

59	autoimmune hypothyroidism. We aim to expand current	and diagnostic findings during hospitalization. Table 3	95
60	understanding by providing a detailed timeline, multidis-	present psychometric assessment scores at admission	96
61	ciplinary treatment course, and review of related literature.	and discharge, demo Psychometric Assessment Scores	97
62	Case presentation	at Admission and Discharge demonstrating substantial	98
63	A 28-year-old South Asian male working as a porter in Qatar	improvement in psychiatric symptomatology following ini-	99
64	presented to the Emergency Department (ED) with vomiting	tiation of levothyroxine replacement and adjunctive antip-	100
65	and was discharged with a diagnosis of gastritis. Two days	sychotic treatment.	101
66	later, he returned after a self-inflicted left wrist laceration. He	Laboratory investigations demonstrated severe primary	102
67	expressed a wish to die and reported a one-month history of	autoimmune hypothyroidism with markedly elevated	103
68	command auditory hallucinations instructing him to kill him-	TSH, suppressed FT4, and elevated thyroid autoanti-	104
69	self. This was his first episode of self-harm.	bodies. Renal function and liver enzyme abnormalities	105
70	Eight weeks before presentation, the patient devel-	showed improvement during hospitalization. Repeating	106
71	oped fatigue, constipation, hypersomnia, low mood, poor	thyroid function testing was unavailable before discharge.	107
72	concentration, reduced appetite, hopelessness, and social		
73	withdrawal. Over the following month, he developed	Diagnosis	108
74	guilt-related and religious beliefs, followed by command	The patient fulfilled Diagnostic and Statistical Manual	109
75	auditory hallucinations, visual hallucinations, thought	of Mental Disorders, 5th Edition (DSM-5) criteria for	110
76	insertion and withdrawal, and persecutory delusions.	Psychotic Disorder Due to Another Medical Condition	111
77	While awaiting surgical treatment in the ED, he attempted	(Autoimmune Hypothyroidism).The patient also exhib-	112
78	self-strangulation.	ited clinically significant depressive symptoms secondary	113
79	Personal and psychiatric history	to hypothyroidism. However, because psychotic symp-	114
80	The patient had no past psychiatric or medical history,	toms were the predominant clinical feature at presentation	115
81	family history of mental illness or self-harm, substance	psychotic Disorder Due to Another Medical Condition	116
82	use, or forensic involvement. He lived with co-workers,	was considered the primary diagnosis. Severe hypo-	117
83	reported financial stress, and was described as introverted	thyroidism was confirmed by markedly elevated TSH ,	118
84	and calm, with no evidence of impulsive or borderline	low free T4 , and elevated anti-thyroid peroxidase anti-	119
85	personality traits.	body levels (Table 2). The absence of prior psychiatric	120
86	Physical examination	illness, negative toxicology screening, temporal relation-	121
87	Examination showed a deep left wrist laceration with	ship between thyroid dysfunction and symptom onset,	122
88	partial flexor tendon injury. He was alert with Glasgow	and rapid symptom resolution following levothyroxine	123
89	Coma Scale (GCS)15/15), with stable vital signs and an	replacement strongly supported a diagnosis of myxedema	124
90	otherwise unremarkable examination.	psychosis secondary to autoimmune hypothyroidism.	125
91	Mental status examination, investigations and	However, because levothyroxine and olanzapine were ini-	126
92	psychometric assessment	tiated concurrently, a direct causal relationship cannot be	127
93	As stated in Table 1, Mental status examination (MSE)	established with certainty.	128
94	revealed remarkable findings. Table 2 illustrates Laboratory	Management and Hospital Course	129
		The patient was admitted on February 27, 2025, and	130
		remained hospitalized until March 9, 2025. He underwent	131

Table 1. Mental status examination findings.

ASPECT OF MENTAL STATUS EXAMINATION	FINDINGS
General appearance and behavior	Medium-built male; deep laceration over the volar aspect of the left wrist; underweight; disheveled; poor hygiene; poor eye contact; frequently looked at the ceiling or kept eyes closed; cooperative but slow to respond
Speech	Decreased rate and volume of speech, relatively long pauses between answers
Affect	Blunted; restricted emotional range
Mood	Depressed; tearful; self-described as “empty”; low reactivity
Thought form	Coherent; logically connected; slowed thinking; no formal thought disorder
Thought content	Religious delusions, delusions of references and guilt, thought insertion and withdrawal
Perception	Second-person auditory hallucinations; visual hallucinations of deity figure
Judgment and insight	Impaired acted on hallucinations
Cognition	Oriented to time, place, and person; poor concentration

Table 2. Laboratory and diagnostic findings during hospitalization.

