Atypical Presentation of Primary Central Nervous System Non-Hodgkin Lymphoma in Immunocompetent Young Adults

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Key words
- CNS lymphoma
- Immunocompetent
- Intraventricular
- Primary choroid plexus
- Septum pellucidum

Abbreviations and Acronyms
CNS: Central nervous system
CSF: Cerebrospinal fluid
CT: Computed tomography
DLBCL: Diffuse large B-cell lymphoma
EVD: External ventricular drain
MRI: Magnetic resonance imaging
PCNSL: Primary central nervous system non-Hodgkin lymphoma

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OBJECTIVE: **Primary central nervous system non-Hodgkin lymphoma (PCNSL) is a malignant lymphoma limited to the cranial-spinal axis in the absence of systemic lymphoma. Historically, PCNSL accounts for fewer than 5% of all cases of primary intracranial neoplasms. PCNSL is rare in immunocompetent young adults. Although the prognosis for PCNSL is poor, approximately 20%–30% percent of cases achieve a cure.**

METHODS: **We report two cases of PCNSL originating in the ventricle in otherwise healthy immunocompetent young adults.**

RESULTS: **A 27-year-old man presented with 10 days of nausea, vomiting, and headache and was found to have a large intraventricular mass emanating from the choroid plexus with resultant hydrocephalus. He underwent placement of external ventricular drain and systemic and intrathecal chemotherapy for cytologically proven PCNSL. A 31-year-old pregnant woman presented with headaches, vision difficulties, and ataxia and was found to have a septum pellucidum mass. She underwent craniotomy and subtotal resection of the mass with subsequent systemic therapy and whole brain radiation for treatment of PCNSL.**

CONCLUSIONS: **To our knowledge, this is the first report of primary CNS lymphoma of the choroid plexus and septum pellucidum in otherwise healthy, immunocompetent young adults.**

INTRODUCTION

Primary central nervous system (CNS) lymphoma (PCNSL) is a relatively rare diagnosis. The increased longevity of patients with acquired and congenital immunodeficiency and the outbreak of acquired immunodeficiency syndrome has resulted in an increased incidence of PCNSL. PCNSL has many histologic pseudonyms including perithelial sarcoma, reticulum cell sarcoma, and microglioma (2, 15, 25). The incidence of PCNSL is 5 per 1 million person-years (26). The incidence remains high among older patients (>60 years old) who are mostly immunocompetent, but has decreased in younger patients with acquired immunodeficiency syndrome secondary to the advent of anti-retrovirals (20, 24). The incidence of PCNSL increased almost three times in the period between 1973 and 1984, but has since stabilized or slightly decreased in incidence (11, 21).

The CNS does not contain resident lymphocytes under normal circumstances, and lacks lymphatic vessels (26). The origin of PCNSL is thought to arise from late germinal center or postgerminal center lymphoid cells that subsequently localized to the CNS, possibly secondary to a not-yet delineated neurotropism, presumably a cellular adhesion molecule (3, 13). Another theory is that PCNSL may be a metastatic occult systemic lymphoma that escapes eradication only in the immunoprivileged CNS and is otherwise eliminated in the periphery by the immune system (26). The causative role of somatic gene alterations and underlying molecular mechanism of PCNSL has not yet been elucidated (16). All but 5%–10% of PCNSLs are diffuse large B-cell lymphomas (DLBCL) in immunocompetent patients (7, 22, 26). Epstein Barr virus is not involved in the pathogenesis in immunocompetent individuals (26). Patients typically present with neuropsychiatric signs (43%), high intracranial pressure (33%), seizures (14%), or ocular symptoms (4%) (4). Seizures are less commonly encountered because of the predominance of subcortical white matter involvement seen in CNS lymphoma.

CASE REPORTS

We report two cases of intraventricular PCNSL in young, immunocompetent patients.

Case Report 1

History. A 27-year-old man with no significant past medical history presented with 10 days of headache, nausea, vomiting, and progressive confusion. Computed tomography (CT) of the head without contrast showed obstructive hydrocephalus and a hypercellular left intraventricular mass ver-

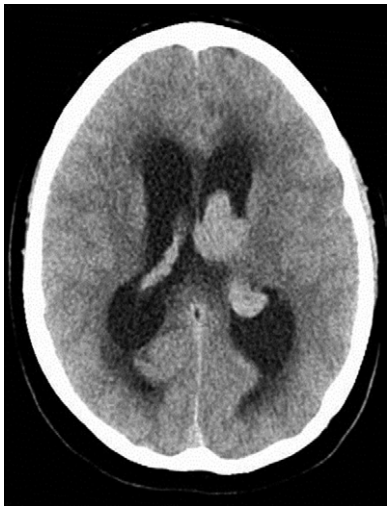

Figure 1. Pretreatment axial noncontrast head computed tomography of patient 1.

