Journal Of Turgut Ozal Medical Center
www.jtomc.org

Celiac Disease Presenting with Motor Weakness

Serpil Demirci[1], Ersan Cengizhan[1], Nermin Karahan[2]

[1]Süleyman Demirel University Medical Faculty, Department of Neurology, Isparta, Turkey
[2]Süleyman Demirel University Medical Faculty, Department of Pathology, Isparta, Turkey

Abstract
Many systemic diseases may present with neurological signs and symptoms. In this case report, it is aimed to emphasize some take-home lessons in regard with disease that may masquerade Guillain-Barre syndrome. A 23 years-old woman presented with acute ascending motor weakness and areflexia for which she was presumed to have a Guillain-Barre syndrome. On neurological examination she had a muscle power of 2/5 according to MRC with areflexia. She had severe hypokalemia which is thought to result from the diarrhea she had. With potassium replacement her motor power resolved to normal. Detailed differential work-up led to a diagnosis of celiac disease with positive anti-gliadin antibodies serology and duodenal biopsy. Differential of acute, bilateral muscle weakness requires consideration of a few neurological conditions. However, the physicians should be aware of that many other systemic diseases may also manifest with signs and symptoms mimicking these neurological conditions.
Key Words: Acute Ascending Polyradiculoneuropathy; Celiac Disease; Hypopotassemia.

Motor Güçsüzlükle Başlangıç Gösteren Çölyak Hastalığı

Özet
Birçok sistemik hastalık nörolojik belirti ve bulgularla başlangıç gösterebilir, yanı sıra bazıları özgül nörolojik hastalıkları taklit edebilir. Bu yazıda, Guillain-Barre sendromunu taklit eden hastalıklar bağlamında bazı önemli noktaların vurgulanması amaçlanmıştır. Akut asendan motor güçsüzlük ve arefleksi nedeniyle Guillain-Barre sendromu düşünülen 23 yaşında bir bayan hastayı bildiriyoruz. Nörolojik muayenede hastanın kas gücü MRC'ye göre 2/5'di ve arefleksisi vardı. Diyareye bağlı olduğu düşünülen ciddi hipokalemisi vardı. Potasyum replasmanı ile kas gücü normale döndü. Ayırıcı tanıya yönelik detaylı incelemelerde pozitif anti-gliadin antikor serolojisi ve düodenal biyopsi sonuçları ile çölyak hastalığı tanısı konuldu. Akut, bilateral kas güçsüzlüğünün ayırıcı tanısında birkaç nörolojik hastalık düşünülür. Ancak, hekimler birçok sistemik hastalığın bu nörolojik tabloları taklit eden belirti ve bulgularla başlayabileceği konusunda dikkatli olmalıdır.
Anahtar Kelimeler: Akut Asendan Poliradikülonöropati; Çölyak Hastalığı; Hipopotasemi.

Olgu Sunumu/Case Report

Received: 27.02.2012, **Accepted:** 28.05.2012

Corresponding Author:
Serpil DEMİRCİ, MD Süleyman Demirel Üniversitesi Tıp Fakültesi, Nöroloji Anabilim Dalı, ISPARTA
Tel: 0 246 211 92 77-Fax:90 246 2370240
e-mail: serpildemirci@hotmail.com

For citing/Atıf için:
Demirci S, Cengizhan E, Karahan N. Celiac disease presenting with motor weakness. J Turgut Ozal Med Cent 2012;19(4):264-7.
DOI: 10.7247/jtomc.19.4.11

Introduction

Celiac disease, in another saying gluten sensitive enteropathy, is a common cause of malabsorbtion. The etiology is not known, but environmental, immunological and genetic factors are held responsible for the condition. Celiac disease has been estimated to occur in up to 1% of the general population, and although was traditionally considered a childhood disease it may appear at any age, including the elderly (1-4). Clinical presentations of the disease are highly variable. Though diarrhea and weight loss are usually present, in some patients manifestations of the disease may be protean. Moreover, some cases may present with only extra-intestinal symptoms without any obvious gastrointestinal changes (1,2). Neurological disorders, including peripheral neuropathy, ataxia, seizures and cognitive dysfunction have been reported in patients suffering from celiac disease; in some these disorders may be the initial manifestation of the disease, leading to its recognition (3-7).

Besides, Guillain-Barre syndrome (GBS) is an acquired acute inflammatory polyradiculopathy presenting with ascending motor paralysis and areflexia. Here we present a case of celiac disease presenting with acute onset motor weakness that was misdiagnosed as GBS.

Case Report

A 23-year old female patient was hospitalized in a community hospital for diarrhea that was present for the recent 10 days. In spite of symptomatic treatment, she had no relief of diarrhea and had lost about 10 kilograms. After she developed muscle weakness beginning first in the distal limbs and then affecting all extremities with an ascending march which interfered with her ambulation and made her bedridden, she was referred to our department with a presumptive diagnosis of Guillain-Barre Syndrome. The patient's personal and family history was unremarkable otherwise.

