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VASCULAR AND HEMATOLOGICAL ABNORMALITIES IN HYPERHOMOCYSTEINEMIA : A STUDY OF 50 CASES

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ABSTRACT

The rising trend of vascular and haematological abnormalities seen in different age group of population is attributed to various modifiable and non-modifiable risk factors like Diabetes, Hypertension, Dyslipidemia, Smoking, Obesity, Sedentary Life Style, Age , Genetic Predisposition, Chronic Alcohol Consumption. Apart from all these risk factors certain other factors play a very significant role in causing vascular and haematological abnormalities which can be modified to improve the morbidity and mortality outcomes. Hyperhomocysteinemia is being a leading cause of many vascular and haematological abnormalities , is a modifiable risk factor , So one should keep in mind the role of homocysteine while evaluating cases of vascular and haematological abnormalities.

KEYWORDS

Homocysteine, Anemia, Vascular Events

INTRODUCTION

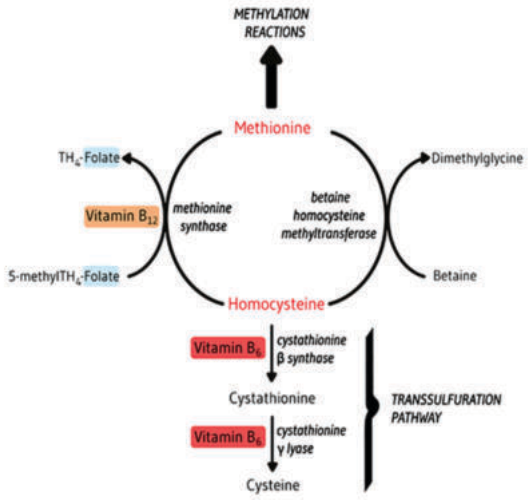
Homocysteine is a sulfur containing nonprotein aminoacid and an intermediate in the methionine metabolism. The fate of homocysteine is decided by either remethylation to methionine or trans-sulfuration to cysteine[1].

A normal level of homocysteine in blood is <15 micromoles/litre. More than 15 micromoles/ litre is called Hyperhomocysteinemia. Severity of the disease is classified in three categories[3]:

- MODERATE : 15-30 micromoles/litre
- INTERMEDIATE : 30-100 micromoles/litre
- SEVERE : >100 micromoles/litre

Homocysteinemia per se does not cause any symptoms, but the associated hypercoagulable state, and the Vitamin B12 and Folic acid deficiency in hyperhomocysteinemia are attributable to the symptoms and features. Homocysteine has effects on vascular endothelium, platelets, coagulation factors that predisposed to thrombosis. Endothelial dysfunction can be induced in a normal individual when hyperhomocysteinemia is induced transiently. Affected patients are at lifelong risk of thromboembolic phenomenon, which are at a major cause for mortality. Venous and arterial occlusions in small or large vessels are seen[3].

Figure 3. Homocysteine Metabolism



Aims and Objectives

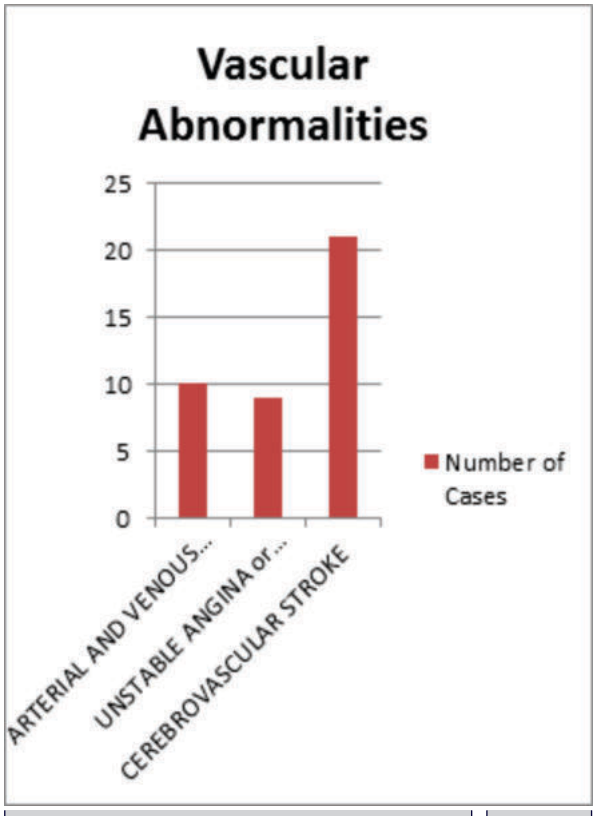
To correlate between elevated levels of homocysteine and vascular and haematological abnormalities in different age group of population.

