The Spectrum of Cerebral Amyloid Angiopathy-related Disorders

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Cerebral amyloid angiopathy (CAA) is a condition characterized by cerebrovascular amyloid deposits and is classified into several types according to the amyloid protein involved (1). Among them, the sporadic CAA of amyloid β -protein (A β) type is most commonly found in elderly individuals as well as in patients with Alzheimer's disease (AD) (1).

Cerebrovascular A β deposits accompany pathological and functional changes of the cerebral blood vessels (CAA-associated vasculopathies). CAA-associated vasculopathies can lead to the development of hemorrhagic lesions [intracerebral lobar macrohemorrhage, cortical microhemorrhage, and convexal subarachnoid hemorrhage (SAH)], ischemic lesions (cortical infarction and ischemic changes of the white matter), and encephalopathies, which include subacute leukoencephalopathy caused by CAA-related inflammation/angiitis. Due to these clinical manifestations, CAA is associated with dementia, stroke, and encephalopathies (2).

Recent advances in diagnostic procedures, in particular neuroimaging, have enabled us to make clinical diagnoses of CAA without a brain biopsy. Sensitive magnetic resonance imaging (MRI), such as gradient-echo T2* imaging and susceptibility-weighted images, are useful to detect microhemorrhagic lesions and focal SAH. Amyloid imaging with the amyloid-binding positron emission tomography (PET) ligands, such as Pittsburgh Compound B (PiB), can detect CAA, although they cannot discriminate vascular from parenchymal amyloid deposits (1, 2). Furthermore, levels of A β 40 for CAA and anti-A β antibody for CAA-related inflammation may be useful markers for testing cerebrospinal fluid samples (1, 2). Investigations using these techniques have expanded the characterization of the spectrum of CAA-related disorders.

In this issue of Internal Medicine, Sengoku et al. report two cases of CAA-related encephalopathies, including a

typical case of CAA-related inflammation that occurred during the clinical course of AD and an atypical case of posterior reversible encephalopathy syndrome (PRES)-like changes in the cortical region with MRI and PiB PET findings suggestive of CAA (3). The prevalence of CAA in AD patients is more than 80%; therefore, determining predictive indicators for future occurrences of CAA-related disorders in AD is an important subject to be investigated (4). Clinical settings that may lead to the development of PRES include hypertension, eclampsia and pre-eclampsia, chemotherapy regimens, organ transplants, immunosuppressant medication, severe infections, chronic renal failure and dialysis, and autoimmune diseases. CAA-related vascular dysfunction may also be another predisposing factor of PRES (5). Further study is required to fully understand the pathophysiology and clinical spectrum of CAA-related disorders.

The author states that he has no Conflict of Interest (COI).

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