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Diagnostic Challenges in a Man with Schizophrenia and Wernicke Encephalopathy: A Letter to Editor

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Dear Editor,

Wernicke encephalopathy (WE) is a neurological disorder caused by a deficiency of thiamine (vitamin B1), often occurring in the context of alcohol use disorder (1). Unlike other organs, the central nervous system in adults is particularly vulnerable to low levels of this vitamin (2). The classic triad of ataxia, nystagmus, and confusion is commonly observed in 10-30% of patients with WE (3). However, diverse clinical manifestations can also occur, including hallucinations or delusions, which may present without the classical triad of WE symptoms (4). There are reports linking WE to various conditions involving nutritional deficiency, such as hyperemesis gravidarum, intestinal obstruction, bariatric or metabolic surgery, certain cancer types, chemotherapy, hemodialysis, and other malignant conditions. Clinically, disorders causing severe acute malnutrition, such as anorexia nervosa, can lead to non-alcoholic WE (1). Vomiting and unexplained weight loss are strong predictors of non-alcoholic WE in adults. It is estimated that 40.3% of patients with schizophrenia are at high risk of malnutrition (5). Evidence also indicates that WE is often underdiagnosed and undertreated in patients with psychiatric disorders who are at increased risk of malnutrition in clinical settings. Moreover, WE manifestations frequently overlap with decompensation symptoms, highlighting a causal relationship between them (6).

This report aims to present the challenges in diagnosing and treating WE in a patient with schizophrenia. The patient, a 53-year-old man, was admitted to a general teaching hospital in northern Iran in 2019 with symptoms of falls, weakness, lethargy, and urinary incontinence. He appeared delusional and had avoided solid foods for 60 days before hospitalization, resulting in a 40 - 50 kg weight loss due to a hunger strike. His daughter reported that he had been walking on all fours due to ataxia a week before admission. During a full eye examination, horizontal nystagmus, impaired gaze, and ophthalmoplegia were noted. He was unable to look down or to the right. His initial vital signs and lab results were as follows: Blood pressure (BP) 110/60 mmHg, respiratory rate (RR) 15/min, body temperature (BT) 37.5°C, resting heart rate (RHR) 75/min, hemoglobin (Hb) level 15.3 g/dL, white blood count (WBC) 6700/mL, and platelet (PLT) count 256,000/mL.

Following a preliminary diagnosis of WE, a consultation-liaison psychiatrist recommended a neurological consultation to rule out other differential diagnoses. The neurologist suggested brain imaging via computed tomography (CT) and initiated thiamine tablets (300 mg) twice daily. Although the CT scans revealed a subarachnoid cyst, no other pathological findings were observed. Two days into his hospital stay, the patient's lethargy and weakness worsened, accompanied by dysfunctional breathing, bradypnea, hypoxemia, and a reduced level of consciousness (LoC). He was intubated, and differential diagnoses beyond WE were considered.

Further clinical and paraclinical investigations were performed to rule out pulmonary embolism, drug poisoning, meningitis, and encephalitis, all of which yielded negative results. Lung CT scans were clear, with oxygen saturation levels at 98%. Venous Doppler ultrasound of the lower limbs showed no signs of thrombosis. After a diagnosis of sepsis by an infectious disease specialist, the patient received intravenous gentamicin (2 g) and clindamycin (600 mg) three times a day. Although conscious, the patient experienced fluctuations in LoC and communicated through eye movements and hand gestures. He attempted extubation several times but was unsuccessful.

On the eighth day of hospitalization, a neurological consultation could not explain the decreased LoC, prompting further tests, including MRI of the brain without contrast, diffusion weighted imaging (DWI), apparent diffusion coefficient (ADC), and electroencephalography (EEG). Due to insufficient treatment response, a grand round was held on the 10th day of hospitalization with a neurologist, clinical pharmacologist, infectious disease specialist, and three psychiatrists. Injectable thiamine was recommended as an alternative to the oral form following confirmation of the WE diagnosis. Due to the shortage of injectable thiamine in Iran, a vitamin B complex containing vitamin B1 (10 mg), vitamin B2 (4 mg), vitamin B6 (4 mg), nicotinamide (40 mg), and dexpanthenol (6 mg) was infused in 500 cc normal saline twice daily, with 20 ampoules per dose.

Over a two-week period following thiamine administration, the patient's LoC improved significantly, and he was extubated. At a six-month follow-up after discharge, his muscle strength had improved, ophthalmoplegia had resolved, and he had returned to work.

This case involved a patient with both schizophrenia and WE, who also suffered from severe malnutrition due to psychosis and significant weight loss. Factors such as housing instability, isolation, substance use, depression, and acute psychosis had contributed to his malnutrition (7). These risk factors underscore the importance of clinicians remaining vigilant for reversible causes of WE. Oudman et al. (2021) conducted a systematic review on the characteristics of WE in schizophrenia patients, examining 15 cases, 12 of which presented with the classic triad of symptoms. Another key finding from the review was that these patients often experience rapid weight loss.

To date, few studies have examined the association between schizophrenia and WE, with significant challenges in diagnosing WE suggesting that many cases go undetected. Oudman et al. noted that some schizophrenia patients experience food-related command hallucinations or delusions, worsening their appetite loss (8). Furthermore, schizophrenia patients may harbor delusions or hallucinations related to their health or food intake, leading to reduced food consumption. This tendency to fast or avoid certain foods can result in neurological complications from severe thiamine deficiency. The primary symptoms of WE in schizophrenia patients remain uncertain (9). Additionally, research indicates that schizophrenia patients often exhibit abnormalities in glucose metabolism, including excessive lactic acid buildup, which increases the likelihood of WE development (10).

In this case, the patient experienced bradypnea after receiving dextrose before being administered an adequate dose of injectable thiamine, which exacerbated WE symptoms. It is important to note that oral thiamine cannot be effectively absorbed from the intestines during WE treatment, making the injectable form essential. According to the European Federation of Neurological Societies (EFNS) guidelines, thiamine (200 mg) should be administered intravenously three times daily until symptom improvement is observed. Similarly, the Royal College of Physicians (RCP) guidelines recommend intravenous thiamine (500 mg) three times daily, followed by intramuscular thiamine (250 mg) for five days or until clinical improvement is sustained (6, 11). Another case report suggests that WE treatment should continue for several months, with a gradual dose reduction of thiamine before complete discontinuation (12).

For psychiatric patients who tend to avoid care and lose weight, oral thiamine may be used if vomiting is absent, whereas intravenous thiamine is indicated in cases where vomiting is present (6). The patient in this case was discharged on a regimen of oral thiamine (300 mg/day) and risperidone (2 mg/day). Overall, an interdisciplinary approach is essential to improving WE diagnosis and management timelines and to reducing the risk of relapse. Regular thiamine level monitoring and preventive treatment are advisable for patients with schizophrenia. In cases where WE is suspected, treatment with an adequate dose of intravenous thiamine is critical.

Footnotes

Authors' Contribution: F. E.: The CL psychiatrist, diagnosis of case in first consultation, concepted the work, performed the literature search, and drafted the manuscript; M. R.: Participated in clinical management

of the patient and contributed in the revision of manuscript; and H. Gh.: Participated in clinical diagnosis and management of the patient as a neurologist.

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