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INCIDENCE OF HYPERHOMOCYSTEINEMIA IN CEREBRAL VENOUS SINUS THROMBOSIS

Neurology

Ayush Dubey Assistant Professor, AIIMS, Bhopal, Madhya Pradesh
Shubham Dubey* Senior Resident, MMCHRI, Kanchipuram, Tamil Nadu *Corresponding Author

ABSTRACT

Cerebral Venous Thrombosis (CVT) is one of the rare causes of secondary headache and it is associated with various other symptoms along with headache. There are many underlying known causes of this dangerous condition out of which, hyperhomocysteinemia(HH) is an important entity. We discuss here about the incidence association of HH with the diagnosed cases of CVT.

KEYWORDS

Hyperhomocysteinemia, CVT

Introduction :
Cerebral venous thrombosis(CVT) is a rare but severe thrombotic manifestation with a high mortality rate with the potential to cause disability and tendency to recur. Haematological abnormalities like mutation of factor V (factor V Leiden) and prothrombin is known to be associated with an increased risk of cerebral vein thrombosis whereas very little data is available on the role of hyperhomocysteinemia, which is a risk factor for venous thrombosis of the lower limbs[1]. High plasma levels of the total homocysteine (tHcy) result from the interaction between genetic and acquired factors. The latter are deficiencies of vitamins such as folic acid, pyridoxine, and cobalamin, which are involved in the metabolic pathways of homocysteine. Among genetic determinants, homozygous substitution of cytosine by thymine at position 677 of the gene encoding for methy lenetetra hydrofolate reductase (MTHFR) causes around 50% reduction in the activity of this enzyme and it is associated with mild to moderate hyperhomocysteinemia in the individuals with inadequate dietary intake of folic acid. Vitamin supplementation with folic acid, pyridoxine, and cobalamin lowers the plasma levels of tHcy in most cases. Therefore, if hyperhomocysteinemia is associated with cerebral vein thrombosis, this multi vitamin therapy has the potential to decrease the risk of recurrence[2]. We carried out a prospective observational study on the role and incidence of hyper homoc ystei nemia in the newly diagnosed cases of CVT patients.

Aims and objectives: To study about the incidence of hyperhomocysteinemia in newly diagnosed CVT patients.

Inclusion criteria :
1. Patients newly confirmed as CVT in either outpatient or emergency department.
2. Patients more than 18 years of age.

Exclusion criteria :
1. Patients less than 18 years of age
2. Patients with prior known hypercoagulable states.

Material and methods : This was a prospective observational study for one year done on the patients presenting to outpatient and emergency departments at a tertiary care teaching hospital from India. All patients who were more than 18 years of age and confirmed as having acute onset CVT after history, examination and appropriate investigations were studied. Homocysteine levels were assessed in all such patients irrespective of their cause (provoked or unprovoked CVT).

Results : 42 patients were diagnosed as acute CVT after proper investigations (including MR venography in all such patients).16(38.09%) were males while 26(61.9%)were females. Most common symptoms of presentation were headache, followed by seizures, altered sensorium and focal neurological deficits(Table 1). Most common age of presentation was from 18-30 year age group. Most common sinus involvement was in the superior sagittal sinus followed by transverse sinuses and then straight sinus. Elevated levels of homocysteine were seen in 12 patients(28.57%). Half of these (6 patients) were associated with other hypercoagulable states like factor V leiden , prothrombin mutation or anti-phospholipid antibodies while other half (6 patients) had solitary hyperhomocysteinemia. Out of the total 12 patients, 5(41.66%) had MTHFR mutation also.

Table 1 : Presenting clinical feature

Presenting clinical feature	Total patients
Headache	38(90.47%)
Seizures	15(35.71%)
Altered sensorium	8(19.04%)
Focal neurological deficits	7(16.66%)

Table 2 : Coagulation defects seen

Coagulation defects found	Number of patients
Hyperhomocysteneimea	12(28.57%)
Factor V mutation	8(19.04%)
Prothrombin mutation	7(16.66%)
Antiphospholipid antibodies	3(7.14%)

DISCUSSION :
Cerebral Venous Thrombosis (CVT) is a worrisome entity which occurs with patient presenting as moderate to severe headache, convulsions, focal neurological deficits as well as altered sensorium. It is common in the young females. If diagnosed and treated on time, it has a very good prognosis whereas delay in diagnosis can also lead to fatal outcomes. There are various factors which lead to hypercoaguable states and lead to this entity. Some of the common known ones are Factor V, prothrombin mutations and antiphopholipid antibodies. Hyperhomocysteneimea is a less known but important risk factor for the causation of CVT[3]. We propose the routine estimation of homocysteine levels in all the patients of acute CVT as dietary supplementation of vitamins can prevent the recurrence of the episodes of CVT in such patients.

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