CO-PRESENCE OF FACTOR V LEIDEN G1691A, MTHFR C677T AND XMN‑1 − 158 G→T (C → T) IN SICKLE CELL PATIENTS

Dear Editor,

Vascular complications are an important and perplexing aspect of the clinical spectrum of sickle cell anemia.[1,2] patients with sickle cell disease show activation of the blood coagulation, fibrinolytic systems, increased platelet activity and consumption of coagulation inhibitors during vaso‑occlusive crises.[3‑6] Due to importance of vascular complications in the physiopathology of sickle cell disease, a number of genetic polymorphisms associated with thrombophilia had reported as potential genetic modifiers of sickle cell disease. Inherited risk factors for vascular disease include factor V Leiden(7) (G1691A) and methylenetetrahydrofolate reductase (MTHFR) C677T point mutations and in view of their role in enhancing thrombus formation, it was suggested that these mutations play a role in the pathogenesis of sickle cell disease.[8,9] The CT variation at position 158 upstream of the Gγ globin gene affect HbF production which is detectable by the restriction enzyme Xmn‑1.[10] Heterozygosity for presence of Xmn1 site polymorphism is also likely to influence phenotype.[12] The Xmn1−γ site is common in almost all population and it has little effect in normal individuals. However, under conditions of hematopoietic stress, as in homozygous β thalassemia and sickle cell disease, presence of the Xmn1−γ site favors a higher HbF response.[12] We had recruited the sickle cell patient from outpatient department All India institute of Medical sciences for the study of various modulating factors. Diagnosis of sickle cell patients done by high performance liquid chromatography (HPLC- Bio‑Rad‑Variant™ Bio Rad, CA, USA). DNA extraction done by phenol‑chloroform method. Molecular study for FV Leiden done according to Bertina RM[14] (1994) while MTHFR C677T genotypic study done according to Hanson NO[15] (2001). Xmn1‑polymorphism study done according to Sutton M.[16] We evaluated 240 patients for the three modulating factor i.e. FV Leiden, MTHFR and Xmn1 polymorphism. Out of the 240 patients 17 were homozygous and 3 were homozygous for FV Leiden mutation while 42 patients were heterozygous and 8 were homozygous for MTHFR C677T mutation. Xmn1 (C-T) present in 73 patients in heterozygous condition while 34 patients were homozygous for Xmn1 homozygous. Fifteen patients showed the presence of FVMTHFR/Xmn1 in heterozygous patients while 37 patients were carrier for MTHFR/Xmn1 in heterozygous patients. Three homozygous patients were carrier for FVMTHFR/Xmn1 while 7 patients were carrier for MTHFR/Xmn1 polymorphism. These observations suggest the co-presence of FV Leiden, MTHFR C677T and Xmn1 in sickle cell patients is common; and emphasis on the hypothesis the interaction of various

genetic factors had epistatic effect on phenotype of sickle cell disease.

SANJAY PANDEY, RAHASYA MANI MISHRA1, SWETA PANDEY, RENU SAXENA
Department of Hematology, All India Institute of Medical Sciences, New Delhi, 1Department of Environmental Biology, Awadhesh Pratap Singh University, Rewa, India

Address for correspondence:
Prof. Renu Saxena, Department of Hematology, I.R.C.H. Building (1st Floor), All India Institute of Medical Sciences, Ansari Nagar, New Delhi - 110 029, India.
E-mail: pandeysanjaybtrediffmail.com

REFERENCES