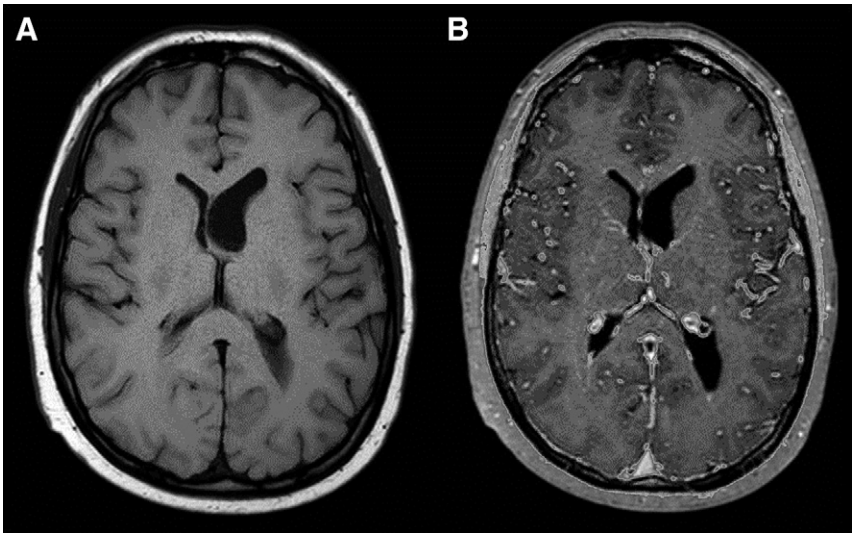

Figure 3. Post-treatment axial (**A**) noncontrast and (**B**) contrast enhanced magnetic resonance imaging of patient 1.

sus atypical hemorrhage (**Figure 1**). Magnetic resonance imaging (MRI) confirmed the intraventricular mass without sign of associated hemorrhage (**Figure 2**).

Operation and Pathologic Findings. A right frontal external ventricular drain (EVD) was placed emergently. Cerebrospinal fluid (CSF) was sent for cytology and flow cytometry. Pathologic evaluation was consistent with DLBCL.

Postoperative Course. Once the diagnosis of PCNSL was made, a subsequent complete workup was negative for systemic lymphoma. The patient was started on high dose dexamethasone and methotrexate with leucovorin rescue and rituximab. He also received two doses of DepoCyte (liposomal cytarabine) through the EVD. His hydrocephalus improved with chemotherapy and the EVD was subsequently removed and replaced with a CSF reservoir for continued intrathecal therapy and long-term surveillance. Follow-up CSF analysis remains negative for malignancy. At 1-month follow-up MRI showed resolution of the intraventricular mass (**Figure 3**). The patient remains neurologically intact and CSF remains negative 1 year after diagnosis.

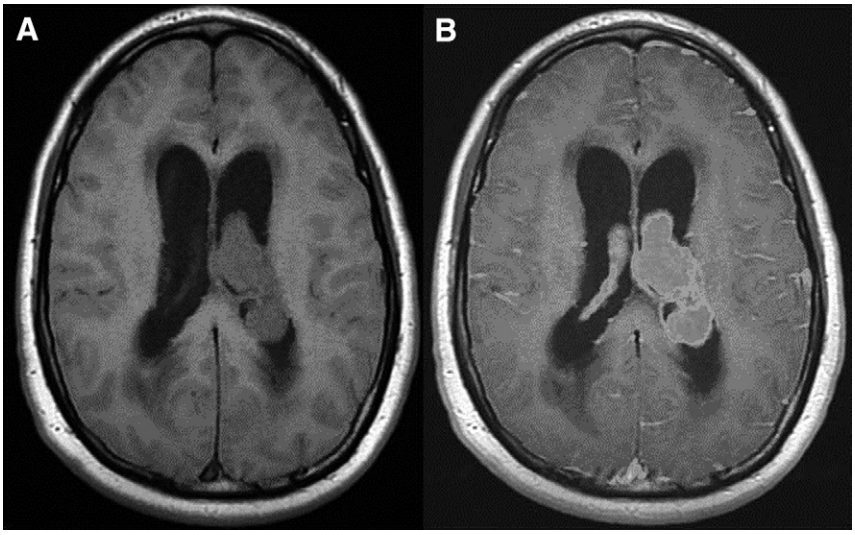

Figure 2. Pretreatment axial (**A**) noncontrast enhanced and (**B**) contrast enhanced magnetic resonance imaging of patient 1.

Case Report 2

History. A 31-year-old woman presented with severe headache, vision difficulties, and ataxia. Initially she presented to an outside hospital 1 year prior where she was found to have a septum pellucidum mass and obstructive hydrocephalus. She underwent placement of a ventriculoperitoneal shunt and biopsy of the mass. Pathology was inconclusive but was believed to be consistent with a benign behaving process such as a central neurocytoma. Her symptoms completely resolved and she was followed closely. A year later, she subsequently became pregnant and once again began to develop headaches and ataxia. Imaging at that time showed a dramatic increase in the size of the lesion (**Figure 4**). She was transferred due to the complexity of her situation with the tumor and her second trimester pregnancy.

Operation and Pathologic Findings. Because of the large increase in the size of the mass, the patient elected to proceed with craniotomy and tumor resection. It was thought that this may be a central neurocytoma. The frozen section analysis of the tumor intraoperatively was consistent with lymphoma. After intraoperative consultation with