

Vertical synergistic divergence: To be or not to be, that is the quintessential question

Dear Editor,

We do not concur and reiterate that clinical picture cascades down consummately to a hallmark bilateral Brown Syndrome (BBS) presentation.^[1-3] Documentation of forced duction test results, ductions, measurements of deviation in prism diopters in nine cardinal gazes with either eye fixing, fundus photographs for torsion, in tandem with findings on neuroimaging/surgical exploration and surgical outcomes would be seminal in sifting the maze, but reports skirt all of that.^[1,3]

Full bilateral elevation in abduction with gross bilateral limitation of elevation in adduction with down-shoot of adducted eye consistently in side, up and down gazes, with globes nailed in down position and negative head tilt test results, unequivocally cohere to a diagnosis of BBS. An alternative diagnosis can only be entertained in the presence of negative exaggerated forced duction tests, which were not done.^[1,3] The report is cryptic as to whether one or both eyes are having 3rd nerve palsy, the extent of involvement, recovery and aberrant innervation, if any present.^[1,3] Either eye is dipping in adduction, and the left eye will also dip if the right eye is allowed to fixate and elevate in slight abduction.^[3] No light is shed on the plausible location/pathway/mechanism/causation of the expounded synergistic vertical divergence involving only the right eye, in view of the facts that up gaze fibers freely cross in the posterior commissure, whereas down gaze fibers are uncrossed, and the superior rectus (SR) receives crossed innervation through the opposite subnucleus. It follows that proposed synergistic divergence/convergence cannot be conflated via up gaze fibers at the supranuclear level.

Neither can it be conflated at the nuclear/infranuclear level. Superior oblique (SO) overactions (not known whether it is primary or secondary) as propounded^[1,3] do not produce globes nailed-in down gaze in adduction. In 3rd nerve palsy, as the depressor action of SO is compromised, they instead cause intorsion. Thus, bilateral overdepression in adduction sans intorsion cannot be ascribed to bilaterally overacting SOs due to (right) 3rd nerve palsy as surmised.^[1,3] There is nothing proximate to "no significant ocular torsion," as torsional position of the globe is a state and, therefore, it may only be normal or abnormal.^[3] Further, the downshoot is only in adduction, not in abduction, and therefore cannot be explained by aberrant innervation of SR as SRs act in abduction.^[1,3] The SR has to be paretic to undergo aberrant innervation; the report does not state so^[3] and resultant cocontraction of vertical recti on up gaze will engender convergence retraction instead.

Overaction of SOs, downshoot and widening of palpebral fissure in adduction is known in Brown Syndromes, and is the likely cause of asymmetrical underdepression of both eyes in abduction, the hallmark finding militating against BBS as per the report.^[1] No perfidy will be committed anyway if congenital 3rd nerve palsy and BBS coexist. In the absence of irrefutable documentary evidence on forced duction tests against BBS and nine gaze deviations fixing with either eye, no meaningful conclusions can be drawn about muscle overactions/underactions and any abstruse synergistic vertical divergence/convergence.

Thus, the proposed esoteric expositions about misinnervation and synergistic divergence are bereft of any neuroanatomical substrate at supranuclear/nuclear/infranuclear levels, and are

overtly speculative, emanating from a skewed interpretation of a hallmark congenital BBS presentation.^[1,3]

**Pramod Kumar Pandey, Pankaj Vats, Anupam Singh,
Neha Rathi, Abhishek Sharma, Shagun Sood**

Guru Nanak Eye Centre, Maulana Azad Medical College,
University of Delhi, New Delhi, India

Correspondence to: Prof. Pramod Kumar Pandey,
Guru Nanak Eye Centre, Maulana Azad Medical College,
University of Delhi, New Delhi – 110 002, India.
E-mail: pkpandey_001@yahoo.co.in

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