Klinični primer: delirij in hipotiroidizem

Case report: delirium and hypothyroidism

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Izvleček

Namen: *Namen prispevka je prikazati primer starejše bolnice s kompleksnim delirijem ob hipotirozi s klinično sliko psihoze.*

Poročilo o primeru: *70-letna bolnica je po predhodni diagnostiki akutnega zmedenega stanja bila obravnavana v urgentni ambulanti splošne medicine, nato pri internistih in nevrologih, nakar je bila zaradi delirija nepojasnjenega vzroka sprejeta na Oddelek za psihiatrijo. Ob nadaljnji diagnostiki sta bila odkrita akutna hipotiroza in kognitivni upad.*

Zaključek: *Hipotiroidizem se lahko kaže s spremenjenim duševnim statusom in kognicijo, kar lahko izgleda kot delirij. Kasneje se lahko pokaže klinična slika psihoze, imenovane tudi "miksedem psihoza". Pacientka je bila sprva zdravljena simptomatsko s klometiazolom, nato z risperidonom. Vzročno zdravljenje je zajemalo levotiroksinat.*

Abstract

Purpose: *The purpose of this report is to present a clinical case of an elderly female patient with complex delirium suffering from hypothyroidism with a clinical manifestation of psychosis.*

Case report: *After a preliminary diagnosis of acute confusion, a 70-year-old female patient was treated in the Centre for Emergency Medicine, Community Health Center and then by internists and neurologists. Afterwards, she was admitted to the Department of Psychiatry due to unexplained delirium. Acute hypothyroidism was detected upon further diagnosis. The patient was identified as suffering from acute hypothyroidism with an underlying cognitive decline.*

Conclusion: *Hypothyroidism can present as changes in mental status and cognition, which can have a clinical manifestation of delirium and later psychosis that is also known as "myxedema madness". This clinical case was treated causally with thyroid hormones and symptomatically first with clomethiazole and later with risperidone.*

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INTRODUCTION

Delirium and confusional states are among the most common mental disorders encountered in patients with medical illness, particularly among the elderly. Such states are associated with many complex underlying medical conditions and can be hard to recognize. Confused patients are unable to think with normal speed, clarity, or coherence. Confusion is typically associated with a depressed sensorium and a reduced attention span, and it is an essential component of delirium (1). Delirium is an acute decline in cognitive function and is a common, serious, and often fatal problem. As a preventable condition in 30–40% of cases, delirium holds substantial public health relevance as a target for interventions to prevent its associated burden of downstream complications and costs (2, 3). While a single factor may lead to delirium, it is more commonly multifactorial in elderly individuals (4). The current standard reference diagnostic criteria are the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) from the American Psychiatric Association (5) and the International Classification of Diseases and Related Health Problems (ICD-10) from the World Health Organization (6). Key diagnostic features include an acute onset and fluctuating course of symptoms, inattention, impaired level of consciousness, and disturbance of cognition indicating disorganization of thought (e.g., disorientation, memory impairment, or alteration in language). Other features supportive of the delirium diagnosis include alterations in the sleep-wake cycle, perceptual disturbances (e.g., hallucinations or misperceptions), delusions, inappropriate or unsafe behavior, and emotional lability. Delirium includes both hypoactive and hyperactive forms. The hypoactive form is more common among elderly individuals, which often goes unrecognized and is associated with higher rates of complications and mortality. Many pharmacologic approaches for the treatment of delirium have been evaluated in clinical trials, but there is no convincing evidence that any of these treatments are effective for either prevention or treatment in general (7, 8).

Hypothyroidism is one of the common comorbidities in patients with psychiatric conditions. Clinical manifestations of hypothyroidism range from life-threatening to no signs or symptoms. The most common symptoms in adults are fatigue, lethargy, cold intolerance, weight gain, constipation, change in voice, and dry skin, although the clinical presentation can differ with age and sex, among other factors (9). About 5–15% of cases present with neuropsychiatric symptoms, including slowing of thought and speech, decreased attentiveness, apathy, depression, agitation, and psychosis or "myxedema madness" (10). Only a few clinical cases of delirium accompanied by hypothyroidism have been described (11-13). Thyroid hormone replacement therapy with levothyroxine is the standard treatment for this condition (9). Psychotic symptoms are managed with antipsychotic medications (14).

Here, we describe a case of a senior female patient suffering from complex delirium with recognized hypothyroidism. Multiple specialists examined her after being in an acute confusional state.

CASE REPORT

A 70-year-old female patient was diagnosed in an Emergency Department. The patient was found by her daughter lying on the floor of her apartment, confused, and not answering the telephone. She had a previously known mild aortic insufficiency and suffered from cervicobrachial syndrome with lumbalgia. The patient occasionally medicated her condition with naproxen and had regularly taken bromazepam (benzodiazepine – BZD) for a few years. At admission, she was agitated and complained of chest pain. No elevation in troponin level was present and no chest damage was found using X-ray imaging. Electrocardiography (ECG) was not mentioned in the documentation of her case. Because of the anamnesis of syncope and acute confusion state, she was further diagnosed by an emergency internist, while standard laboratory tests and examinations did not find the cause for her acute confused state. ECG was repeated and showed an inversion of T waves in the chest leads V2–V4, which was known

before. She was directed to an emergency neurologist. No pathological deviation was observed at the time of neurological examination. She was examined by a neurologist six days prior because of unexplained syncope. A computed tomography (CT) of the head performed four days before this examination found no pathological deviations. Therefore, this time the neurologist recommended only a further evaluation by a psychiatrist and an electroencephalogram (EEG) examination in the next few days.