On neurological examination the patient was floppy and unable to walk. The examination of cranial nerves was normal; her muscle power was 2/5 according to MRC. Deep tendon reflexes were not elicitable. She had no sensory impairment and no respiratory problem Laboratory work-up revealed mild anemia with very low potassium (1.9 mEq/L; normal values 3.5-5.5 mEq/L) levels. Vitamins E, B12 and folate levels were in the normal range. Thyroid hormone levels were also normal. An immediate electrophysiological work-up revealed normal sensory and motor nerve conduction and F-waves with normal latency and persistence. The electromyogram performed during weakness revealed normal findings. There was no inducible weakness with exercise. Electrocardiogram showed U-waves.

After potassium replacement the patient's neurological status improved, so no any other invasive testing, i.e. lumbar puncture, were performed for Guillain-Barre syndrome and laboratory work-up was directed to reveal the underlying cause of diarrhea. Stool culture was negative for any infectious agents. Serologic studies detected the presence of anti-endomysial IgA and tissue transglutaminase IgA antibodies as well anti-gliadin IgA and IgG antibodies. Then, the patient was offered a small-bowel biopsy to confirm the diagnosis of celiac disease. Endoscopic examination revealed antral gastritis and duedonitis. Duodenal biopsy showed absence of villi, resulting in a flat appearance. Under the surface epithelium there was increased cript cell proliferation with diffuse inflammatory cell infiltration in surface and crypt epithelium (Figure 1-A). Immunohistochemical examination revealed CD3 positivity in intraepithelial lymphocytes (Figure 1-B).

With these findings, the patient was given the diagnosis of gluten sensitive enteropathy. After appropriate diet regimen the patient's diarrhea disappeared. During the follow-up of patient over 1-year, she has not experienced any diarrhea and weakness episode.

Discussion

A wide variety of neurological disorders, sometimes as the presenting manifestation, may develop in the course of celiac disease. Among these ataxia and peripheral neuropathy are the commonest. Less common manifestations include myoclonus, seizures, dementia, encephalitis, myopathy and neuromyotonia (3,4,7). These are estimated to occur in up to 6-10% of patient with proved-celiac disease. Up to 50% of celiac disease patients may develop peripheral neuropathy. The peripheral neuropathy type mostly encountered in celiac disease is symmetric distal sensory neuropathy. The other neuropathies that may occur in celiac disease include a pure motor neuropathy, mononeuritis multiplex, a Guillain-Barre-like syndrome and an autonomic neuropathy (3-5,7). However, with normal EMG findings and rapid improvement of patient's status with potassium replacement, we immediately excluded GBS from the differential work-up; and absence of a family history and occurrence of no similar episodes during follow-up excludes the possibility of an underlying hypokalemic periodic paralysis, though was not genetically confirmed.

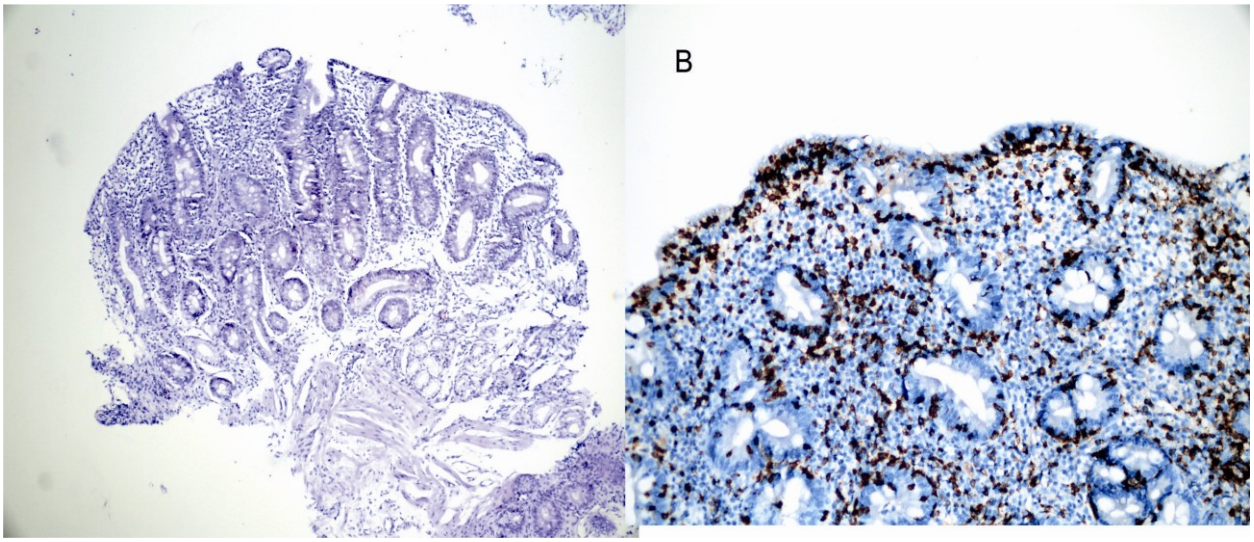

Figure 1. (A) Duodenal biopsy showing total atrophy of villus structures and intraepithelial lymphocyte infiltration (HE, x40). **(B)** CD3 positive lymphocyte infiltration in flattened surface epithelium (CD3, x100).

