4th International symposium on Cognitive Neuroscience and Psychology

September 11-12 | 2025 in Barcelona, Spain

Yi Xu1, Xiaodi Wang2, Muhan Cao2, **Qinghua Hou2***

1.Department of Rehabilitation medicine, the seventh Affiliated Hospital, Sun Yat-sen University. Shenzhen, China,
2.Department of Neuroly, Clinical Neuroscience Center, the seventh Affiliated Hospital, Sun Yat-sen University. Shenzhen, China.

Covert CSF circulation impairment: concept, clinical insights and primary attempt to treat and detect

Metabolic waste and macromolecules in the brain are primarily cleared by the flow of cerebrospinal fluid (CSF), which drains through lymphatic pathways in the dura mater, skull base, and spinal meninges. This clearance system, though sophisticated, is structurally vulnerable and prone to stagnation. Aging or disease can reduce clearance capacity or increase waste production, raising the risk of CSF circulation impairment. Early-stage CSF circulation disorders are often subclinical, yet they may silently impair brain health and cognitive function before symptoms appear. Early detection and intervention are thus essential. However, covert CSF circulation impairment can be difficult to identify. Advanced MRI techniques show promise for detection by tracing water molecule movement, distinguishing lymphatic fluid from surrounding tissues, and dynamically assessing CSF flow. These imaging advances are expected to drive future research on covert CSF circulation disorders. Increased understanding in this area will boost research into cognition and sleep and support development of non-surgical therapies. In our presentation, we will highlight our preliminary interventions using enhanced external counterpulsation and our MRI-based evaluation approaches.

Keywords: Cerebrospinal fluid; Glymphatic; Lymphatics; enhanced external counterpulsation; Magnetic Resonance Imaging

Biography

Dr. Hou, M.D., is a Chief Physician , Received postdoctoral training at UVA and was a visiting scholar at HKU. He holds leading roles in multiple neurology societies and has led six research projects

ISBN: 978-1-917892-19-3

doi.org/10.51219/URForum.2025.Qinghua-Hou