 20 days.The child was admitted to hospital with the complaints of bleeding from mouth and nose for 3 days. Peripheral blood film of the child showed features of hemolytic anaemia, as a congenital hemolytic anaemia probably hemoglobinopathies/thalassemia. As because the child is 1½ months old the diagnosis was confirmed by Hb-electrophoresis of his parents.Hb electrophoresis examination of the parent showed predominantHb was HbE which was 90.0%found in mother &92. 4% found in father. So the case was diagnosed as congenital hemolytic anaemia, HbE disease.

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Introduction

Haemoglobin disorder is not uncommon disease in our countryin which the clinical manifestation occurs as haemolyticanaemia. Many patients with congenital haemolyticanaemia due to haemoglobin disorder get admitted in hospital, take blood transfusion, feel better and go home. But, as there is continuous break down of red blood cells, they again feel worse – get admitted in to hospital – take blood transfusion. Beta thalassemia carries can have mild anemia with Hb level ranging from 9 to 12 g/dL which does not warrant transfusion to normalize the Hb level. Individual response and adaptation to anemia may also play a role in selecting patients for transfusion. On the other hand, in case of HbE beta thalassemia, the most crucial issue is to determine transfusion dependence.[1]This transfusion cycle goes on throughout their life, but ultimate result is not satisfactory. Causes of HaemolyticAnaemia due to haemoglobin disorder isThalassaemia, Haemoglobinopathies (Sickle cell anaemia-Hb E disease, Hb C disease, Hb D Punjab), Double heterozygous disorders (Sickle cell β

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thalassaemia). Thalassaemia is prevalent in mediterranean&South East Asia. Hb–S &Hb-C is prevalent in tropical Africa among black population Hb-E is found in South-east Asia. Hb-D Punjabis found in Indian sub continent.[2,3]

Thalassaemia results due to reduced synthesis / absent of either α or β chain. Clinically β chain disorder is more common which may be Thalassaemia major (Homozygous): Complete absence of β chain is the disease condition with clinical symptom of haemolyticanaemia and Thalassaemia minor or trait (Heterozygous): Reduced β chain synthesis is either asymptomatic or show mild symptom.[2]

The haemoglobinopathies are characterized by the production of structurally defective haemoglobin due to abnormalities in the formation of the globin moiety of molecule. Hb-E is produced due to replacement of glutamic acid by lysine in the 26th position of β chain. Hb-S is produced by replacement of glutamic acid by valine in 6th position of β chain and the disease produced is sickle cell disease or sickle cells trait.[4]

An estimated 320,000 babies are born each year with clinically significant hemoglobin disorder.[5] Nearly 80% of these births occur in developing countries. Most conservative estimates suggest that at least 5.2% of the world population (over 360 million) carry a significant hemoglobin variant[5] and in excess of 100 million beta thalassemia carries with a global frequency of 1.5%.[6] Bangladesh is one of the most densely populated country in the world, with a population of over 160 million people. Over 70% of the population live in highly resource-constrained rural areas.[7] A recent study has indicated that about 28% of assessed rural women have beta thalassemia or HbE.[8] Similar findings have been reported for women and children of the thalassemia prone Southeast-Asian country, Cambodia.[9,10]

The information on the prevalence of hemoglobinopathies in Bangladesh is scarce duo to lack of population-based data. According to World Health Organization (WHO) estimates, approximately 3-6% of the population are the carries of beta-thalassemia and 3-4% are te carries of hemoglobin E (HbE) in Bangladesh.[11]

Haemoglobin disorders usually does not appear with any acute symptom but gradually may turn in to a very severe form and bring many complications. Ultimately may be fatal.

It is a fact that most children with severe forms of thalassemia (such as thalassemia major) usually die under 5 years of age[5] and the average life expectancy of patients suffering from thalassemia is about 30 years[12], particularly in heavily resource constrained countries.

Haemoglobin disorders are diagnosed by examination of PBF, Hb electrophoresis, other sophisticated investigations.

Case Report:

A male child of 1 ½ months was admitted in Community Based Medical College Hospital in Paediatric ward on 16/2/2012 with the complaints of history of bleeding from mouth and nose for 3 days, yellow coloration of whole body and sclera since birth , progressive pallor since birth & gradual abdominal distention for 20 days. He is the 2nd issue of his parent.The patient comes from low socioeconomic condition and belongs to Garo tribe. There is history of consanguineous marriage between his parent.

