A case of celiac disease with hallucinations

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Celiac disease is a malabsorptive disorder causing inflammation in the duodenum with subsequent villous atrophy. Many patients have different types of nutritional deficiencies such as lack of vitamins and minerals.^{1,2} The duodenal inflammation is the result of a human leukocyte antigen–dependent autoimmune reaction against transglutaminase, an enzyme present in several organs,³ which explains in part the multiorgan symptoms of the disease such as skin lesions, other autoimmune conditions, and neurologic symptoms.⁴ We describe a patient with hallucinations that improved on a gluten-free diet and thiamine supplementation.

CASE REPORT

A previously healthy 66-year-old man, a nonsmoker and teetotaler, presented at the emergency unit of Skåne University Hospital, Malmö, Sweden. His only medication was Dapsone (diaminodiphenyl sulfone) for treatment of dermatitis herpetiformis for many years. In spite of this diagnosis, he was on a normal diet. He had been under examination by his primary care physician because of diffuse myalgias for almost a year, without any signs of rheumatic disease except for a homogeneous form of antinuclear antibodies.

At presentation, the patient reported that he had experienced frequent diarrhea for 3 months, swollen legs, and a weight loss of 6 kg. His gait and blood pressure were normal. He described both visual and auditory hallucinations, such as seeing small animals on the walls and red threads hanging in the air. When fixing his eyes on something, it suddenly changed shape to a face or began to move. One night he complained of hearing intense shooting at the hospital.

Laboratory analysis revealed severe hypopotassemia (2.5 mmol/L), normocalcemia, hypoalbuminemia (17 g/L), and anemia (Hb 7.6 g/dL) with signs of iron deficiency. The patient's prothrombin time-international normalized ratio (PT-INR) was 1.8, indicating fat malabsorption with vitamin K deficiency. His liver enzyme and creatinine levels were normal at presentation. His C-reactive protein was slightly elevated (83 mg/L), and there were other signs of inflammation (thrombocytosis, erythrocyte sedimentation rate of 64 mm, and elevated haptoglobin of 3.51 g/L).

A CT scan of the abdomen and thorax revealed prominent mesenteric lymphatic nodes. After a few days, complementary laboratory analysis revealed normal anti-endomysium immunoglobulin A (IgA) and anti-tissue transglutaminase IgA, while anti-gliadin IgA was highly elevated (300 IU/L). Although unusual, not all patients with celiac disease present with these antibodies. A gastroscopy showed no abnormalities except for a scalloping appearance, suggestive of gluten enteropathy, and reflux esophagitis. The histologic examination confirmed a total

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villous atrophy and an increased number of intraepithelial lymphocytes compatible with untreated celiac disease. A brain CT scan with IV contrast was normal. EEG showed generally slow activity, especially located in the temporal lobes, without any sign of epileptic activity.

The patient received several blood transfusions and IV iron saccharose. A gluten-free diet was prescribed almost immediately after admission. Treatment with thiamine injections was initiated a few days after presentation. Hallucinations persisted for 10 days, then ceased. His general condition improved and he was discharged from the hospital with oral B vitamin medication. At follow-up at the outpatient clinic 6 months and 2 years later, no persistent deficiencies, signs of hallucinations, or other symptoms were found.

DISCUSSION

Celiac disease can cause neurologic symptoms, both through nutritional deficiencies and autoimmune mechanisms.^{4,5} Many conditions can result in hallucinations, such as substance abuse including alcoholism, acute or chronic psychosis, brain tumors, and several metabolic disturbances. By conducting a thorough clinical examination and patient history, we were able to rule out all these other causes. The disease course, with rapid improvement after administration of thiamine and the uncomplicated recovery without any relapse during the subsequent years, suggests that the cause of the hallucinations was thiamine deficiency. We do not quantitatively measure thiamine in clinical practice because we lack suitable methods at our laboratory, and this is a major drawback in the interpretation of the clinical findings and the resolution upon treatment with thiamine injections. We did not perform brain MRI, which could have revealed typical changes due to thiamine deficiency.

Thiamine deficiency is associated with Wernicke encephalopathy, which can present following malnutrition or malabsorption,⁶ most often with symptoms like ataxia, oculomotor disturbances, and changes in mental status.⁷ It seems important to treat Wernicke encephalopathy as emergently as possible, since it can develop into a chronic irreversible condition with brainstem and cerebellar lesions as well as permanent cognitive impairment known as Korsakoff syndrome. The lesson we can learn from this case is that when a patient is admitted to the hospital with such atypical symptoms as hallucinations, with or without gastrointestinal symptoms, the possibility of celiac disease should be kept in mind and thiamine substitution should be given promptly to prevent further toxic brain damage and achieve resolution of symptoms.

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