Brainstem cavernous malformation approach

The facial colliculus (FC), an important landmark for planning a surgical brainstem cavernous malformation approach (BCM), it may be difficult to identify on magnetic resonance imaging (MRI). Three-dimensional (3D) images may improve the FC-identification certainty; hence, a study attempted to validate the FC-identification certainty between two-dimensional (2D) and 3D images of patients with a normal brainstem and those with BCM. In this retrospective study, Uchida et al. included 10 patients with a normal brainstem and 10 patients who underwent surgery for BCM. The region of the FC in 2D and 3D images were independently identified by three neurosurgeons, three times in each case, using the method for continuously distributed test results (0-100). The intra- and inter-rater reliability of the identification certainty was confirmed using the intraclass correlation coefficient (ICC). The FC-identification certainty for 2D and 3D images was compared using the Wilcoxon signed-rank test. The ICC (1,3) and ICC (3,3) in both groups ranged from 0.88 to 0.99; therefore, the intra- and inter-rater reliability were good. In both groups, the FC-identification certainty was significantly higher for 3D images than for 2D images (normal brainstem group; 82.4 vs. 61.5, P = .0020, BCM group; 40.2 vs. 24.6, P = .0059 for the unaffected side, 29.3 vs. 17.3, P = .0020 for the affected side). In the normal brainstem and BCM groups, 3D images had better FC-identification certainty. 3D images are effective for the identification of the FC [1)].

The anterior portion of mesencephalus and the interpeduncular fossa tissue may be accessed via subtemporal and retrosigmoidal approach to the posterior portion.

Supracerebellar infratentorial approach for brainstem cavernous malformation

Supracerebellar infratentorial approach for brainstem cavernous malformation.

Lateral inferior cerebellar peduncle approach

Lateral inferior cerebellar peduncle approach

Retrosigmoid approach

Retrosigmoid approach

de Aguiar et al., preferred the retrosigmoid approach because it is more used due to the best view to the safety entry zones. [2)].

Endoscopic endonasal surgery for a mesencephalic cavernoma [3)].

1)
Uchida T, Kin T, Koike T, Kiyofuji S, Uchikawa H, Takeda Y, Miyawaki S, Nakatomi H, Saito N. Identification of the Facial Colliculus in Two-dimensional and Three-dimensional Images. Neurol Med Chir (Tokyo). 2021 May 11. doi: 10.2176/nmc.oa.2020-0417. Epub ahead of print. PMID: 33980777.

2)

de Aguiar PH, Zicarelli CA, Isolan G, Antunes A, Aires R, Georgeto SM, Tahara A, Haddad F. Brainstem cavernomas: a surgical challenge. Einstein (Sao Paulo). 2012 Jan-Mar;10(1):67-73. PubMed PMID: 23045829.

3)

Enseñat J, d'Avella E, Tercero A, Valero R, Alobid I. Endoscopic endonasal surgery for a mesencephalic cavernoma. Acta Neurochir (Wien). 2014 Oct 24. [Epub ahead of print] PubMed PMID: 25342085.