Hyperhomocysteinemia

Rosi J Jr. et al., from the Department of Neurosurgery, School of Medicine, University of São Paulo, found no association between hyperhomocysteinemia and intracranial aneurysms [1)].

A retrospective analysis of baseline data from 2040 patients with hypertension and hyperhomocysteinemia (HHcy) included demographic characteristics, biomarkers, history of chronic diseases and lifestyle factors. Polymerase chain reaction-restriction fragment length polymorphism method was used to investigate the C677T polymorphism of MTHFR gene. We examined independent effects and interactions between sex and stratified factors on the risk of stroke by logistic regression model. A total of 1412 patients suffered stroke, and the prevalence of stroke was 70.65% in men and 66.53% in women. Both men and women had independent risk factors for stroke, including diabetes mellitus, atrial fibrillation, smoking, increased level of systolic blood pressure (SBP) and plasma total homocysteine (tHcy), as well as the decreased level of high-density lipoprotein cholesterol. Diastolic blood pressure (DBP) -specific risk of stroke was unique to men. Interactions between sex and other risk factors on stroke risk were statistically significant: age, fasting plasma glucose (FPG), SBP, DBP, triglycerides (TG) and tHcy. Furthermore, tHcy interacted with age, SBP and DBP in men, and age, SBP, DBP, FPG, and TG in women to modulate the risk of stroke. Although TT genotype did not have an independent effect on stroke, it could interact with sex and FPG, TG and SBP to increase stroke. In conclusion, sex-specific differences are useful to stratify the risk of stroke and assist clinicians in the decision to select a reasonable therapeutic option for high-risk patients [2)].

Hereditary prothrombotic states of clinical importance include factor V Leiden, the prothrombin 20210A mutation, deficiencies of protein C, protein S, or antithrombin, sickle cell disease, and hyperhomocysteinemia. Major acquired prothrombotic states include cancer, myeloproliferative disorders, the antiphospholipid syndrome, and heparin-induced thrombocytopenia. Because most of the hereditary prothrombic states are not established risk factors for arterial thrombosis, routine laboratory testing in most patients with ischemic stroke should be limited to complete blood count, lupus anticoagulant, anticardiolipin antibodies, and plasma total homocysteine. Additional testing for factor V Leiden, prothrombin 20210A, antithrombin, protein C, and protein S may be indicated for patients under the age of 50 or those with paradoxical cerebral embolism. The treatment of acute ischemic stroke in patients with prothrombotic states is similar to that in patients without an identifiable prothrombotic condition, and may include antiplatelet agents, anticoagulants, or thrombolytic therapy in patients who otherwise meet eligibility criteria. The potential benefit of chronic anticoagulation therapy for the primary or secondary prevention of stroke in patients with prothrombotic states has not been addressed in controlled clinical trials. Specific therapeutic approaches for the prevention of stroke are established for patients with sickle cell disease, myeloproliferative disorders, and heparin-induced thrombocytopenia, and are under investigation for hyperhomocysteinemia and the antiphospholipid syndrome [3)].

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Rosi J Jr, Morais BA, Pecorino LS, Oliveira AR, Solla DJF, Teixiera MJ, Figueiredo EG. Hiperhomocysteinemia as a Risk Factor for Intracranial Aneurysms: a Case Control Study. World Neurosurg. 2018 Jul 24. pii: S1878-8750(18)31610-3. doi: 10.1016/j.wneu.2018.07.132. [Epub ahead of print] PubMed PMID: 30053565.

2)
Pang H, Fu Q, Cao Q, Hao L, Zong Z. Sex differences in risk factors for stroke in patients with hypertension and hyperhomocysteinemia. Sci Rep. 2019 Oct 4;9(1):14313. doi: 10.1038/s41598-019-50856-z. PubMed PMID: 31586136.
3)
Hiatt BK, Lentz SR. Prothrombotic States that Predispose to Stroke. Curr Treat Options Neurol. 2002 Nov;4(6):417-425. PubMed PMID: 12354368.