On local examination the patient was ill looking, pale and anaemic with jaundice, hypopigmentation present in the both sides of angle of mouth and scrotal area and no bony tenderness. His abdomen was distended (Figure: 1), liver and spleen was palpable.

Figure 1: Photograph shows baby with distended abdomen.

On hishaematological investigations Hb% was 5.9 gm/dl, TC, DC of WBC, Platelet count, BT, CT, Prothrombin time was within normal range.

On peripheral blood film examination, RBC was hypochromic with marked anisopoikilocytosis. Good number of cell fragments and target cells were present. Fair number of NRBC was also seen. WBC was mature with normal distribution. Platelet was normal. Morphological features showed haemolyticanaemia consistent with haemoglobinopathies/Thalassaemia (Figure: 2, 3 & 4). Reticulocyte count was 10%.

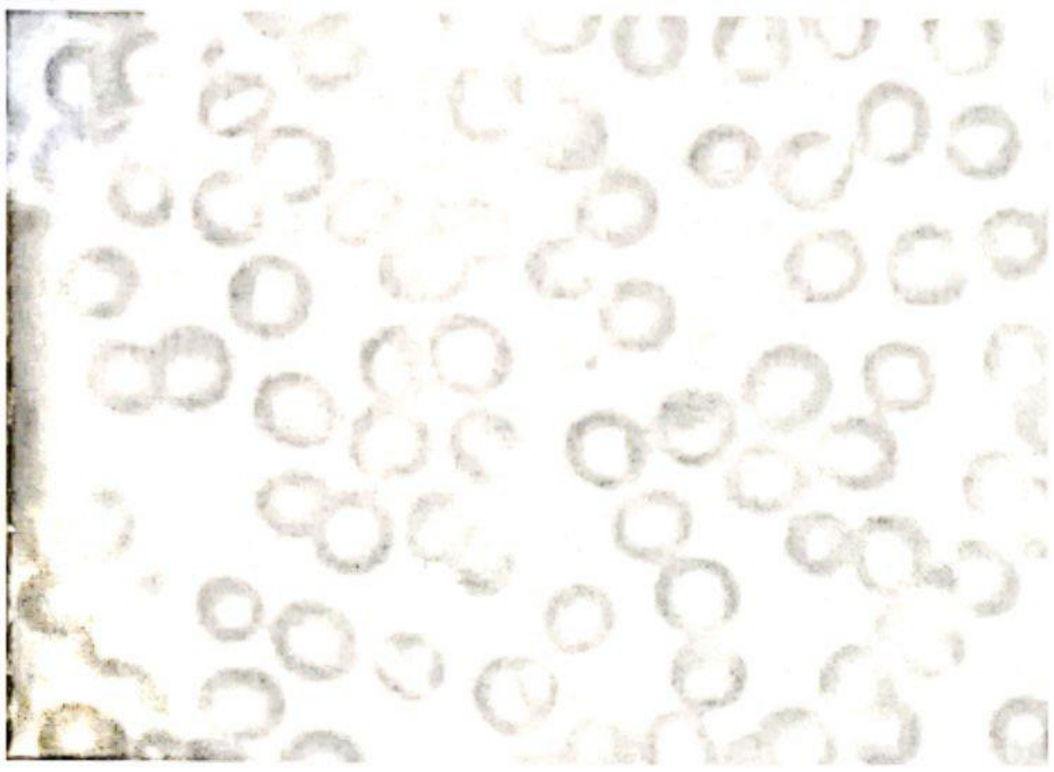

Figure 2: PBF shows hypochromic RBC with marked anisopoikilocytosis.