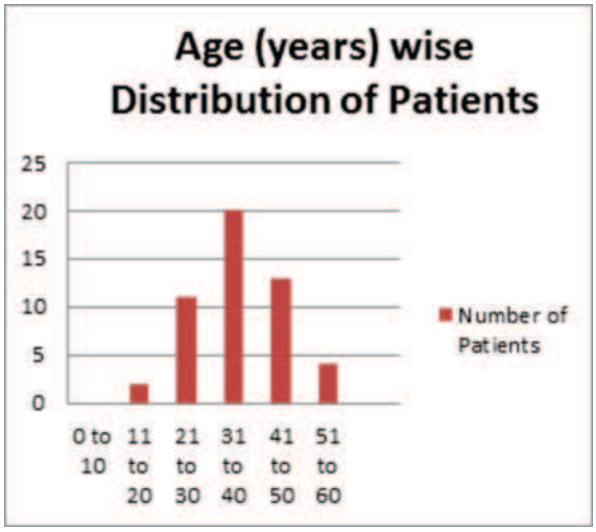
METHODOLOGY

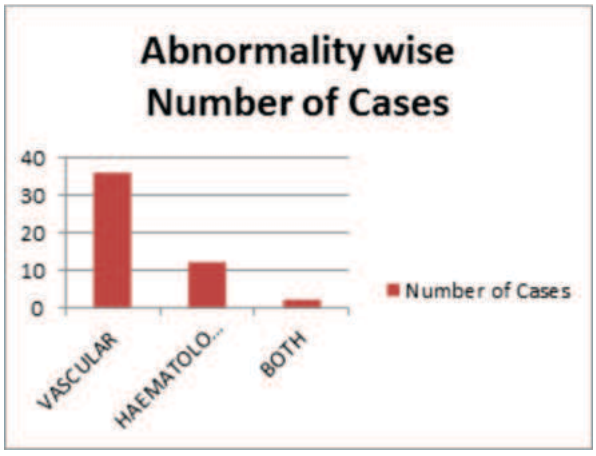
This observational and cross sectional study was done on a sample size of 50 cases in age group of 15-60 years patients having vascular and haematological abnormalities with elevated homocysteine level at a tertiary care centre in Ahmedabad during a period of 6 months from March 2020 to September 2020. Detailed clinical history, laboratory investigation, radiological investigations related to the symptoms were done in all patients. Established cause of vascular or haematological abnormalities other than hyperhomocysteinemia like Diabetes, Hypertension, Dyslipidemia, Smoking, Obesity, Genetic Predisposition, Chronic Alcohol Consumption, Hypercoaguable Disorders, CKD were excluded. Patients taking supplementation of Vitamin B12 and Folic Acid were also excluded.

RESULTS

Out of 50 cases studied during a period of 6 months 35 cases were male and 15 cases were females. Maximum cases being 20 (40%) were from age group of 31-40 years, the rest being from other age groups. Out of 50 cases 44 cases (88%) had intermediate to severe hyper-homocysteinemia and 6 cases (12%) had moderate hyper-homocysteinemia. Out of those 50 cases 36(72%) were associated with vascular abnormalities like cerebrovascular stroke[4], myocardial infarction[5,6], unstable angina[5,6], venous and arterial thrombosis[8] and others. 12 cases (24%) were associated with vitamin b12 deficiency[10], folic acid deficiency[10] and megaloblastic anemia[10]. Rest 2 cases (4%) had features of both.







DISCUSSION

The results of the current study are in accordance to the various studies done over a period of time establishing hyperhomocysteinemia as a potential cause of thrombotic events. Present study suggested a high prevelance of vascular events associated with hyperhomocysteinemia, with cerebrovascular stroke being a leading presentation among them[4]. There is increased risk of myocardial infarction seen with the presence of elevated homocysteine levels[6]. Other pro coagulable events like cerebral venous sinus thrombosis[7], deep vein thrombosis[8] are ascribed to a lesser proportion as compared to other vascular diseases. One of the common presentations in seen in around 25% percent of population associated with elevated homocysteine levels is associated with haematological abnormalities likely to be Vitamin B12 deficiency, Folic acid deficiency, more commonly seen with vegeterians.[10]

Treatment

Administration of Pyridonixe, Folic Acid, Cyanocobalmine, Betaine in standard doses helps in treating the cause, apart from medical management.

CONCLUSION

This study showed the importance of hyperhomocystinemia being one of major modifiable risk factor apart from other risk factors in management of various vascular and haematological diseases.

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