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Idiopathic hyperhomocysteinemia and Peripheral neuropathy

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Abstract

Peripheral neuropathy (PN) can originate from numerous causes, such as metabolic, infectious, inflammatory, toxic, malnutritional, inherited, adverse effects to certain drugs or radiation, or autoimmune-mediated mechanisms. However, a large percentage (32-70%) of all peripheral neuropathies after routine clinical evaluations remains "idiopathic". Those patients who were diagnosed with idiopathic neuropathy may have an underlying etiology that is less than optimally investigated. One such neuropathy may be caused by idiopathic hyperhomocysteinemia (HHcy) in the absence of folic acid and/or B12 deficiency. It is well known that homocysteine is an intermittent metabolite of methionine. Increased plasma level of homocysteine, namely HHcy, results from disturbed methionine metabolism caused by folic acid deficiency with or without vitamin B12 deficiency. Previous paradigms suggest that HHcy caused by folic acid deficiency may result in only megaloblastic anemia while vitamin B12 deficiency causes both anemia and neurologic symptoms. However, recent studies reveal that HHcy itself may increase the frequency of cardiovascular and stroke, cognitive impairment, dementia, and Parkinson's disease, indicating a role of HHcy in the development of neurologic disorders. We have recently reported that idiopathic HHcy with normal levels of folic acid and vitamin B12 without any identifiable etiology is an independent risk factor for developing PN involving ~1.8% of neuropathy patients. Neurophysiologic studies showed slowing conduction in both peripheral and central pathways, indicating conduction abnormality. Our findings suggest that the idiopathic HHcy-induced neuropathy is a distinct clinical entity involving both peripheral and central nervous system.

Biography

Jin Jun Luo, MD, PhD, FAAN, FAANEM, is an Associate Professor of Neurology and Pharmacology, and director of EMG and Neuromuscular Medicine at Temple University School of Medicine in Philadelphia, PA, USA. He is board certified in Neurology, Clinical Neurophysiology, Neuromuscular Medicine, and Electrodiagnostic Medicine. Dr. Luo is an ad hoc reviewer for many peer-reviewed professional journals and serving as an executive editorial board member for the Journal of Neurology and Neurophysiology, the Brain Disorders & therapy, and the International Journal of Physical Medicine & Rehabilitation. He is a frequent contributor to neurology literature.