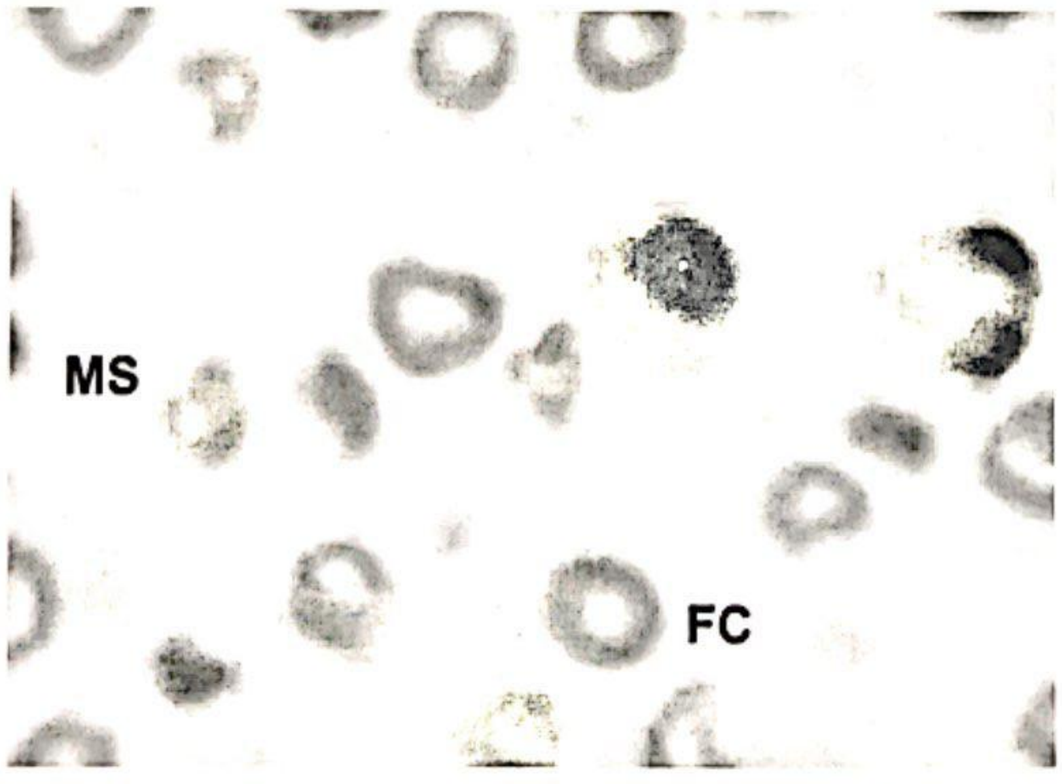

Figure 3: PBF shows fragments cell (FC) and Microspherocyte (MS).

