Potential Clinical and Radiographic Horizontal Gaze Deviation an Early Sign of Stroke

Dear Editor

The recent article from Jiang et al "Degree of Conjugate Gaze Deviation on CT Predicts Proximal Vessel Occlusion and May Expedite Endovascular Therapy," *Journal of Stroke and Cerebrovascular Disease* 2019; 28:1093-1098[1] provides valuable information that may lead to early stroke intervention. They found that radiographic horizontal gaze deviation (h-CGD) detected by CTA is frequently associated with a proximal arterial occlusion (either ICA or proximal segments of the MCA); the h-CGD was always ipsilesional. This compelling association may increase timely ischemic stroke intervention.

The average NIH stroke scale score (NIHSS) in their patients was 14, which suggest that additional neurologic deficits localized the lesion to the cerebral hemispheres; given that the maximum NIHSS for clinical-fixed horizontal gaze deviation is 2. It would be helpful to learn how many of their patients had clinical gaze deviation (grades 1 or 2) and the gaze deviation contribution to the average NIHSS; this information is probably available in their NIHSS data. If horizontal gaze abnormality was clinically absent, it is possible that the effect of the supine position or eyelid closure in anterior circulation strokes precipitated the h-CGD found by CT scan.

Finding radiographic h-CGD in anterior circulation stroke is of significant value as demonstrated by Jiang et al[1]; however, h -CGD detection goes beyond its role in facilitating stroke intervention after a CTA if clinically recognized prior to arrival to the medical center.[2] Whereas it is unlikely that h-CGD in proximal arterial lesions of the cerebral hemispheres will be an isolated finding, it would be important to be aware of the entire spectrum of radiographic h-CGD.

Previous publications report radiographic h-CGD in acute lateral medullary[3] and cerebellar strokes,[4] and importantly in acute vestibular neuritis.[5] The ocular deviation in these cases is concordant in CT and MRI studies in patients with acute vestibular syndromes (regardless of the lesion location peripheral or central), if central, posterior circulation stroke is the most common cause. The h-CGD direction generally correlates with the slow phase of horizontal nystagmus (because the fast phases of nystagmus usually diminish when the patients are in the supine position, in darkness, or with eyelid closure). Additional correlation with ocular lateropulsion (maximal eye deviation with 3-5 second eyelid closure) is present particularly in PICA strokes.[2] In cerebellar strokes, the ocular deviation is contralesional probably because the nystagmus direction (fast phase) may frequently be ipsilesional. The VOG algorithm could process the h-CGD in 3 clinical scenarios: anterior circulation stroke, posterior circulation stroke, and vestibular neuritis.

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https://doi.org/10.1016/j.jstrokecerebrovasdis.2019.104389

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DOI of original article: http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2018.12.037.
1052-3057/$ - see front matter