Central nervous system vasculitis and thrombophilia: insights from an angiography-based cohort

Sir,

Primary central nervous system vasculitis (PCNSV) is a rare, immune mediated inflammatory disorder restricted to intracranial vessels and represents a major diagnostic and therapeutic challenge. Unlike systemic vasculitides, PCNSV frequently presents with ischemic stroke or focal neurological deficits in the absence of marked systemic inflammation. Although hereditary thrombophilia is a well-established contributor to thrombotic cerebrovascular disease, its role in PCNSV remains unclear.

We retrospectively evaluated whether classical hereditary thrombophilia markers are over-represented in patients with angiography-confirmed PCNSV. Eleven patients fulfilling established diagnostic criteria and European Stroke Organization recommendations for PCNSV, all supported by digital subtraction angiography (DSA), were included. Thirty-four age- and sex-matched controls who had undergone thrombophilia testing for non-neurological indications served as the comparison group. Genetic analysis included Factor V Leiden, Prothrombin G20210A, methylenetetrahydrofolate reductase (MTHFR) C677T and A1298C polymorphisms, and Factor XIII V34L. Traditional vascular risk factors were also assessed. No statistically significant differences were observed between PCNSV patients and controls with respect to vascular risk factors or thrombophilia-associated genetic variants.

Within the PCNSV cohort, ischaemic stroke was the predominant clinical presentation. Cerebrospinal fluid analysis frequently demonstrated pleocytosis and elevated protein levels, and magnetic resonance imaging was abnormal in all cases. In contrast, systemic inflammatory markers such as erythrocyte sedimentation rate were only mildly elevated, consistent with a localised inflammatory process confined to the central nervous system.

The present findings must be interpreted cautiously given the small sample size and retrospective, single-centre design. The absence of statistically significant associations may reflect limited statistical power, and our data do not exclude a contributory role of thrombophilia in individual cases. Rather, these results indicate that, within this angiography-based cohort, no enrichment of classical hereditary thrombophilia markers was observed among patients with PCNSV.

Our observations are consistent with the prevailing concept that PCNSV represents a vessel centric, immune-mediated inflammatory arteritis rather than a primary thrombophilic vasculopathy. While immunothrombotic mechanisms may contribute secondarily to vascular injury, inherited prothrombotic factors do not appear to constitute a dominant pathogenic driver. The systematic use of DSA in all patients strengthens diagnostic specificity and reduces misclassification with non-inflammatory intracranial vasculopathies.

From a clinical standpoint, these findings suggest that routine hereditary thrombophilia screening may have limited diagnostic yield in patients with suspected PCNSV and should not delay cerebrospinal fluid analysis, advanced neuroimaging, or angiographic evaluation. Larger multicentre studies incorporating functional coagulation assays and broader genomic approaches are needed to further clarify the complex relationship between thrombophilia and central nervous system restricted vasculitis.

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