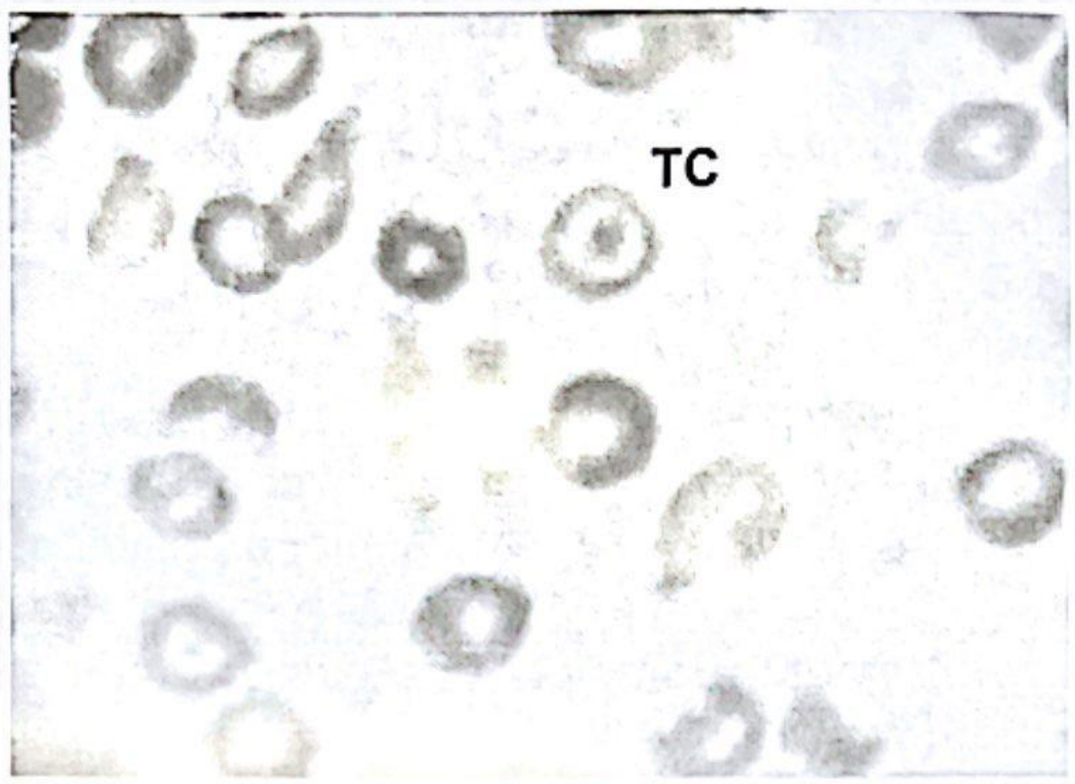

Figure 4: PBF showing target cells (TC).

On Biochemical test S. Bilirubin (Total) was 8.5 mg/dl, S. Bilirubin (Direct) was 3.2 mg/dl, S. Bilirubin (In direct) was 5.3 mg/dl, S. ALT (SGPT) was 157.0 U/L which were more than normal range. HBs Agwas Negative. Liver was mildly enlarged and spleen was normal on ultrasonography. He received two units of blood transfusion during staying in hospital.

Provisional diagnosis was Haemolyticanaemia. To establish it as congenital haemolyticanaemia due to haemoglobin disorders, Hb electrophoresis is essential. But as the patient was only 1½ months. Hb electrophoresis findings at this age may not be accurate. So we did the relevant investigations of parent to establish the diagnosis as congenital haemolyticanaemia.

Morphological features suggestive of haemoglobinopathies on peripheral blood film examination of mother and father.In both slides RBC was moderately hypochromic with mild anisopoikilocytosis. Many target cells and fair number of cell fragments were presents. No NRBC was seen. WBC was mature with normal distribution. Platelet was normal (Figure: 5 & 6).

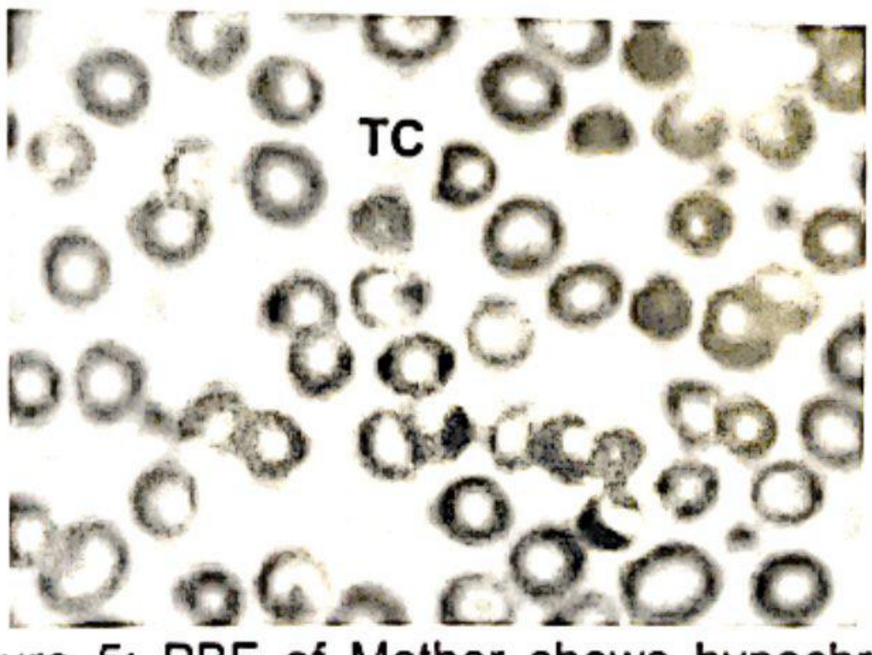

Figure 5: PBF of Mother shows hypochromic RBC & target cells (TC).

