Teaching NeuroImages: Reversible paradoxical lithium neurotoxicity

V.Y. Vishnu, MD
Praveen Kesav, DM
Manoj Kumar Goyal, DM
Manish Modi, DM
Sudesh Prabhakar, DM

Correspondence to
Dr. Goyal:
goyal_mk@yahoo.com

A 33-year-old man with bipolar affective disorder presented with acute onset of rigidity, tremors, and confusion. He had been taking oral lithium (1,200 mg daily) for the past 2 months. Baseline blood, EEG, and CSF analyses were normal. Serum lithium level was 0.67 mEq/L (0.3–1.3). Gadolinium MRI brain showed multiple bilateral symmetric T2-weighted hyperintensities (figure, A–C). On suspicion of lithium-induced neurotoxicity, lithium was replaced with valproate. At 1-month follow-up, his extrapyramidal symptoms had resolved completely, with significant resolution noted on cranial MRI (figure, D–F). Paradoxical lithium neurotoxicity occurs at therapeutic or low serum levels due to lithium-induced toxic demyelination.1–3

AUTHOR CONTRIBUTIONS
Dr. Vishnu: data collection, drafting of manuscript. Dr. Kesav: data collection, review of literature. Dr. Goyal: concept and revision of manuscript. Dr. Modi: revision of the manuscript. Dr. Prabhakar: revision of the manuscript.

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REFERENCES

T2 hyperintensities involve (A) bilateral posterior limb of internal capsule and thalami, (B) midbrain, and (C) pons and bilateral middle cerebellar peduncles (arrows). One-month follow-up cranial MRI shows resolution of T2 hyperintensities in bilateral thalami (D), midbrain (E), and pons and bilateral middle cerebellar peduncles (F) (arrows).

From the Department of Neurology, Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, India.
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