Teaching Video Neurolmage: Diagonal Saccade Testing Can Localise Slow Saccades

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A 24 year old woman presented with blurry vision. Examination showed left eye esotropia and slow horizontal saccades bilaterally. Vertical saccade velocity was normal, and there was a “round the houses” sign on diagonal saccades (Video 1). Video Head Impulse Testing (vHIT) showed reduced gains in the posterior canals bilaterally with relative preservation of anterior and horizontal canal function bilaterally, suggestive of medial longitudinal fasciculus involvement of her lesion.

This 24 year old woman presented with blurred vision with examination findings of slow horizontal saccades bilaterally and normal vertical saccade velocity with “round the houses” sign on diagonal saccades. Video Head Impulse Testing (vHIT) showed reduced gains only in the posterior canals bilaterally. Slowing of the horizontal saccades with sparing of the vertical saccades localises the lesion to the paramedian pontine reticular formation (PPRF) bilaterally with sparing of the riMLF (rostral interstitial nucleus of the medial longitudinal fasciculus)\(^1\). Reduced gains in both posterior canals on vHIT indicate involvement of the medial longitudinal fasciculus bilaterally\(^2\), findings that are consistent with the imaging, which shows enhancing lesion in the dorsal pons (Figure 1). Cerebrospinal fluid tested positive for aquaporin-4 antibodies. The patient was treated with five days of plasma exchange, with clinical improvement in the saccades.

Video 1: Video of Eye Movements

Video shows evidence of left eye esotropia on primary gaze and bilateral slowing of horizontal saccades with normal vertical saccade velocity. Testing of diagonal saccades shows that bilaterally the horizontal component of the movement lags behind the vertical, causing a curved trajectory – the ‘round the houses’ sign.
Figure 1: Investigations

FLAIR MRI Imaging showing hyperintensity in the dorsal pons evident on coronal (A), axial (B) and sagittal (C) imaging. Video Head Impulse testing shows reduced gains in the posterior canals bilaterally (D).

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References


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