Triangle of Guillain and Mollaret

The triangle of Guillain and Mollaret, also known as the Dentato-Rubro-Olivary Tract, has three corners:

red nucleus

inferior olivary nucleus

contralateral dentate nucleus

The Rubro-olivary tract fibers descend from the parvocellular division of each red nucleus along the central tegmental tracts to reach the capsule (amiculum olivare) of the ipsilateral inferior olivary nucleus (ION). From the ION, olivocerebellar tract fibers cross the contralateral inferior cerebellar peduncle to reach the cerebellar cortex, then pass from the cerebellar cortex to the contralateral dentate nucleus. Dentatorubral fibers then ascend via the contralateral superior cerebellar peduncle, decussate in the midbrain, and return to the original red nucleus.

Note that no direct connecting tract is present between the inferior olivary nucleus and contralateral dentate nucleus [1].

History and etymology

The Triangle of Guillain and Mollaret was described in 1931 by the French neurologists Georges Charles Guillain (1876-1961) and Pierre Mollaret (1898-1987) [2] [3] They are also known respectively for defining what is now known as Guillain-Barré syndrome and Mollaret's meningitis.

Related pathology

Hypertrophic olivary degeneration, manifest as palatal myoclonus contralateral to lesions of the superior cerebellar peduncle ipsilateral to lesions of the central tegmental tract

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Cerebellar atrophy contralateral to lesions of the olivocerebellar fibers

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Holmes tremor (double lesions in both the dentatorubral-olivary system and dopaminergic nigrostriatal system) [4]

Myorhythmia is a hyperkinetic movement disorder that derives from a disruption of the Triangle of Guillain and Mollaret, due to an identifiable structural lesion. It is often disabling and with disappointing control under medical treatment.

1)
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2)
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3)
Guillain G, Mollaret P. Deux cas de myoclonies synchrones et rythmées vélo-pliaryngo-oculo-diaphragmatiques. Le problème anatomique et physio-pathologique de ce syndrome. Rev Neurol (Paris). 1931;2:545–566.
4)
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