LETTER TO THE EDITOR

The “Morning Glory Sign” May Lead to False Impression According to Slice Angle

We read with interest the report by Adachi’s group with its important reminder in applying the morning glory sign and would like to comment on this subject.

It is more important and meaningful to evaluate directly the marginal morphology of the mesencephalic tegmentum, which contains functional structures, such as the oculomotor and gaze centers, than to assess the mid-sagittal configuration, which may not include features relating to the pathology of the progressive supranuclear palsy (PSP). The morning glory sign on the axial image, however, is influenced much more by slice location and angle than thickness. For this reason, this sign becomes unreliable in sensitivity and specificity.

Although Fig. 1B parallel to the nasion-pontomedullary junction line shows the tegmentum to be flat, Fig. 1C parallel to the anterior commissure-posterior commissure line demonstrates it to be convex. In this way, the “true” morning glory sign may be obscured (false negative) at a shallow slice angle because of improper setting. Even a thinly sliced axial image could not show the precise location of Point A (the tectum-tegmentum junction) and could mislead the diagnosis if both the superior and inferior colliculi appear on the same plane in a patient whose brainstem is at an obtuse angle to the cerebrum. In addition, the sign will not lead directly to the diagnosis of PSP, as shown in more than a few cases with “false” morning glory sign such as that in as Fig. 1 and the patient with atrophy of multiple systems we mentioned previously.

The nasion-pontomedullary junction line is an individually different and unreliable baseline because of the variable misregistration between the skull and brain, whereas the anterior commissure-posterior commissure line defined on the brain parenchyma itself remains much more constant. Moreover, in institutions that usually employ the anterior commissure-posterior commissure line protocol, it may be troublesome and waste time to re-perform magnetic resonance imaging of the nasion-pontomedullary junction in a patient suspected of having PSP. In contrast, because a mid-sagittal image can be obtained easily and reliably in any institution, the penguin-silhouette sign on a midsagittal image will be a more stable criterion for PSP.
References


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