TEST	ADMISSION RESULT	FOLLOW-UP RESULT	REFERENCE RANGE
Thyroid-stimulating hormone. (TSH)	>100 mIU/l	Not repeated	0.4–4.5 mIU/l
Free thyroxine t4	<0.5 ng/dl	Not repeated	0.7–1.8 ng/dl
Anti-TPO (thyroid peroxidase) antibodies	589 IU/ml	Not repeated	<35 IU/ml
Anti-thyroglobulin antibodies	1421	Not repeated	
AST / ALT	171 / 128 U/l	125/108 U/l	<40 U/l
Creatinine	151 µmol/l	115 µmol/l	62–115 µmol/l
Troponin-t	59 ng/l	No significant interval increase on serial measurements	<14 ng/l
Electrocardiogram (ECG)	Sinus bradycardia, IRBBB	Normal sinus rhythm.no acute ischemia, nonspecific T-wave changes	—
Echocardiographic	Normal LV and RV function; no regional wall motion abnormalities; no significant valvular heart disease	Not repeated	—
CT brain	No acute intracranial abnormality	Not repeated	
CBC, electrolyte	Within normal limits	Within normal limits	—
Wrist X-ray (left wrist)	Soft tissue swelling only without fracture	Not repeated	—
Cervical spine X-ray	Normal study	Not repeated	—
Urine drug screen	Negative	Not repeated	—

Table 3: Psychometric assessment scores at admission and discharge.

SCALE	SCORE UPON ADMISSION	INTERPRETATION	SCORE UPON DISCHARGE	INTERPRETATION
Brief psychiatric rating scale (BPRS)	75/128	Severe psychiatric symptoms	22/128	Minimal residual psychiatric symptoms
Hamilton depression rating scale (HAM-D)	31/52	Severe depression	8/52	Mild depressive symptoms/remission
Positive and negative syndrome scale (PANSS)	Total: 108 (P: 23, N: 27, G: 58)	Severe psychosis	Total: 45 (P: 8, N: 9, G: 28)	Marked improvement in psychotic symptoms
Columbia suicide severity rating scale (C-SSRS)	High risk	Recent suicide attempt with persistent suicidal ideation and command hallucination	Low Risk	Resolution of suicidal ideation and significant reduction in suicide risk

multidisciplinary evaluation and treatment. Following the wrist-cutting suicide attempt and attempted strangulation while awaiting surgery, he was placed under observation with psychiatric assessments . Endocrinology started levothyroxine 75 mcg/day, titrated to 100 mcg/day on hospital Day 5 consistent with the severity of hypothyroidism and the need for thyroid hormone replacement. Psychiatry initiated olanzapine 10 mg nocte, and Lorazepam was prescribed on an as-needed basis; however, only a single 2 mg dose was administered during the hospitalization, with no subsequent doses required. Plastic surgery repaired the palmaris longus tendon via tenorrhaphy. Multidisciplinary care also involved Nephrology, Cardiology, and Internal Medicine. By day 7, the patient demonstrated marked psychiatric improvement, characterized by a euthymic mood, restored

insight, and increased social engagement. During the 11-day hospitalization, progressive improvement was also observed in facial edema and laboratory abnormalities, including renal function and liver enzyme levels (Table 2). At discharge, psychotic symptoms and suicidal ideation had resolved, insight and judgment were restored, and the patient remained fully oriented. Following multidisciplinary assessment, his risk of self-harm was considered significantly reduced. He was discharged on olanzapine 10 mg nightly, with plans for gradual dose reduction after stabilization of thyroid function and ongoing psychiatric follow-up.

Follow-Up Plan

The patient was discharged on March 9, 2025, after an 11-day admission with multidisciplinary follow-up. He returned to his home country, precluding long-term

psychiatric and endocrine follow-up. Consequently, repeat thyroid tests, medication adjustments, and outcome data were unavailable; remission refers to his status at discharge rather than recovery.

Discussion

This case reinforces literature describing myxedema madness as a reversible psychotic state due to hypothyroidism. [3,8] Hypothyroidism-induced psychosis, while rare, presents a diagnostic challenge due to its ability to mimic primary psychiatric conditions. Contemporary literature supports the idea that psychotic presentations can arise abruptly and may even precede classical hypothyroid symptoms [9,10].

In this case, the presence of command hallucinations, religious delusions, and impaired judgment resulting in a suicide attempt aligns with previously reported cases. Chan E noted similar profiles in patients presenting with new-onset psychosis and suicidal ideation who were subsequently diagnosed with hypothyroidism [11].

The severity of psychiatric symptoms can often mislead clinicians, especially when classic hypothyroid features are subtle or absent. [5] Previous research linked hypothyroidism to changes in neurometabolic activity that might contribute to myxedema psychosis, including tyrosine hydroxylase imbalance in the anterior locus coeruleus; abundance of T3 receptors in the amygdala and the hippocampus. Pathogenesis likely involves cerebral hypometabolism, neurotransmitter dysregulation, and immune-mediated neuronal disruption [2].