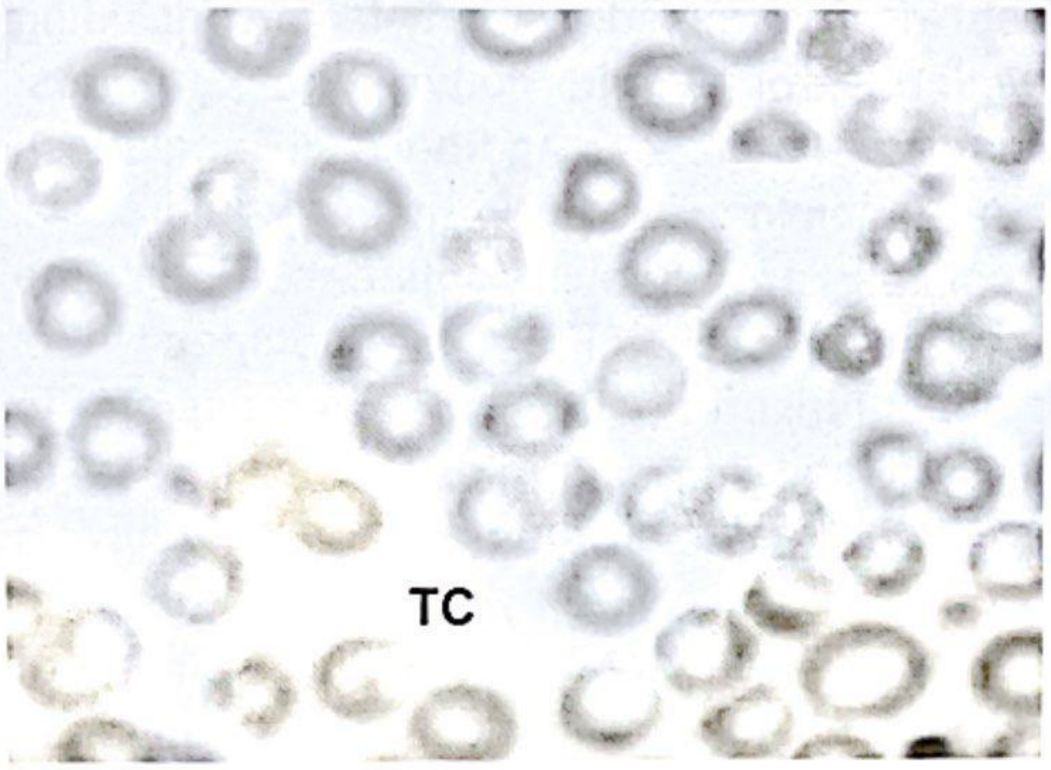

Figure 6: PBF of Father shows hypochromic RBC & target cells (TC).

In Hb electrophoresis examination the predominantHb was HbE which was 90.0%found in mother &the predominant Hb was HbE which was 92. 4% found in father (Figure: 7 & 8).

