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Case Report Open Access

Chronic Inflammatory Demyelinating Polyneuropathy (CIDP) as a first presentation of systemic lupus erythematosus

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Peripheral nervous system involvement frequently occurs in systemic lupus erythematosus (SLE) patients. However, chronic inflammatory demyelinating polyneuropathy (CIDP) is an unusual presentation that can develop before, after, or simultaneously with the onset of SLE. This paper reports the case of a 20-year-old man with diabetes mellitus (DM) and CIDP accompanied by SLE. The patient complained of progressive weakness in the bilateral upper and lower extremities that had begun 2 months prior to this visit. He was diagnosed with CIDP and treated with intravenous immunoglobulin (IVIG), but had little improvement. A plasma exchange was then scheduled, but it was not helpful either. The patient developed polyarthritis, oral ulcer, and a worsening of his muscle weakness two weeks later. A neurologic examination revealed 3/5 muscle strength in the upper and lower extremities, absent deep tendon reflex (DTR), and impaired position sense. The patient was diagnosed with SLE because of pancytopenia, lymphopenia, pleuropericardial effusion, proteinuria, high titer anti-nuclear antibody (ANA), and anti-dsDNA. A kidney biopsy revealed stage IV lupus nephritis. The patient received 3 pulses of methyl prednisolone, 6 months of cyclophosphamide, and a high daily dose of prednisolone. His proteinuria improved, and he regained the ability to ambulate with a normal gait after about 2.5 months. To the best of the authors' knowledge, the concurrency of CIDP with SLE and DM has not been previously reported.

Keywords: chronic inflammatory demyelinating polyneuropathy, immunosuppressive agents, plasma exchange, systemic lupus erythematosus.

Introduction

Patients with chronic inflammatory demyelinating polyneuropathy (CIDP) all have chronicity, demyelination, inflammation, or immune-mediation in common. This entity characteristically presents with symmetric weakness in both proximal and distal muscles for at least 2 months, hyporeflexia or areflexia, nerve conduction abnormalities indicating demyelination, and high cerebrospinal fluid (CSF) protein levels. Some systemic disorders like hepatitis B, C, or HIV infection, lymphoma, diabetes mellitus (DM), and systemic lupus erythematosus (SLE) or other collagen vascular disorders can be associated with CIDP [1]. CIDP has been reported in a few patients with SLE [2-5]. There are also some reports of CIDP concurrent with DM [6, 7]. This report introduces a patient with DM accompanied by CIDP and SLE. To the best of the authors' knowledge, the concurrency of these three conditions has not been previously reported.

Case presentation

A 20-year-old man who had had diabetes mellitus for 7 years presented with progressive muscle weakness beginning in the lower limbs and progressing to the upper extremities. These symptoms began 2 months before admission to the neurology ward. He had no pain, fever, dysphagia, urinary or bowel incontinence, or breathing difficulty. There was no history of recent diarrhea or upper respiratory tract infection. He noted a several years' history of alopecia areata.

The initial physical examination was unremarkable. The neurological examination showed 4/5 bilateral upper and lower extremity weakness, and absent or trace deep tendon reflexes in all 4 extremities with no limb ataxia or sensory deficit. A nerve conduction study revealed electrophysiological evidence of a polyneuropathy affecting motor fibers with mixed axonal and demyelinating features with prolonged tibial,

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median, and ulnar motor latencies and a reduction in motor conduction velocities.

Cerebrospinal fluid (CSF) analysis showed no white cells, a glucose level of 96 mg/dl (with a corresponding serum glucose level of 144 mg/dl), and an elevated protein level of 156 mg/dl.

The patient was diagnosed with CIDP and treated with a five-day course of intravenous immunoglobulin (IVIG) infusion at a dose of 2 g/kg body weight, but he experienced little improvement. Then, he left the hospital against medical advice.

Two weeks later, the patient was re-hospitalized in the neurology ward for worsening of weakness. Five plasma exchange (PE) treatments were scheduled, and a rheumatology consultation was requested.

