



# It is illegal to post this copyrighted PDF on any website. Severe Hypothyroidism in a Hypomanic Patient With Sepsis

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**F**ew cases of hypothyroidism in the setting of hypomania or mania have been documented.<sup>1–7</sup> Moreover, infection and inflammation are also risk factors that can precipitate mania.<sup>8</sup> We present the case of a bipolar patient with hypomania, severe hypothyroidism, and sepsis.

## Case Report

A homeless middle-aged man with history of acquired hypothyroidism (on levothyroxine 150 mcg), bipolar 1 disorder with recurrent documented manic episodes, and chronic poorly healing MRSA (methicillin-resistant staphylococcus aureus) cellulitis of the left leg (incomplete treatment at a separate institution 1 year prior) presented to the emergency department with a chief complaint of weakness for 1 day. He was noted to be septic, presumably from the chronic cellulitis.

The patient reported that he had self-tapered off all psychiatric medications over the past 2 years, including escitalopram, bupropion, risperidone, and lamotrigine. At 3 months prior to admission, he completely self-tapered off his last psychiatric medication, escitalopram, after his insurance “messed up” the prescription. After cessation of escitalopram, the patient reported “feeling the best ever,” and that he was sleeping only 1.5 to 2 hours each night, with no daytime naps. He then impulsively flew to the current city in which he was residing from out of state to visit a relative and had since been homeless.

On admission he exhibited notable grandiosity, claiming that he wanted to help and befriend everyone, was “excited to start something new,” hoped to “bring positives to all people’s lives,” and was “evermore appreciative to be alive.” He denied indicators of mania in response to questioning; however, he reported feeling “better than ever before” and “naturally happy” while off medications. Medically, he reported cold intolerance, weight gain, short-term memory loss, and fatigue; however, on the mental status examination he was energetic, excitable, and distractible with pressured

speech. He described that his current presentation was “very different” from his past manic episodes, during which he would spend “tons of money on sports cars,” felt like Superman, and exhibited violent outbursts with frequent police arrests.

His vitals at admission showed the following: blood pressure: 103/73 mm/Hg (down to 97/61 several hours later), respiratory rate: 24 breaths/minute, pulse: 103 beats/minute, temperature: 38.2°C, and body mass index: 33.9 kg/m<sup>2</sup>. The physical examination showed left leg erythema, swelling, and purulence. Laboratory tests at admission revealed thyroid-stimulating hormone >100 mIU/L; free T<sub>4</sub><0.2 nmol/L; leukocytosis; normocytic anemia; elevated procalcitonin, erythrocyte sedimentation rate, C-reactive protein, lactate, and creatinine; positive polymicrobial wound culture; negative urine culture; and negative urine drug screen. Two preantibiotic blood cultures were also taken at this time. Electrocardiogram (EKG) showed sinus rhythm, T wave abnormalities, and low QRS voltages.

Due to multiple medical comorbidities, the patient was admitted to the medicine service, and consultation-liaison (CL) psychiatry was asked to follow the patient. Despite multiple attempts made by the CL team to explain the benefits of medication, the patient refused inpatient psychiatric pharmacologic treatment. However, he was agreeable to wound debridement, broad-spectrum intravenous antibiotics, and restarting levothyroxine. He remained hypomanic throughout hospitalization, continuing to insist that his mission was to make all people around him happy, and was agitated and verbally aggressive toward staff.

After 6 days of hospitalization, his wound erythema and swelling had improved, and his 2 blood cultures came back negative. He was medically cleared by the inpatient wound care consultant for discharge. Since he was uncooperative with further inpatient care and the psychiatry team determined that he was not an acute safety risk, the patient was discharged with levothyroxine 150 mcg and oral clindamycin to be managed in the outpatient setting. He was also given an outpatient psychiatry follow-up appointment, to which he was agreeable. He was subsequently lost to follow-up.

## Discussion

Mechanisms for hypothyroidism-induced mania are not well understood; theories include poor regulation of central nervous system catecholamine receptor sensitivity, associated thyroiditis and thyrotoxicosis, and circadian rhythm disruption.<sup>1</sup> Thyroid dysfunction is the most frequent abnormality found in bipolar disorder, and patients

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with treatment-resistant or rapid-cycling variants are more likely to have hypothyroidism. Levothyroxine treatment of hypothyroidism in rapid cyclers has been shown to decrease the severity and frequency of mood episodes in bipolar disorder.<sup>9</sup>

Infection and inflammation also represent major risk factors for triggering mania.<sup>10</sup> Studies<sup>11</sup> have documented immune activation and elevated inflammatory markers in manic individuals. Individuals hospitalized with acute mania also have markedly increased rates of bacterial infections and antibiotic exposure compared to the control population. In such cases, the resolution of infection may contribute to the decrease in measures of immune activation noted after the manic episode has resolved.<sup>12</sup>

Our patient's mental status examination strongly suggested a diagnosis of hypomania.<sup>13</sup> His subjective symptoms, laboratory results, and EKG findings pointed toward a diagnosis of severe hypothyroidism.<sup>14,15</sup> He was also determined to have a positive diagnosis of sepsis from chronic cellulitis.<sup>16</sup> A combination of infection and hypothyroidism may have triggered his hypomania. Alternatively, hypothyroidism and subjective fatigue may have acted as protective/suppressive influences that dampened his mania (with demonstrably more severe episodes in his past) to hypomania.

The patient's poor insight into his psychiatric illness, active medical issues, and loss to follow-up made it challenging to discern a true etiology. His case highlights the importance of screening for thyroid disorders and infection in patients with bipolar illness and of encouraging medication adherence.

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