Leptomeningeal metastasis of classical Hodgkin lymphoma in a patient with malignant posterior reversible encephalopathy syndrome

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An HIV-negative, immunocompetent 39-year-old man presented at Victoria Hospital (London, ON, Canada) in February, 2017, with a 10-week history of fever and lymphadenopathy. Lymph node biopsy confirmed a new diagnosis of stage IV nodular sclerosis classical Hodgkin lymphoma. 2 weeks after his second course of bleomycin, vinblastine, dacarbazine, and cyclophosphamide chemotherapy, he developed headaches, confusion, visual impairment, and tonic–clonic seizures, with a blood pressure of 182/109 mm Hg. MRI scan of the head without gadolinium showed T2-weighted fluid-attenuated inversion recovery (FLAIR) hyperintensity involving the bilateral occipital lobes and the left frontal lobe, consistent with posterior reversible encephalopathy syndrome. His hypertension and acute kidney injury resolved (the hypertension with the use of antihypertensives such as labetalol, and the acute kidney injury with a short course of crystalloid infusion [normal saline]), and he was started on anti-seizure treatment with lacosamide 150 mg twice daily, resulting in clinical resolution of his neurological symptoms. The day after his third course of chemotherapy, he became febrile and again had tonic–clonic seizures. An MRI scan, which was done 1 week later because of the patient's decreased level of consciousness (he was not alert and not readily responsive), showed resolution of the previous lesions, and new white matter lesions with substantial mass effect with midline shift (shift of the brain past its centre line) that ultimately led to the patient's death (figure, A). Autopsy revealed severe right hemispheric leukoencephalopathy consistent with posterior reversible encephalopathy syndrome. More suprisingly, pathology showed incidental metastatic spread of classical Hodgkin's lymphoma in the leptomeninges in the right hemisphere (figure, B).

Nearly all cases of CNS lymphoma are non-Hodgkin lymphomas. Cerebral metastasis of classical Hodgkin's lymphoma is exceptionally rare, with an estimated prevalence of 0·02–0·5% in all patients with Hodgkin's lymphoma, although the reasons for its rarity are unknown. Posterior reversible encephalopathy syndrome classically presents with seizures, confusion, headache, and visual disturbances, accompanied by subcortical vasogenic oedema preferentially involving the parieto-occipital lobes. Although most cases resolve with supportive therapy (eg, antihypertensives) and removal of risk factors (eg, drug exposures), posterior reversible encephalopathy syndrome can rarely result in fatal irreversible malignant oedema. Risk factors include hypertension, kidney dysfunction, and drug exposures including chemotherapeutic agents, and therefore it is an important non-metastatic differential diagnosis for sudden neurological decline in a patient with cancer.

Contributors
All authors contributed to study concept and design, acquisition of data, and drafting and critical revision of the manuscript for intellectual content. Written informed consent to publication was obtained.

Declaration of interests
We declare no competing interests.

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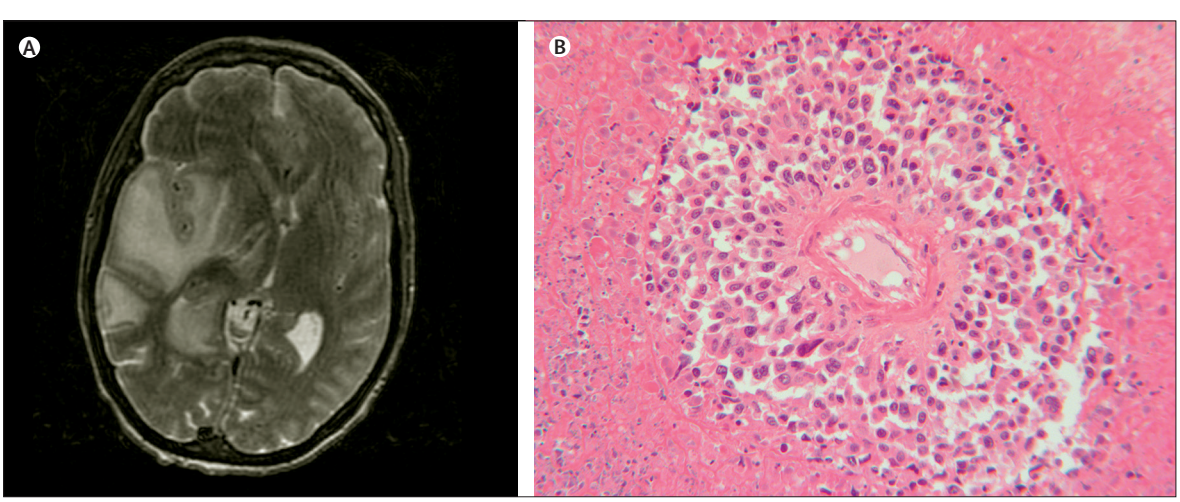

Figure: **Leptomeningeal metastasis of classical Hodgkin lymphoma in a patient with malignant posterior reversible encephalopathy syndrome**
(A) Axial MRI shows dramatic right hemispheric leukoencephalopathy causing a mass effect of 17 mm. (B) Haematoxylin–eosin-stained microscopy (x 25 magnification) shows a small leptomeningeal blood vessel surrounded by a mantle of classical Hodgkin lymphoma cells with areas of necrosis.