The patient was admitted to the psychiatry department because of delirium. A psychiatrist observed that she was confused, disoriented, agitated, and under the influence of visual hallucinations without delusional interpretations. Her mood status was stable or euthymic and she was not suicidal. According to her daughter, she used too much bromazepam. She was not demented and managed to live on her own.

The patient became drowsy shortly after admission, with alterations in neurological status (lowered left oral angle and she lowered her left hand when attempting a latent paresis). Thus, emergency CT of the brain was indicated, but found no acute neurological pathology. Laboratory tests found elevated creatinine kinase and myoglobin levels, with average values of creatinine and a slightly lowered glomerular filtration level (71 mL/min/1.73 m^2). Lumbar puncture was performed after consultation with an infectious disease specialist. Cerebrospinal fluid examination showed no significant deviation. Elevated myoglobin and creatinine kinase levels were interpreted as a consequence of lying on the floor, since an EEG performed afterwards was slightly abnormal and showed no evident epileptic changes. Significantly elevated thyroid-stimulating hormone (TSH 33.42 mU/L) and lowered values of thyroxine (T4 11.35 mU/L) were observed along with average values of triiodothyronine (T3 3.78 mU/L). Thyroid antibodies were normal. Thyroid specialist diagnosed hypothyroidism and introduced thyroid hormone replacement (levothyroxine at 50 mcg). To reduce agitation after experiencing hallucinations, the patient first received clomethiazole, analgesic, and an infusion of saline. Because of persistent psychotic symptomatology, clomethiazole was replaced with risperidone after a few days. Magnetic resonance imaging (MRI) of the head was performed during hospitalization to exclude vascular pathogenesis and showed moderate cortical atrophy with some very minor postischemic hyperintensive changes. Because her cognitive status assessment after delirium stabilised, she underwent a clinical psychological examination that showed memory deficits and a slowed thought process with perseverations. She was described as in remission with underlying mild cognitive decline, without alterations in neurological status upon dismissal from hospital care.

DISCUSSION

This clinical case illustrates the complexity of delirium assessment and its etiologies. Hyperactive delirium with multifactorial etiology was observed from clinical evaluations. The patient was agitated upon admission, but her condition rapidly changed in the psychiatric department when she was drowsy. Her syncopes were not explained after an examination by an internist, although she suffered from aortic insufficiency. After a change in her neurological status, neurological diagnostics with MRI of the head suggested possible minor ischemic attacks. An EEG excluded epileptogenic genesis. The patient's fluctuating baseline mental status indicated delirium, where changes typically occur over hours to days. Changes in mental status occurring over a prolonged period of time would indicate conditions such as dementia or psychosis, which were not observed by the patient's daughter. Careful physical examination excluded other possible causes, such as electrolyte derangements, infection, or organ failure, since delirium can be multifactorial in its etiology (15). In the present clinical case, advanced age and chronic use of BZD were the predisposing factors, and hypothyroidism and minor brain ischemia were the precipitating factors.

Given the complex multifactorial etiology of delirium, accumulating evidence suggests that several different sets of interacting biological factors result in disruption of large-scale neuronal networks in the brain, leading to acute cognitive dysfunction (16). The list of potential neurotransmitters involved in delirium is long, but a relative cholinergic deficiency and/or dopamine excess are the most common, which was demonstrated by the use of drugs that target these changes (17-

19). Antipsychotics are often used for patients with delirium and with severe agitation and safety risks, but they may contribute to heightened adverse effects and poorer long-term outcomes (15). In the present case, clomethiazole was used after admission. It is a sedative and hypnotic drug used to treat delirium that enhances the action of gamma-aminobutyric acid - GABA neurotransmitters. It is contraindicated for pulmonary conditions in the elderly, such as chronic obstructive pulmonary disease (20). After the patient's delirium subsided, psychotic symptoms remained, which can be attributed to "myxedema madness" (10). The standard treatment for this condition is thyroid hormone replacement therapy with levothyroxine (9), which was initiated in the patient as suggested by the thyroid specialist.

Clinical data showed that the use of antipsychotics can be associated with lower free thyroxine levels, but not TSH levels. A lower T4 level has been reported with the use of quetiapine and olanzapine, but no change has been found in the TSH level (21). There are few case reports on the treatment course of psychosis secondary to hypothyroidism. One case reported a female patient with past medical history of severe hypothyroidism (TSH 60.29 mU/L). She was started on levothyroxine (50 mcg), but lacked improvement in psychosis for six days, so haloperidol was added as part of her treatment (10). Another female patient with psychosis and TSH level of 100.34 mU/L was started on levothyroxine (50 mcg), which was later titrated to 100 mcg. Olanzapine was added to achieve the remission of psychosis (22). A different case of a female after total thyroidectomy with delusions and hallucinations quetiapine was administered to high doses of T4 and T3 and resulted in remission of psychosis after one month (23). The latest case reported a female patient with psychiatric history of schizophrenia and posttraumatic stress disorder, history of radioactive iodine ablation, and non-compliance with levothyroxine therapy for several months (TSH 50.8 mU/L). She was treated with levothyroxine, risperidone, and valproate. Haloperidol was later added to augment the antipsychotic effect. The authors concluded that if the laboratory test indicates hypothyroidism, the best next step is to start the thyroid hormone replacement. Antipsychotics in combination with levothyroxine can expedite the return to a psychiatric baseline (14).

CONCLUSIONS

Hypothyroidism can present as changes in mental status and cognition, which can have a clinical manifestation of delirium and later psychosis that is known as "myxedema madness". The clinical case described in this report was treated causally with thyroid hormones and symptomatically with clomethiazole and with risperidone.

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