

# A Case of Brainstem Involvement in Progressive Multifocal Leukoencephalopathy

A 71-year-old man with history of...

Type 2 diabetes

Hypertension

Chronic lymphocytic leukemia (CLL)

...presented with



Subacute onset wide-based gait



Right hemiataxia diagnosed as ischemic stroke



Altered mental status requiring intubation



Absence of horizontal eye movements



Spasticity with no limb movements



Bilateral extensor plantar responses

**Question for consideration**  
What are the possible causes of rapidly progressive brainstem and cerebellar symptoms?



## Investigations

- CT** ▶ Hypodensity in the right middle cerebellar peduncle
- MRI** ▶ Abnormal T2/FLAIR signal in the middle cerebellar peduncles extending into the cerebellum, pons, and pontomedullary junction
- EEG** ▶ Diffuse encephalopathy
- Blood tests** ▶ Unremarkable
- CSF PCR** ▶ Positive for John Cunningham virus (JCV) DNA

## Differential diagnosis



Inflammatory disorders

Neuro-Behcet disease, demyelinating disorders, neurosarcoidosis

Infections

Listeria, enteroviruses, herpesviruses

Neoplastic aetiologies

Lymphoma, brainstem glioma

Toxic and metabolic causes

Posterior reversible encephalopathy syndrome  
Osmotic demyelination syndrome

## Final diagnosis

Rhombencephalitis secondary to progressive multifocal leukoencephalopathy (PML) caused by JCV



Autopsy: PML

**PML is an incurable disease and may present with brainstem involvement and occur in association with CLL, even if the patient is stable without history of immunotherapy**