Unilateral Blepharospasm and Blepharoptosis with Bilateral Vertical Gaze Palsy in Thalamic Hemorrhage

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Abstract
We present here case of a 49 year-old female with unilateral left sided blepharospasm and blepharoptosis, bilateral vertical gaze palsy, right hemiparesis and right seventh nerve supranuclear palsy as a manifestation of left thalamic hemorrhage. To our knowledge this is the first reported case of a combination of unilateral blepharospasm and blepharoptosis with bilateral vertical gaze palsy.

Introduction
Supranuclear lesions of eyelid movements are a rare finding in stroke patients. Blepharospasm, blepharoptosis, and eyelid apraxia are various types of supranuclear manifestations of lid movements. Our patient had unilateral blepharospasm and blepharoptosis, bilateral vertical gaze palsy and no oculomotor palsy. The association of these findings with thalamic hemorrhage gives some insight to the supranuclear pathway of eyelid movement control in humans.

Case Report
A 49-year-old female developed sudden onset weakness on right half of body with deviation of angle of mouth towards left side. In addition, she kept her left eyebrow raised for a clear vision. There was no sensory deficit, cerebellar signs, loss of consciousness, or seizure. There was no past history of stroke. On examination her blood pressure was 150/90 mm Hg, rest of the general physical examination was normal. CVS, Chest, and abdomen were normal. On CNS examination she was conscious, and oriented. She showed impairment of memory both recent and remote on testing mini-mental scale (registration and recall) and important past events in life. On eye examination she had partial ptosis on left side and had her left eyebrow raised. (Figure 1C) On attempting to open her left eyelid passively her eyes

Fig. 1 : (A,B) Normal horizontal gaze; (C) Left sided partial ptosis and raised eyebrow; (D) impaired vertical gaze bilateral frontalis active; (E) deviated angle of mouth to left; (F) no resistance to eyelid opening on right side; (G) patient is resisting eyelid opening on left side; (H,I) Gradient echo and T-1 weighted sequences respectively showing lesion in thalamomesencephalic region. Sequences show hyperintense signals of hemorrhage in thalamic area extending into the upper midbrain region.
closed tightly suggesting presence of blepharospasm. (Figure 1G) There was no ptosis and no resistance to passive opening on right side. (Figure 1F) On oculomotor testing she showed inability to look up and down in both eyes with normal horizontal gaze. (Figure 1A,B) On attempting to look up she developed wrinkling on forehead due to the contraction of frontalis muscle. (Figure 1D) The doll's eye movements, both vertical and horizontal, were normal. Pupils were equal and reacting to light bilaterally. She also had right seventh nerve supranuclear palsy (Figure 1E) and right hemiparesis. MRI showed intraparenchymal hemorrhage in left thalamic region extending to upper midbrain with perilesional edema in thalamus and midbrain. (Figure 1H,I) Final diagnosis of left thalamic hemorrhage with right hemiplegia, right seventh supranuclear palsy, left blepharoptosis, left blepharospasm, and bilateral vertical gaze palsy was kept.

**Discussion**

Thalamic hemorrhages present with altered sensorium, memory disturbances, vertical gaze palsy, hypoesthesia, and sectoranopias. The surrounding edema may cause contralateral hemiparesis. Thalamic hemorrhages can extend to involve upper midbrain presenting with a combination of ptosis and oculomotor palsy, and vertical gaze palsies. There have been case reports of various combinations of the above findings. The innervation of the LPS is bilateral and so, it is spared in unilateral brain lesions, and because it has a single nucleus that is why, with most nuclear involvements, ptosis is bilateral. There is no previous case report to our knowledge of a combination of unilateral blepharoptosis, unilateral blepharospasm, and bilateral vertical gaze palsy without the involvement of oculomotor nerve, with contralateral hemiparesis and seventh nerve supranuclear palsy.

Supranuclear disorders of eyelid are rarely seen in the stroke patients. The eyelid is closed by the orbicularis oculi (OO) and opened by the levator palpebrae superioris (LPS) and these muscles show a reciprocal innervation. In spontaneous blinking (SB) LPS inhibition precedes and outlasts the OO activation. The supranuclear disorders of LPS-OO relationship and are divided into three groups:

1. The disorders of the lid-eye coordination such as lid retraction seen in Parinaud’s syndrome, parkinsonism, and progressive supranuclear palsy.
2. The disturbances of blinking and lid posture maintenance like Blepharospasm (BSP) and blepharoclysis (BCO) or blepharoptosis occurring in idiopathic dystonias and basal ganglia diseases and, less frequently, in rostral brainstem lesions.
3. The alteration of voluntary lid movements like impairment of Bell’s phenomenon, the voluntary eyelid closure palsy, and the so-called cerebral ptosis, all related to lesions of frontal cortical areas and/or the corticospinal system.

BSP occurs due to involuntary overactivity of the OO, with normal LPS activity. BCO or blepharoptosis (lid opening apraxia) is an overinhibition of the LPS with no evidence of ongoing OO activity. BSP and blepharoptosis both may coincide in the same patient as was seen in our patient, which is explainable by the hemorrhage in basal ganglia region which controls the supranuclear movements of eyelids.

The patient also had vertical conjugate gaze palsy with intact reflex eye movements, which is explainable by the involvement of upper midbrain thalamic junction. The centre for control of vertical gaze is in rostral interstitial nucleus of medial longitudinal fasciculus. Unfortunately the patient was lost to follow-up and we couldn’t see the long-term consequences of the findings. Ocular abnormalities are overlooked by most residents as the physical weakness of hemiparesis and facial palsy are the main concerns of the patient, but noting these findings can help improve the post stroke rehabilitation of the patients. Elderly patients with stroke are more prone to falls and resulting fractures. Proper counseling regarding visual correction especially cataract surgery should also be provided to the attendants, because cataracts, gaze palsies, blepharoptosis, blepharospasm, and residual limb weakness can lead to a very poor quality of life in absence of proper post stroke rehabilitation.

**References**