

Cerebello-cortical stimulation

Cerebellar mutism can occur in a third of children undergoing cerebellar resections. Recent evidence proposes it may arise from uni- or bilateral damage of cerebellar efferents to the cortex along the **dentatothalamic tract**. At present, no neurophysiological procedure is available to monitor this pathway intraoperatively. Giampiccolo et al. specifically aimed at filling this gap.

They assessed 10 patients undergoing **posterior fossa surgery** using a conditioning-test stimulus paradigm. Electrical conditioning stimuli (cStim) were delivered to the exposed cerebellar cortex at interstimulus intervals (ISIs) of 8-24 ms prior to transcranial electric stimulation of the **motor cortex**, which served as test stimulus (tStim). The variation of motor-evoked potentials (**MEP**) to cStim + tStim compared with tStim alone was taken as a measure of cerebello-cortical connectivity.

cStim alone did not produce any MEP. cStim preceding tStim produced a significant inhibition at 8 ms ($p < 0.0001$) compared with other ISIs when applied to the lobules IV-V-VI in the anterior cerebellum and the lobule VIIIB in the posterior cerebellum. Mixed-effects of decrease and increase in MEP amplitude were observed in these areas for longer ISIs.

The inhibition exerted by cStim at 8 ms on the motor cortex excitability is likely to be the product of activity along the cerebello-dento-thalamo-cortical pathway. They showed that monitoring efferent cerebellar pathways to the **motor cortex** is feasible in intraoperative settings. This study has promising implications for pediatric **posterior fossa surgery** with the aim to preserve the cerebello-cortical pathways and thus prevent **cerebellar mutism** ¹⁾.

¹⁾

Giampiccolo D, Basaldella F, Badari A, Squintani GM, Cattaneo L, Sala F. Feasibility of cerebello-cortical stimulation for intraoperative neurophysiological monitoring of cerebellar mutism. Childs Nerv Syst. 2021 Apr 9. doi: 10.1007/s00381-021-05126-7. Epub ahead of print. PMID: 33835202.

From:
<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:
https://neurosurgerywiki.com/wiki/doku.php?id=cerebello-cortical_stimulation

Last update: **2025/05/13 02:07**

