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Teaching Video NeuroImage: Pendular Vertical Oscillations in a Young Adult With a Pontine Hemorrhage

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Soumava Mukherjee: Major role in the acquisition of data

Nilam Singh: Major role in the acquisition of data

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A 23-year-old woman presented with constant pendular vertical oscillations in primary gaze along with bilateral horizontal gaze palsy [Video 1] within 3 days of acute pontine haemorrhage [Figure]. There was no palatal tremor. Gaze palsy was likely due to involvement of the paramedian pontine reticular formation. Pendular vertical oscillations (PVOs) after pontine stroke are a unique clinical finding initially described as ‘ocular myoclonus’. Pathophysiology of PVOs include: (1) synchronized neural oscillations from the inferior olive following disruption of the central tegmental tract, (2) unstable integration of vertical gaze in the interstitial nucleus of Cajal from damage to the pontine paramedian tract or (3) injury to omnipause neurons.<sup>1</sup> Differential diagnosis includes ocular bobbing and oculopalatal tremor, both more common after brainstem stroke. However, ocular bobbing consists of intermittent fast downward movement with slow return to midline. Oculopalatal tremor is a delayed manifestation of injury to the dentato-rubro-olivary pathway manifesting as pendular nystagmus with vertical and/or torsional component synchronous with palatal tremor.<sup>2</sup>

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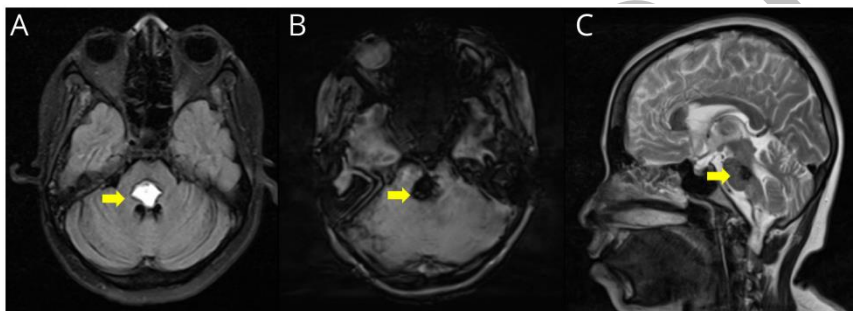
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## Legends:

**Video 1. Continuous pendular vertical oscillations in primary gaze along with bilateral horizontal gaze palsy**

**Figure. Axial T2FLAIR MRI (A) showing acute haemorrhage at dorsal pons with blooming in SWI (B) and follow-up sagittal T2 MRI (C) image showing haemorrhagic residue. Arrows indicate the site of haemorrhage.**



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