Psychotic Mania Secondary to Chronic Hypercalcemia

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Mania is characterized by distractibility, impulsivity, grandiosity, flight of ideas, decreased sleep, and pressured speech. On rare occasions, mania presents with psychotic features of delusions or hallucinations.[1] Although mania and psychosis are most often associated with bipolar mood disorder, they can also occur secondary to medical conditions, drug intoxication, or medication side effects.[1] In this report, we explore chronic hypercalcemia as a possible organic cause of mania with psychotic features.

Case Report

A 58-year-old woman with unspecified depression was brought to the psychiatric hospital by her husband due to a 2-week history of erratic behavior, aggression, sleeplessness, pressured speech, looseness of associations, religious and grandiose delusions, and response to internal stimuli. She had never exhibited these symptoms before. Medical workup was done at an outside medical hospital wherein computed tomography (CT) of the head without contrast showed no detectable abnormalities. A CT of the abdomen and pelvis without contrast showed non-obstructing stones in the right kidney. The urine drug screen was positive for cannabis, urinalysis was positive for amorphous crystals, and lumbar puncture was unremarkable. A comprehensive metabolic panel ordered as part of the routine admission laboratory workup incidentally revealed an elevated calcium level of 11.6 ng/mL. Further laboratory workup revealed a corrected calcium level of 11.6 ng/mL, ionized calcium elevated to 1.52 ng/mL, parathyroid-related hormone elevated to 94 pg/mL, vitamin D level of 47.34 ng/mL (within normal limits), and parathyroid hormone–related protein at 2.9 pmol/L (within normal limits). The patient was started on olanzapine, which was slowly uptitrated over the course of her 11-day hospitalization with concurrent resolution of her acute psychotic symptoms. She was discharged on oral olanzapine 15 mg and oral lorazepam 2 mg at bedtime with a diagnosis of unspecified psychosis suspected to be secondary to endocrine disorder. An outpatient endocrinology referral was placed, and a Sestamibi scan showed an ectopic parathyroid adenoma on the right border of the esophagus. She was diagnosed with primary hyperparathyroidism (PHPT) and scheduled for surgical removal of the adenoma.

Leading up to surgery, the patient showed no further manic or psychotic symptoms. She developed metabolic syndrome secondary to atypical antipsychotics, as well as persistent fatigue and depressive symptoms. The patient tried multiple antipsychotic regimens (olanzapine, aripiprazole, quetiapine, lurasidone) and dose adjustments, yet depressive symptoms persisted. The patient was lost to psychiatric follow-up 7 months prior to surgery, so no detailed psychiatric assessment immediately prior to or after surgery was available. However, according to the electronic medical record, she stopped taking all antipsychotic medications 2 months prior to parathyroidectomy. After parathyroidectomy, the patient reported no psychiatric complaints at her 3-month postoperative visit, saying she felt "almost normal."

Discussion

Although most cases are asymptomatic, hypercalcemia can manifest clinically as a combination of skeletal, renal, gastrointestinal, and neuropsychiatric symptomologies.[2,3] The underlying mechanism of neuropsychiatric symptoms is poorly understood. The prevailing theory assumes calcium alters monoamine metabolism in the central nervous system.[4] However, a higher degree of hypercalcemia is not associated with more severe psychiatric symptoms, as severe symptoms have been reported in mild hypercalcemia.[2,5] The most common psychiatric symptoms include depression and anxiety, but there have been case reports of acute psychosis in PHPT patients.[6] Acute psychosis resolved quickly after parathyroidectomy and normalization of calcium levels.[6] However, randomized control trials show varied results on the efficacy of parathyroidectomy as a treatment for PHPT neuropsychiatric symptoms.[7–9] Therefore, medical management is first-line treatment.[3,10]

This case contributes to a growing body of literature documenting rare psychotic manifestations of PHPT. Although alternative diagnoses such as a late-onset primary bipolar disorder cannot be fully disproven (recurrence of mania or psychosis after hypercalcemia has resolved would warrant reevaluation of the patient's diagnosis), this case emphasizes the importance of assessing electrolyte, metabolic, and hormonal etiologies when a patient presents with new-onset psychiatric symptoms.

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