Pallidotomy for Post-Stroke Hemidystonia with Tongue Myorhythmia: A Potential Therapeutic Approach

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Abstract

Introduction: Myorhythmia is a rare hyperkinetic disorder characterized by slow (1–4 Hz), rhythmic involuntary movements, often linked to brainstem lesions such as pontine infarcts.[1] Post-stroke pontine damage can cause hemidystonia and tongue myorhythmia, both typically resistant to medical therapy.[1,2] We report a case where stereotactic pallidotomy, performed primarily for hemidystonia, led to significant improvement of coexisting myorhythmia, suggesting a potential therapeutic benefit.

Clinical description: A 62-year-old woman developed progressive right hemidystonia and complex myorhythmia four months after sustaining a left pontomesencephalic ischemic stroke. Neurological examination revealed right-sided hemiparesis, spasticity, severe dysarthria, and rhythmic involuntary movements (~3 Hz) involving the limbs, tongue, and soft palate. Given refractoriness to pharmacological treatment, the patient underwent stereotactic pallidotomy targeting the internal globus pallidus (GPi). Intraoperatively, immediate suppression of myorhythmia was observed, with sustained improvement at three months post-procedure, including a marked visual reduction of tongue tremor and only mild residual palatal involvement, giving an enhanced gait and overall quality of life.

Discussion: Discussion: Differentiation of myorhythmia from Parkinsonian or dystonic tremor, and myokymia is crucial and relies on clinical evaluation supported by electromyography and imaging.[1] Pontine infarcts are a well-recognized cause of myorhythmia, typically showing limited response to pharmacological therapies. In this case, stereotactic pallidotomy was primarily performed to address hemidystonia[3] but unexpectedly improved coexisting myorhythmia, which was not previously described in the literature. Tremor analysis of the limbs, using the iPhone StudyMyTremor application, revealed a significant postoperative reduction in amplitude (from 11.37 mm to 1.94 mm), power (from 116.26 mW to 24.28 mW), and synchronization (from 194.01 to 3.18), with minimal change in frequency (3.03 Hz preoperatively and 3.73 Hz postoperatively), resulting in substantial functional improvement to the patient.

Conclusions: This case underscores pallidotomy's potential as a therapeutic strategy for refractory post-stroke hyperkinetic movement disorders, particularly when myorhythmia coexists with dystonia, with significant reductions in tremor amplitude, power, and synchronization, contributing valuable insight to clinical practice.

References

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