In celiac disease, the pathogenesis of neurological disorders is thought to result from several possible mechanisms, malabsorbtion of vitamins, metabolic complications of osteomalacia and autoimmune reactions. However, the concept of neurological signs and symptoms being nutritional in origin is outmoded recently, and it is now considered that autoimmunity promoted by anti-gliadin antibodies in genetically susceptible persons is the key mechanism for their development (3). However, the physician should not forget that, as in our case, metabolic derangements developed in the course of disease may also present with signs and symptoms indicating a neurological disorder.

Many systemic diseases may present or complicate with neurological signs and symptoms; the interpretation of these signs and symptoms sometimes may lead the physician in false diagnosis of acute neurological disorders. The patient we present was referred to our clinic with a presumptive diagnosis of GBS who later given the celiac disease diagnosis. Guillain-Barre syndrome is the most common form of acute flaccid paralysis; it is characterized by rapid and progressive weakness in the extremities, areflexia and sensory deficit in most patients. The cause of GBS is unknown but about three-quarters of patients report an infection in the 3 weeks before disease onset. Weakness peaks within 4 weeks, and recovery begins within several weeks or months. The diagnosis of GBS relies heavily on the clinical impression obtained from the history and examination, although cerebrospinal fluid analysis and electrodiagnostic testing usually provide evidence supportive of the diagnosis. In the presented case the history of diarrhea, acutely developed motor paralysis and areflexia are the clinical signs urging the physician to consider GBS as the cause responsible from symptoms. However, a wide range of disease, such as acute myelopathy of any cause, myasthenia gravis, acute intermittent porphyria, botulism, critical illness myopathy and polyneuropathy and periodic paralysis as well metabolic derangements may masquerade as GBS (8,9). Though, each with its own characteristics can be excluded based on careful history and examination.

These are important to define not only to avoid mistreatment with IVIG or plasmapheresis but also to institute appropriate therapy, when possible. So, for an accurate diagnosis with a reasonable degree of certainty, the clinician must also consider the mimics and variants of GBS. For the presented patient, acute onset, progressive muscle weakness and presence of antecedent diarrhea was presumptive of GBS. However, with the rapid improvement of muscle weakness and deep tendon reflexes after appropriate potassium replacement and normal nerve conduction values, the diagnosis of GBS was excluded. Detailed laboratory work-up with positive serology yielded

a diagnosis of celiac disease, in other name gluten sensitive enteropathy.

Differential of acute, bilateral muscle weakness requires consideration of a few neurological conditions. However, the physicians should be aware of that many other systemic diseases may also manifest with signs and symptoms mimicking these neurological conditions. Since gluten sensitive enteropathy is not a rare disorder, may have onset at any age in the human life span and regarding that some neurological disorders may develop with anti-gliadin antibodies without manifest intestinal symptoms, the clinicians should have a high index of suspicion in those patients with undetermined etiology of diarrhea.

References

1. Sanders DS, Patel D, Stephenson TJ, Ward AM, McCloskey EV, Hadjivassiliou M, et al. A primary care cross-sectional study of undiagnosed adult coeliac disease. Eur J Gastroenterol Hepatol 2003;15:407-13.
2. van der Windt DA, Jellema P, Mulder CJ, Kneepkens CM, van der Horst HE. Diagnostic testing for celiac disease among patients with abdominal symptoms. JAMA 2010;303:1738-46.
3. Rubio-Tapia A, Murray JA. Celiac disease. Curr Opin Gastroenterol 2010;26:116-22.
4. Hadjivassiliou M, Grünewald RA, Davies-Jones GA. Gluten sensitivity as a neurological illness. J Neurol Neurosurg Psychiatry 2002;72:560-3.
5. Rosenberg NR, Vermeulen M. Should coeliac disease be considered in the work up of patients with chronic peripheral neuropathy? J Neurol Neurosurg Psychiatry 2005;76:1415-9.
6. Hadjivassiliou M, Aeschlimann P, Strigun A, Sanders DS, Woodroofe N, Aeschlimann D. Autoantibodies in gluten ataxia recognize a novel neuronal transglutaminase. Ann Neurol 2008;64:332-43.
7. Freeman HJ. Neurological disorders in adult celiac disease. Can J Gastroenterol 2008;22:909-11.
8. Burns TM. Guillain-Barre syndrome. Semin Neurol 2008;28:152-67.
9. Levin KH. Variants and mimics of Guillain-Barre syndrome. Neurologist 2004;10:61-74.