A differential diagnosis of psychosis in hypothyroidism is Hashimoto's encephalopathy (HE) or steroids responsive encephalopathy with autoimmune thyroiditis. While MP is related to neurochemical alterations accompanying thyroid hormone deficiency, neuropsychiatric changes in HE are caused by an autoimmune response unrelated to hypothyroidism. [12,13] Hence, steroid responsiveness in most HE cases. HE is characterized by encephalopathy, with seizures, ataxia, stroke-like episodes, or cognitive fluctuation, making it unlikely in isolated hypothyroid psychosis. In this case, HE was considered because of elevated anti-thyroid antibody levels. However, the patient had no seizures, fluctuating consciousness, cognitive decline, focal neurological deficits, ataxia, or stroke-like episodes; cognition and orientation remained preserved, and neuroimaging was unremarkable, favoring severe hypothyroidism-associated psychosis. Electroencephalography and cerebrospinal fluid analysis were not performed.

Our patient demonstrated marked clinical improvement within the first week of treatment, with substantial resolution of psychiatric symptoms observed by Days 5–7 and continued recovery throughout hospitalization. This timeline is consistent with findings from systematic reviews and published case reports indicating that psychotic symptoms associated with severe hypothyroidism often improve within days to weeks of initiating treatment.

The patient's recovery followed the initiation of both levothyroxine and olanzapine. Thyroid hormone replacement addressed the underlying endocrine disorder, whereas olanzapine likely contributed to the rapid control of psychotic symptoms, behavioral disturbance, and suicide risk. Because both treatments were initiated concurrently, their relative contributions cannot be determined. Nevertheless, available evidence suggests that patients with myxedema psychosis generally experience favorable outcomes following correction of hypothyroidism, particularly when recognized early and managed through a multidisciplinary approach [2,3,7,11].

The present case underscores the importance of screening for thyroid dysfunction in patients with first-episode psychosis, particularly when psychiatric symptoms are accompanied by depressive features or systemic manifestations suggestive of hypothyroidism. Current evidence supports routine thyroid evaluation during early psychosis assessment, as recognition of endocrine abnormalities may identify reversible secondary causes and enable timely treatment. [8,9]. Furthermore, the patient's course emphasizes multidisciplinary collaboration involving psychiatry, endocrinology, surgery, nephrology, cardiology, and internal medicine. Improvement in psychiatric symptoms and systemic abnormalities during hospitalization supports coordinated management [1,8].

Limitations include no repeating of thyroid testing during hospitalization, limiting correlation between biochemical and psychiatric improvement. Return home shortly after discharge precluded long-term endocrine and psychiatric follow-up, preventing confirmation of sustained euthyroidism and remission. Concurrent levothyroxine and olanzapine initiation precluded attribution of clinical recovery.

Conclusion

Patient improvement underscores recognizing reversible causes of psychosis. Thyroid screening in patients with atypical psychiatric or somatic symptoms may be lifesaving. Early diagnosis, hormone replacement, and care are essential.

What is new?

Endocrine disorders should be considered in first-episode psychosis. Routine thyroid function screening in psychiatric populations may detect treatable endocrine pathology, saving lives. Prompt recognition, hormone replacement therapy, and coordinated multidisciplinary care are critical for better outcomes in myxedema madness.

List of Abbreviations

TSH	Thyroid-stimulating hormone
MP	Myxedema Psychosis
ED	Emergency Department
GCS	Glasgow Coma Scale
MSE	Mental status examination

271	DSM-5	Diagnostic and Statistical Manual of Mental Disorders,
272		5th Edition
273	Anti-TPO	Thyroid peroxidase antibodies
274	ECG	Electrocardiogram
275	IRBBB	incomplete right bundle branch block
276	BPRS	Brief psychiatric rating scale
277	HAM-D	Hamilton depression rating scale
278	PANSS	Positive and negative syndrome scale
279	C-SSRS	Columbia suicide severity rating scale
280	HE	Hashimoto's' encephalopathy

281 Conflict of interest

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290 the patient despite that there is no patient identifiable data
291 included in this case report.

292 Ethical approval

293 The ethical approval has been obtained from the medical
294 research center of Hamad Medical Corporation (with ID no.
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296 Author details

297 Shereen Aly¹, Mohamed AlMoraisi¹, Oraib Abdallah², Majid
298 Al-Abdulla¹
299 1. Psychiatry Department, Mental Health Services- Hamad
300 Medical Corporation, Doha, Qatar
301 2. Pharmacy Department, Mental Health Services- Hamad
302 Medical Corporation, Doha, Qatar.

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Summary of the case

1	Patient (gender, age)	28 years, male
2	Final diagnosis	Myxedema madness not primary psychosis
3	Symptoms	Command hallucinations to self-harm; visual hallucinations of deity figure, religious delusions, delusions of references and guilt, thought insertion and withdrawal, hypersomnia, low mood, poor concentration, appetite loss, hopelessness, and social withdrawal
4	Medications	Symptomatic treatment given
5	Clinical procedure	Thyroid-stimulating hormone. (TSH)>100 mIU/l (range 0.4–4.5 mIU/l); free thyroxine T4 <0.5 ng/dl (Range : 0.7–1.8 ng/dl), anti-TPO (thyroid peroxidase) antibodies: 589 IU/ml (range <35 IU/ml)
6	Specialty	Endocrinology, psychiatry