At that time, the patient developed faint malar rash, oral ulcer, polyarthritis, and limb edema. His heart was slightly tachycardic and fine rales were audible on 1/3 base of both lungs. Weakness (grade 3/5 proximally and distally in upper limbs, and 2/5 in the proximal and distal lower limbs), absent tendon reflexes, impaired pinprick sensation in a glove and stocking distribution, and impaired position sense in the lower extremities were detected upon neurologic examination. Blood investigations on admission revealed a reduced total white cell count with lymphopenia, anemia, hypoalbuminemia, and a creatinine (Cr) level of (1.6 mg/dl). Microscopic hematuria, 4+ proteinuria, 15-17 WBC, and 35-40 RBC with 1-2 granular cast were seen upon urine analysis. The erythrocyte sedimentation rate (ESR) was 100 mm/hour, while the C-reactive protein (CRP) was <0.6 mg/l. Autoantibody screening revealed a positive antinuclear antibody (ANA) with a high titer of 1:1000 (speckled pattern), an elevated anti-dsDNA (929 IU/L), low complements, and negative anti-Smith, anti-La, anti-Ro, anti-ribonucleoprotein (anti-RNP), and antiphospholipid antibodies.

Mild tricuspid regurgitation, normal pulmonary artery pressure, normal ejection fraction, 1-2 mm pericardial effusion, and mild left ventricular (LV) diastolic pressure were found in echocardiography.

A kidney biopsy revealed diffuse glomerulonephritis with diffuse lupus nephritis class IV/index of activity: 13/24 (Table 1).

Hydroxychloroquine, monthly cyclophosphamide, and a 3-day pulse of 1000 mg methylprednisolone followed by oral prednisolone 60 mg/day with restricted control of hyperglycemia with insulin were scheduled with the diagnosis of SLE. The patient also underwent daily physiotherapy.

Table 1. Laboratory findings at initial presentation and at last review (12 months after onset of symptoms)

Lab Data	First visit	Last visit
WBC ($\times 10^9$/L)	3.1	6.1
Hb (g/dL)	12.1	13
Platelet count ($\times 10^9$/L)	116000	351000
ESR (mm/hr)	100	15
Albumin (g/L)	20	35
Creatinine (mg/dL)	1.6	1.3
CRP (mg/L)	<0.6	<0.6
ANA	Positive	NA
Anti-dsDNA (IU/L)	929	-
CH50 (mg/dL)	50	-
C4 (mg/dL)	5	-
Anti-Sm	Negative	NA
Anti RNP	Negative	NA
Cerebrospinal fluid examination		-
White cells/mL	0	-
Glucose (mgl/dL)	96	-
Protein (mg/dL)	156	-
EMG/NCS	Uniform demyelinating polyneuropathy	-
Kidney biopsy	Diffuse glumerolonephritis class IV	-
Doppler sonography of renal artery and vein	Normal	-
Echocardiography	Mild tricuspid regurgitation, normal pulmonary artery pressure, normal ejection fraction and mild LV diastolic pressure, 1-2 mm pericardial effusion	-
Perfusion lung scan	Low probability for pulmonary emboli	-
Spiral chest CT scan	Alveolar infiltration in lower zone of R lung, Bilateral plural effusion	-
Brain, whole spine MRI, MRV	Normal	-

One month later, the patient developed blurred vision and bilateral optic disc edema. Both brain magnetic resonance imaging (MRI) and magnetic resonance venography (MRV) were normal. Visual field testing revealed an enlarged blind spot. CSF examinations was normal except for elevated protein

and pressure (24 cm H_2O) measured by lumbar puncture (LP) with the patient lying on his side.

Intracranial pressure decreased to 16 cm H_2O after repeated LP, diamox, and doses of prednisolone diminishing to 30 mg/day prescribed. This dose was then tapered down by 5 mg monthly to a maintenance dose of 5 mg daily.

After 3 months, the patient was able to walk without assistance. Cyclophosphamide was switched to Cellcept 3 g/day after 6 months.