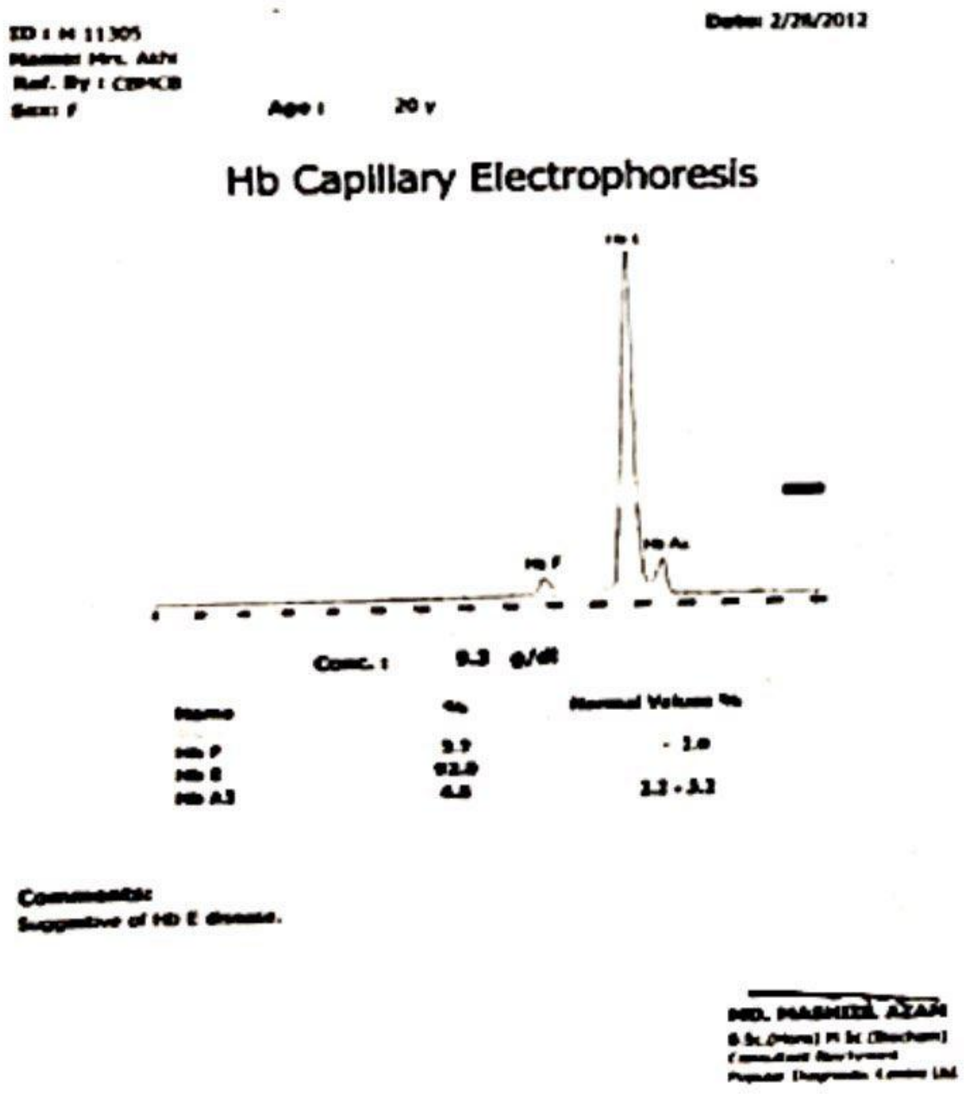

Figure 7: Hb Electrophoresis report of mother.

