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LETTER TO THE EDITOR

Hemoglobin E trait - in Rajshahi, Bangladesh

Hemoglobin E (HbE) is an important hemoglobin variant with worldwide distribution and commonly found in Southeast Asian populations. In Bangladesh a number of these disorders have been reported in different area. But in Rajshahi (north-west region of country), there is no study on the prevalence of hemoglobin E. The aim of this study was to identify and report hemoglobin E trait in the population of Rajshahi. This retrospective descriptive observational study period were for two years from 1 January 2009 to 31 December 2010 in Rajshahi. During this period we have analyzed complete blood count and hemoglobin electrophoresis of the blood samples of 537 anemic patients in the population of Rajshahi. Age range were 1 to 60 years. A total of 38 (or 7%) samples were found to be possessing the hemoglobin E trait. The findings of this study close to the study carried out by Dhaka Shishu Hospital Thalassemia Center in 2004 in school children of Bangladesh showed that the overall frequency of Hb-E trait 6.3%[1]. Awareness of this disorder is important to prevent transfusion dependent Hb E/ß thalassaemia.

Discussion

Hemoglobin E characterized by the production of structurally defective hemoglobin variant results from a G→A substitution at codon 26 of ß globin gene which producing a structurally abnormal hemoglobin. Hemoglobin Eß thalassaemia result from co-inheritance of ß thalassaemia allele from one parent, and the structural variant hemoglobin E from the other[1]. Clinical presentation of HbE/ ß thalasaemia is varying from asymptomatic state to a transfusion dependent anaemia. Hemoglobin E is more prevalent in the Mediterranean region, the Middle East, the Indian Subcontinent and Southeast Asia and south china, with reported carrier rates ranging from 2% to 25%[2-5]. WHO estimates that about 7% of world population is a carrier of a hemoglobin disorder and 3,00,000 to 5,00,000 children are born each year with the severe homozygous states of this diseases[3]. In Bangladesh more than 7,000 children are born with thalassemia each year[3]. A study carried out by Dhaka Shishu Hospital Thalassemia Center in 2004 in school children of Bangladesh showed that the overall frequency of beta-thalassemia trait was 4.1% and Hb-E trait 6.3%[6].

A number of hemoglobinopathies have been described but comprehensive study was not done in country wide.

Blood samples from patients in different districts of Rajshshi division and Khulna division including Kustia, Meherpur, Chuadanga, Natore, Pabna, Chapi Nawabgong and Nawgaon suspected of having hemoglobinopathy were referred to a Clinic "Medipath Diagnostic complex" Rajshahi, for hemoglobin electrophoresis. Blood samples were collected in that Clinic (Medipath Diagnostic complex). EDTA blood sample were analyzed for complete blood count (CBC) and hemoglobin electrophoresis carried out on cellulose acetate using TEB buffer, pH 8.6. Peripheral blood film were examined after staining with Leishman's stain by hematologist and routine hematologic studies (hemoglobin levels and red cells indices) done by automated methods.

During this study period 537 samples were analyzed for hemoglobin electrophoresis , CBC and morphology of RBCs. Hemoglobin E trait was detected in 38 (or 7%) samples having hemoglobin E ranged from 10 to 40%. They had lower hemoglobin, MCV and MCH [10.6-11.4 g/dl, 60.5±9.5fl, 20.0±4.6pg respectively] with hypochromic microcytic red cells and target cells.

Table I: Hematological manifestation of patients with HbE trait

Age (years)	1-60
Hb level (gm/dl)	10.6-11.4
MCV(cubic microns)	60.5 ± 9.5fl
MCH (pg)	20.0 ± 4.6
HbE (percent)	10- 40

Abbreviations: MCV = mean corpuscular volume;
MCH = mean corpuscular hemoglobin;
HbE = hemoglobin E

Table II: Hemoglobin E trait (n=38) diagnosed in Rajshahi region from 1 January 2009 to 31 December 2010.

Abnormality	No. of cases
HbE trait	38
Other Hb disorders	201
Normal Hb	298
Total patients	537

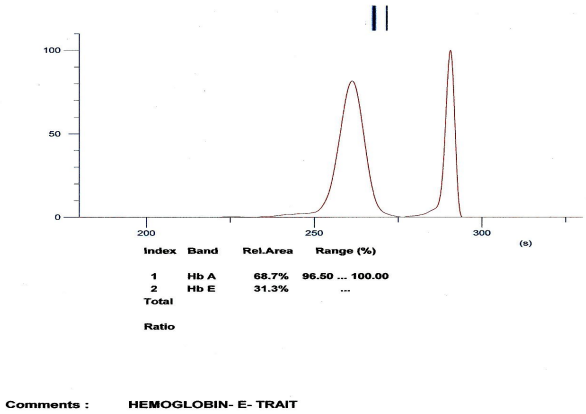

Fig.-1: Hb electrophoresis showing HbE trait.

Due to the small samples size and restricted to the north-west region of country, this study did not reflect the total prevalence in population of Bangladesh. Comprehensive study are require to know the actual prevalence of hemoglobin E trait.

Conclusions: Hemoglobin E both homozygous and heterozygous state are minimally anemic and asymptomatic. But co-inheritance of beta thalasaemia trait results in HbE/ beta thalasaemia, having variable phenotypes ranging from transfusion dependence to asymptomatic. Premarital HbE screening and the population survey can prevent Hb E/ ß thalassaemia.

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