At his last visit (after 12 months), the patient had a normal muscle force 5/5 with a normal gait. The proteinuria had diminished, and creatinine was stable at 1.2 mg/dl. Complete blood count (CBC), complement levels, and ESR had returned to normal and anti-dsDNA became negative.

Discussion

Peripheral neuropathy (PN) occurs in 6-51% of patients with SLE (8-10). This wide range is due to the electrodiagnostic or clinical criteria used to select cases. The most common presentation is sensory motor or sensory axonal neuropathy. Less commonly, mononeuritis multiplex, autonomic neuropathy, cranial nerve mononeuropathies, and Guillain-Barré syndrome or CIDP can occur in patients with SLE [11]. PN is also a frequent manifestation of DM, especially type I. Objective evidence of neuropathy exists in two-thirds of diabetic patients, but only about 20% are symptomatic. The most frequent form is polyneuropathy followed by carpal tunnel syndrome, visceral autonomic neuropathy, and other varieties [12]. Clinically, CIDP can resemble a severe and progressive diabetic distal symmetric polyneuropathy. It is important to diagnose CIDP in diabetics, because, as opposed to diabetic polyneuropathy, CIDP can be treated [13, 14]. Benign intracranial hypertension (BIH) has been reported as a presentation of SLE [15]. Moreover, it is commonly associated with withdrawal from corticosteroids. Rarely does BIH develop in patients on a maintenance corticosteroid regimen or while increasing its dose [16]. In this patient, blurred vision and papilledema were eliminated after the lumbar puncture was performed and the steroid dose was reduced.

The main treatment for idiopathic CIDP includes steroids, IVIG, and plasmapheresis depending on the severity of the disease. If the response is not complete, combination treatments or the addition of an immunosuppressant or immunomodulatory drug should be considered [17]. Hugh et al. compared high steroid doses with IVIG in 24 patients with CIDP and claimed that IVIG was slightly, but not significantly, better than steroids [18]. In 2005, Vina et al. reported 6 cases of concurrent SLE and CIDP and reviewed 13 published cases from between 1950 and 2004.

Among the 6 patients reported by Vina et al., those who had more severe internal organ involvement and multiple autoantibodies had a better response to treatment [3]. This evidence may indicate that more aggressive treatment with methylprednisolone pulse and early administration of a potent immunosuppressive like cyclophosphamide may also efficiently suppress the immunologic process of CIDP [1, 3].

Conclusion

Early aggressive treatment with immunosuppressive agents in addition to conventional treatment for patients with concurrent CIDP and other immune mediated diseases may be indicated, but this may still need further investigation.

Conflict of interest

The authors declare no conflicts of interest.

References

1. Lewis, R. Chronic inflammatory demyelinating polyneuropathy: Etiology, clinical features, and diagnosis, www.uptodate.com, 2013.
2. Jasmin R, Sockalingam S, Shahrizaila N, Cheah TE, Zain AA, Goh KJ. Successful treatment of chronic inflammatory demyelinatingpolyneuropathy (CIDP) in systemic lupus erythematosus (SLE) with oral cyclophosphamide. ***Lupus*** 2012; 21(10): 1119-1123. doi: 10.1177/0961203312440346.
3. Vina ER, Fang AJ, Wallace DJ, Weisman MH. Chronic inflammatory demyelinating polyneuropathy in patients with systemic lupuserythematosus: prognosis and outcome. ***Semin Arthritis Rheum*** 2005; 35(3): 175-184. doi: 10.1016/j.semarthrit.2005.08.008.
4. Zoilo MA, Eduardo B, Enrique F, del Rocio MV. Chronic inflammatory demyelinating polyradiculoneuropathy in a boy with systemic lupus erythematosus. ***Rheumatol Int*** 2010; 30(7): 965-968. doi: 10.1007/s00296-009-1008-2.
5. Hantson P, Kevers L, Fabien N, Van Den Bergh P. Acute-onset chronic inflammatory demyelinating polyneuropathy with cranial nerve involvement, dysautonomia, respiratory failure, and autoantibodies. ***Muscle Nerve*** 2010; 41(3): 423-426. doi: 10.1002/mus.21543.
6. Sharma KR, Cross J, Farronay O, Ayyar DR, Shebert RT, Bradley WG. Demyelinating neuropathy in diabetes mellitus. ***Arch Neurol***