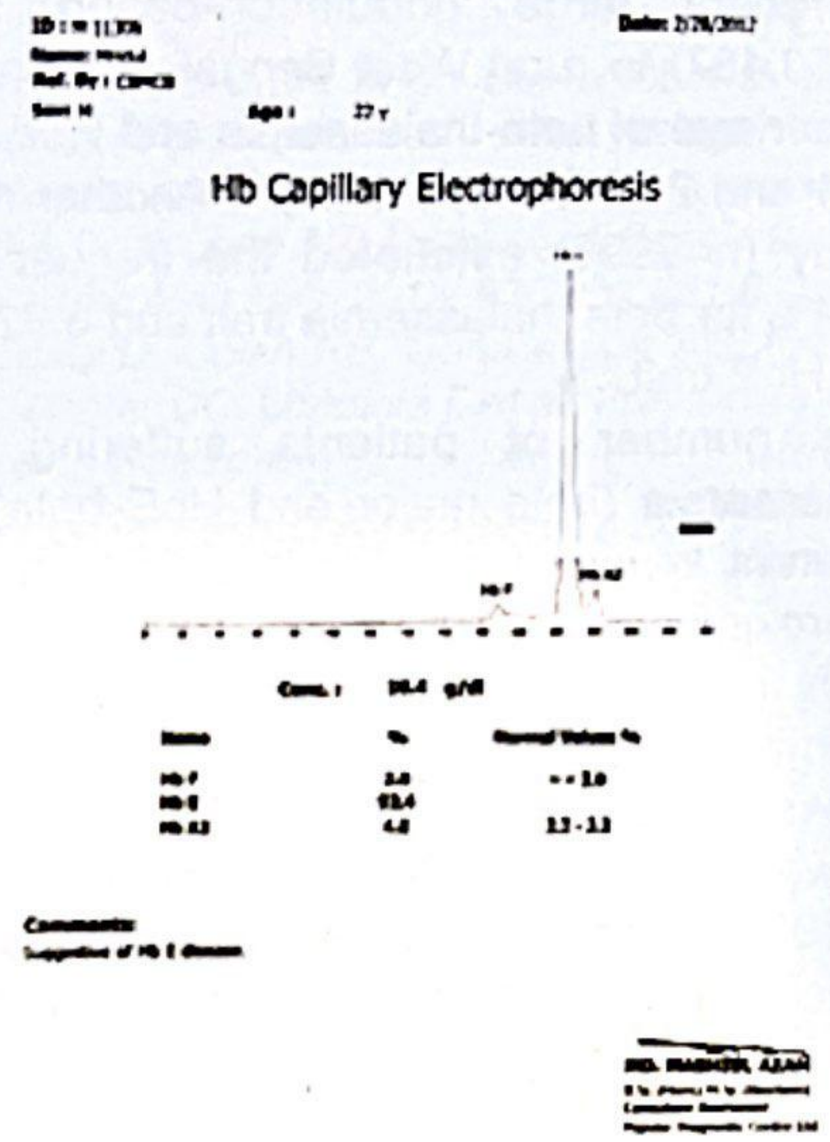

Figure 8: Hb Electrophoresis report of father

Discussion

Usually the Patient with haemoglobin disorders does not show the manifestation of haemolysis very early after birth. The onset is gradual and usually the symptoms become evident within 1 year.[2] As the child was only 1 and ½ month age with haemolytic blood film and with atypical presentation (bleeding from mouth and nose) we had to depend on the relevant investigations of parent. Considering all the findings of the child and parent we came to conclusion that the child is having haemoglobin disorder. Most probably Hb E disease. Of course for confirmation we have to do the Hb% electrophonesis of the child which should be done after the age of 6 months.[13]

In a study among 735 school children in Bangladesh showed a 4.1% prevalence of the beta-thalassemia trait and a 6.1% prevalence for the HbE trait.[14] The same study revealed the regional variation of beta-thalassemia carries ranging from 2.9 to 8.1 and 2.4 to 16.5% for HbE carries. Among tribal children, the prevalence of beta-thalassemia trait was almost identical but HbE was much higher (41.7%). Another study will a small sample size also observed similar (39-47%) prevalence rate of HbE among a tribal population in Bangladesh.[15]

A recent large population-based study (n=50,487) in rural West Bengal revealed the carrier rate of beta-thalassemia and HbE to be 6.61 and 2.78% respectively.[12] Another recent study (n=9990) estimated the frequency of 3.64% for beta thalassemia trait and 3.92% for the HbE trait.[16]

The number of patients suffering from thalassemia (beta major and HbE beta) with different levels of severity is estimated to be approximately 60,000-70,000 in Bangladesh.[17] With the birth rate of 21.6/10000, it could be estimated that nearly 2500 thalassemia major cases are added every year in Bangladesh.[12] Taiwan adopted a national screening program in 1993 to manage the spread of thalassemia which enjoyed considerable success, with less than three per year of thalassemia births in last 10 years.[18]

Suffering of this case is due to the trait condition of their parent and of course consanguinity has increased the risk. So only for the sake of birth, one child suffers from such a painful disease which has no permanent cure. This is unwanted. It should be prevented. Haemoglobin disorder is a preventable disease. As hereditary haemolyticanaemia due to haemoglobin disorder is inherited to offspring from parent, , investigation of both male and female should be done prior to marriage or if married before having children to exclude the trait condition.[2,19,20,21]

Initially examination of PBF (Which cost only tk 200/-). In suspected cases it should be confirmed by Hb Electrophoresis.[3] One trait male and one trait female should not get married. In the context of our country it may not yet be strictly followed. In that case anti-natal check up during 1st pregnancy the tests mentioned should be done for both husband and wife. These tests should be mandatory. Though there is also risk in 1st pregnancy, at leastfurther hazards can be prevented if the 1st one is saved by God's blessings.

A secondary prevention strategy emphasizes prenatal diagnosis followed by genetic counseling for the termination of pregnancy. The acceptability of the prenatal diagnosis and selective termination/abortion of an affected foetus is determined by many factors including religious, social and cultural backgrounds, personal experiences and beliefs. Bangladesh is a predominantly Muslim country and social practices are heavily influenced by the religious practices. From the perspective of Islamic jurisprudence, it is permissible to perform abortion to protect mother's life or health, or because of foetal anomaly which is incompatible with life.[22] A study conducted in the highly conservative Muslim society of Pakistan has shown that selective termination is accepted by affected parents irrespective of religious and social groups after genetic counseling.[23] Due to the extreme sensitivity of abortion from an Islamic viewpoint, mistakes are not permissible in the diagnosis of foetal anomalies.[22]

Conclusion

No parents like to see the helpless crying of their child for a regular blood transfusion therapy. Then why such a diseased child should be born? Only a combined and sincere effort of all concerned can prevent the helpless crying of future so many children.

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