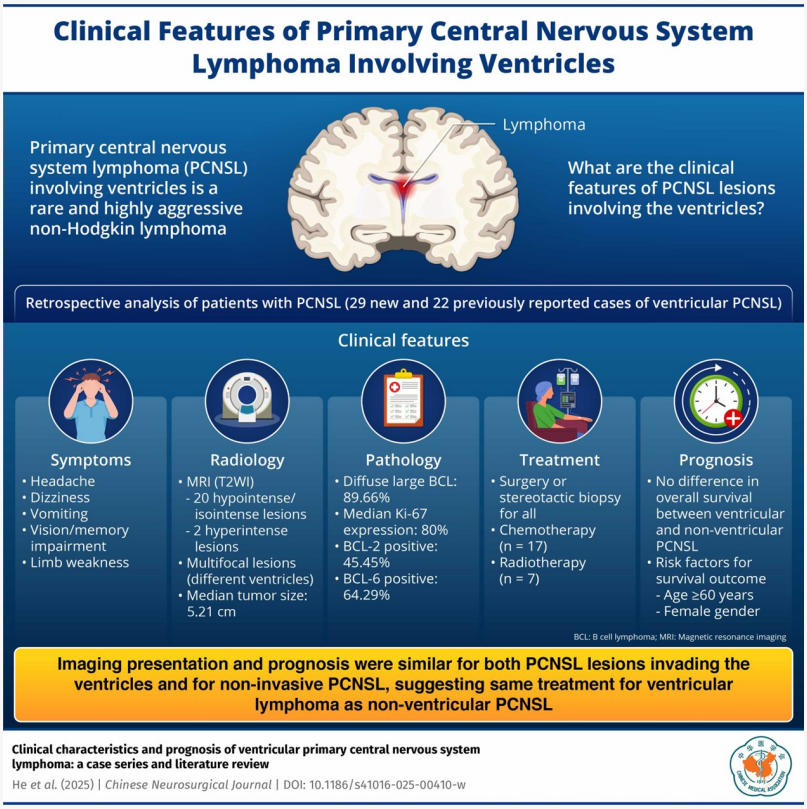
Chinese Neurosurgical Journal Study Decodes Clinical Features of Tumor in Brain Ventricles

Researchers trace how a rare tumor grows in the brain's ventricles, highlighting its clinical characteristics and prognosis



Researchers have now evaluated the clinical symptoms, treatment methods, pathological features, and radiological presentations of PCNSL involving ventricles, with the goal of evaluating their effect on outcomes and developing optimal treatment regimens.

BEIJING, BEIJING, CHINA, November 12, 2025 /EINPresswire.com/ -- Primary central nervous system lymphoma (PCNSL) is a rare and highly aggressive lymphoma or tumor of the brain. While ventricular brain lymphoma is even rarer, its clinical characteristics and treatment strategies remain less explored. Now, researchers have evaluated the clinical features of PCNSL lesions involving the ventricles. They found that this rare tumor type shares key features with other brain lymphomas, suggesting a unified treatment approach.

Deep within the brain lie four hollow chambers known as ventricles, vital spaces that circulate cerebrospinal fluid to protect and nourish the nervous system. But in rare instances, these ventricles can become unexpected site of a fast-growing and aggressive cancer called primary central nervous system lymphoma (PCNSL). Since PCNSL involving ventricles is a rare occurrence, studies highlighting its histologic findings, radiologic features, and therapeutic methods are limited to case reports.

To bridge this gap, a team of researchers led by Professor Xuejun Li from the Department of Neurosurgery, Central South University, China, conducted a retrospective analysis of patients with PCNSL to evaluate the clinical features of PCNSL lesions involving the ventricles. The study

was published in the journal of Chinese Neurosurgical Journal on 10 October 2025.

“Ventricular involvement in PCNSL is exceptionally rare and not much is known about it. Therefore, to expand our knowledge, we analyzed the clinical symptoms, treatment methods, pathological features, and radiological presentations of PCNSL involving ventricles, with the goal of evaluating their effect on outcomes and developing optimal treatment regimens,” says Prof. Li.

Notably, researchers identified 29 new cases and 22 previously reported cases of PCNSL involving ventricles. Of the patients included in the study, 32 were males and 19 were females, with a median age of 53 years. The clinical symptoms of PCNSL involving ventricles were found to be different from those not involving ventricles. Specifically, most of the patients with ventricular PCNSL experienced headache. Other common symptoms observed in patients with ventricular PCNSL included dizziness, nausea, vision and memory impairment, and limb weakness.

The magnetic resonance imaging (MRI) analysis revealed hypointense or isointense lesions on T2-weighted imaging. In contrast, T2-weighted imaging identified most of the lesions as isointense or hypointense and two lesions as hyperintense. In addition, enhancement and edema were reported in all 22 cases without any necrosis, cystic degeneration, or calcification. Remarkably, six patients’ showed hydrocephalus due to large size of tumor with the median size being 5.21 cm. Moreover, 45.45% cases were BCL-2 and 64.29% cases were BCL-6. Furthermore, median Ki-67 of PCNSL involving the ventricle was found to be 80%.

Importantly, the researchers identified age over 60 years and female gender as key factors associated with poorer survival, while surgical method, number of lesions, and chemotherapy type did not significantly affect patient outcomes. Most patients underwent either tumor resection or biopsy, followed by high-dose methotrexate-based chemotherapy, the standard PCNSL regimen.

Overall, the findings suggest that despite its unusual location, ventricular PCNSL behaves much like other forms of brain lymphoma. MRI scans revealed that these tumors often show more variable signals on T2-weighted imaging, but their overall radiologic and pathological features remain consistent with conventional PCNSL.

“Our study reveals that PCNSL lesions invading the ventricles exhibited clinical features and outcomes similar to those with non-ventricular PCNSL. Hence, we recommend same treatment strategy used for PCNSL in general, involving surgical removal or biopsy followed by a combination of chemotherapy, and other therapies should be used for the treatment of PCNSL involving the ventricle depending on the patient’s specific case,” concludes Prof. Li.

Reference

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About Central South University
Central South University (CSU), located in the historical and cultural city of Changsha, Hunan Province, China, is an ideal ground for academic pursuit. The University comprises 31 secondary colleges, boasting 3 large Class A tertiary comprehensive hospitals that are comparable to the Peking Union Medical College Hospital, namely Xiangya Hospital, the Second Xiangya Hospital and the Third Xiangya Hospital and Xiangya Stomatological Hospital. CSU has a rich history of over one hundred years as an educational institution. It actively responds to the reform of China's higher education system and advocates the principles of "Create Knowledge and Serve Society." Pursuing "Virtue, Truth, Perfection, Inclusiveness," CSU has made significant progress in its overall strength by adhering to its own operational characteristics and aligning with the major demands of the country and society.
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About Professor Xuejun Li from Central South University
Dr. Li Xuejun is a Chief Physician and Professor at the Department of Neurosurgery, Xiangya Hospital, Central South University, as well as a doctoral supervisor. He received Ph.D. in Neurosurgery from Central South University in 2003. He is also the Director of the Hunan Brain Tumor International Science and Technology Innovation Cooperation Base. His research focuses on neuro-oncology and neurosurgery. With a distinguished career, Professor Li has earned several accolades, including the "People's Good Doctor (Neurotumor) Special Contribution" and the "Respecting Life Honoring the Doctor" Neurosurgery Specialist Elite Award.

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