2002(5); 59: 758-765. doi: 10.1001/archneur.59.5.758.
7. Jang Y, Kim H, Lee J. A Case of Chronic Inflammatory Demyelinating Polyneuropathy in a Girl with Type 1 DM. ***J Korean Diabetes Assoc*** 2006; 30(2): 130-135. doi: 10.4093/jkda.2006.30.2.130.
8. Florica B, Aghdassi E, Su J, Gladman DD, Urowitz MB, Fortin PR. Peripheral neuropathy in patients with systemic lupus erythematosus. ***Semin Arthritis Rheum*** 2011; 41(2): 203-211. doi: 10.1016/j.semarthrit.2011.04.001.
9. Muscal E, Brey RL. Neurological Manifestations of Systemic Lupus Erythematosus in Children and Adults. ***NeurolClin*** 2010; 28(1): 61-73. doi: 10.1016/j.ncl.20009.09.004.
10. Bertsias GK, Ioannidis JP, Aringer M, Bollen E, Bombardieri S, Bruce IN, et al. Rrecommendations for the management of systemic lupus erythematosus with neuropsychiatric manifestations: report of a task force of the EULAR standing committee for clinical affairs. ***Ann Rheum Dis*** 2010; 69(12): 2074-2082. doi: 10.1136/ard.2010.130476.
11. Rosenbaum R. Neuromuscular complications of connective tissue diseases. ***Muscle Nerve*** 2001; 24(2): 154-169. doi: 10.1002/1097-4598(200102)24:2<154::aid-mus20>3.0.co;2-3.
12. Dyck PJ, Kratz KM, Karnes JL, Litchy WJ, Klein R, Pach JM, et al. The prevalence by staged severity of various types of diabetic neuropathy, retinopathy, and nephropathy in a population-based cohort. ***Neurology*** 1993; 43(4): 817-824. doi: 10.1212/wnl.43.4.817.
13. Jann S, Bramerio MA, Facchetti D, Sterzi R. Intravenous immunoglobulin is effective in patients with diabetes and with chronic inflammatory demyelinating polyneuropathy: long term follow-up. ***J Neurol Neurosurg Psychiatry*** 2009; 80(1): 70-73. doi: 10.1136/jnnp.2008.149013.
14. Nakano M, Takase Y, Tatsumi C, Miura A, Matsuyama T, Kadekawa J, et al. A case of CIDP with diabetes mellitus who had good response to intravenous immune globulin. ***RinshoShinkeigaku*** 2002; 42(1): 32-34.
15. HerreroValverde A1, MeraCampillo J, Zea Mendoza A, Masjuan Vallejo J. Pseudotumorcerebri and systemic lupus erythematosus. ***Rev Clin Esp*** 2003; 203(2): 74-76. doi: 10.1157/13043648.
16. Sasisekhar TVD, BhavyaCh, Poojita Y. Benign Intracranial Hypertension Secondary to. Prolonged Steroid Usage: A Case Report. ***International Journal of Scientific Study*** 2015; 2: 204-207.
17. Rafai MA, Boulaajaj FZ, Sekkat Z, El Moutawakkil B, Slassi I. Methylprednisolone pulse in treatment of childhood chronic inflammatory demyelinating polyneuropathy. ***Arch Pediatr*** 2010; 17(9): 1293-1299. doi: 10.1016/j.arcped.2010.06.022.
18. Hughes R, Bensa S, Willison H, Van den Bergh P, Comi G, Illa I, et al. Randomized controlled trial of intravenous immunoglobulin versus oral prednisolone in chronic inflammatory demyelinating polyradiculoneuropathy. ***Ann Neurol***. 2001; 50(2): 195-201. doi: 10.1002/ana.1088.