Human immunodeficiency virus-associated vasculopathy

Human immunodeficiency virus-associated vasculopathy and opportunistic infections are common causes of HIV-related ischemic stroke. Furthermore, subtypes of HIV-associated vasculopathy may manifest as a result of an immune reconstitution-like syndrome after starting ART. A better understanding of this mechanism may point toward new treatments ¹⁾.

Human immunodeficiency virus (HIV)-associated vasculopathy can cause ischemic stroke; however, there is limited evidence on optimal management.

Mizushima et al. reported a case of acute ischemic stroke due to progressive internal carotid artery stenosis in an HIV-positive patient. Superficial temporal artery to middle cerebral artery bypass), in addition to the best medical treatments, prevented stroke progression.

A 39-year-old man with HIV infection presented with a sudden onset of aphasia and right hemiparesis. Magnetic resonance imaging revealed an ischemic lesion in the leftbasal ganglia and concentric thickening of the vessel wall in the terminal portion of the bilateral ICAs. Despite maximal medical treatments for HIV-associated vasculopathy and possible opportunistic infections, bilateral ICA stenoses progressed, leading to a second hemodynamic stroke event. Because tissue plasminogen activator treatment failed, they performed STA-MCA bypass. A significant improvement in neurological symptoms and cerebral blood flow was observed after surgery. No further stroke events occurred during the continuation of medical treatments².

Research

Tat protein released from HIV-infected blood-borne leukocytes can contribute to the breakdown of the blood-brain barrier (BBB) and induction of inflammatory responses and can provide entry for HIV into the brain. To mimic this pathology, Tat was injected into the tail vein of C57BL/6 mice. Treatment with Tat markedly upregulated expression of cyclooxygenase-2 (COX-2) and decreased expression of tight junction proteins, occludin and zonula occludens-1 (ZO-1). These alterations were associated with the disruption of the BBB integrity as quantified by extravasation of Evans blue dye into the brain tissue. In addition, direct treatment of brain microvessels with prostaglandin E(2), a product of COX-2 activity, resulted in decreased expression of both occludin and ZO-1. To determine if upregulation of COX-2 is involved in the disruption of tight junction proteins and BBB integrity, mice were pretreated with rofecoxib, a specific inhibitor of COX-2, prior to Tat treatment. COX-2 inhibition attenuated Tat-induced alterations of occludin expression. However, rofecoxib was ineffective in preventing downregulation of ZO-1 expression and increased BBB permeability. These results suggest only a limited role of COX-2 overexpression in the loss of tight junction integrity and the BBB breakdown in HIV-related brain diseases ³.

Human immunodeficiency virus-associated aneurysm

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Benjamin LA, Allain TJ, Mzinganjira H, Connor MD, Smith C, Lucas S, Joekes E, Kampondeni S, Chetcuti K, Turnbull I, Hopkins M, Kamiza S, Corbett EL, Heyderman RS, Solomon T. The Role of Human Immunodeficiency Virus-Associated Vasculopathy in the Etiology of Stroke. J Infect Dis. 2017 Sep 1;216(5):545-553. doi: 10.1093/infdis/jix340. PMID: 28931222; PMCID: PMC5853476.

Mizushima M, Sugiyama T, Eguchi K, Tarisawa M, Tokairin K, Ito M, Hashimoto D, Yabe I, Fujimura M. Rescue extracranial-intracranial bypass for ischemic stroke secondary to progressive human immunodeficiency virus-associated vasculopathy. J Neurol Surg A Cent Eur Neurosurg. 2022 Feb 22. doi: 10.1055/a-1779-4142. Epub ahead of print. PMID: 35193153.

Pu H, Hayashi K, Andras IE, Eum SY, Hennig B, Toborek M. Limited role of COX-2 in HIV Tat-induced alterations of tight junction protein expression and disruption of the blood-brain barrier. Brain Res. 2007 Dec 12;1184:333-44. doi: 10.1016/j.brainres.2007.09.063. Epub 2007 Oct 2. PMID: 17976544.

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