

BIPOLAR DISORDERS, DYSTONIA, AND COMPULSION AFTER DYSFUNCTION OF THE CEREBELLUM, DENTATORUBROTHALAMIC TRACT, AND SUBSTANTIA NIGRA

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Bipolar disorders occurred in 3 of 15 (20%) subjects after focal cerebellar circuit lesions. Two presented with rapid cycling bipolar disorder and dystonia, including one with a checking compulsion. Lesions included right cerebellar hypoplasia (bipolar disorder), bilateral cerebellar atrophy (rapid cycling unipolar mania and dystonia), and left midbrain pathology (mixed bipolar disorder, dystonia, and Compulsion). Bipolar disorders were associated with cerebellar circuit pathology ($p = 0.032$) and were more prevalent than in population controls ($p = 0.004$). Diminished cerebellar output (to cortical, thalamic, basal ganglia, limbic, or other circuits) or nigral pars reticulata dysfunction may result in abnormal neuronal oscillation in bipolar disorders, especially rapid-cycling types, or in dystonia. Review of the literature supports the concept of nigral and cerebellar direct and indirect connections with thalamofrontotemporal and basal ganglia circuits in bipolar disorders, dystonia, and compulsions, as well as possible clinical relationships between these disorders.

Key Words: Mania, depression, cerebellum, dystonia, substantia nigra, pars reticulata

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