Co-Cccurrence of Guillain-Barre Syndrome and Primary Sjögren Syndrome in an Elderly Woman

Yu-Kai Lin[1], Fu-Chi Yang[1], Feng-Cheng Liu[2], Jiunn-Tay Lee[1], Yueh-Feng Sung[1]

Abstract

Purpose: Co-occurrence of Guillain-Barré syndrome (GBS) and other autoimmune diseases is rare. We present the case of a patient with co-occurrence of GBS and primary Sjögren syndrome (pSS).

Case Report: An 82-year-old woman presented with acute ascending flaccid paralysis and acute respiratory failure. Nerve conduction studies and cerebrospinal fluid analysis confirmed the diagnosis of GBS of acute inflammatory demyelinating polyradiculoneuropathy subtype. The initial unresponsiveness to plasma exchange therapy raised the suspicion of other potential diseases. She was later proved to have underlying pSS. Her neurological deficits and respiratory failure improved dramatically with combination therapy of intravenous immunoglobulin (IVIg) and immunosuppressive agent.

Conclusion: pSS should be considered as a possible cause of refractory GBS, particularly in elderly women. Combination therapy with IVIg and immunosuppressive agent may be beneficial.

Key Words: Guillain-Barré syndrome, Sjögren syndrome, intravenous immunoglobulin, plasma exchange

Acta Neurol Taiwan 2016;25:83-87

INTRODUCTION

Guillain-Barré syndrome (GBS) is an immune-mediated polyneuropathy that, despite being relatively rare, is the most common cause of non-trauma-related acute neuromuscular paralysis. GBS has six subtypes, among which acute inflammatory demyelinating polyradiculoneuropathy (AIDP) is the most prevalent[(1)]. GBS occurs predominantly in the middle-aged population, with a higher incidence in males than in females[(2)].

Primary Sjögren syndrome (pSS) is also an immune-mediated disorder that is characterized by an autoimmune exocrinopathy. The disease primarily affects women during the fourth and fifth decades of life. pSS has been known to manifest with neurological complications, affecting both the peripheral nervous system consisting mainly of axonal sensorimotor/sensory polyneuropathy, and the central nervous system[(3)]. Patients with pSS and neurological manifestations are older than patients without neurological involvement[(4)].

Co-occurrence of GBS and other autoimmune disease is rare[(5-7)]. We herein report a case of an elderly woman

From the [1]Department of Neurology, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan; [2]Rheumatology/Immunology and Allergy, Department of Medicine, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan.

Received February 24, 2016. Revised April 6, 2016.
Accepted June 16, 2016.

Corresponding to: Yueh-Feng Sung, MD, PhD. Department of Neurology, Tri-Service General Hospital, National Defense Medical Center, No. 325, Section 2, Cheng-Gong Road, Neihu 114, Taipei, Taiwan, R.O.C.
E-mail: sungyf@ndmctsgh.edu.tw

who presented with fulminant GBS and was later proved to have pSS.

CASE REPORT

An 82-year-old woman with a history of diabetes mellitus presented to our emergency department with progressive symptoms of distal numbness together with ascending weakness of all four limbs 2 weeks prior. The patient reported that she experienced an upper respiratory infection 1 week before the onset of these symptoms. Dyspnea and respiratory distress developed rapidly after admission, so she was intubated and mechanically ventilated.

Neurological examination revealed flaccid quadriplegia with absent deep tendon reflexes in all extremities. The muscle strengths of her upper and lower limbs, assessed by using Medical Research Council (MRC) muscle strength grading system, were 2/5 and 1/5, respectively. Babinski's sign was absent. The perception of light touch and pinprick in the hands and feet was diminished. Vibration sensation and proprioception below the hips were also diminished. Her fasting blood glucose level was 205 mg/dL and hemoglobin A1c (HbA1c) was 7.1%. A cerebrospinal fluid analysis revealed normal pressure and color, with a protein concentration of 161 mg/dL (normal range: 15–45 mg/dL) and a leukocyte density of 1 cell/μL (normal range: 0–5 cell/μL). Nerve conduction studies (NCSs) showed prolonged distal latencies, reduced amplitudes, and reduced conduction velocities of the compound muscle and sensory nerve action potentials in all the limbs (Table 1).

A diagnosis of GBS of AIDP subtype was made. The Erasmus GBS Outcome Score[8], GBS disability score, and Erasmus GBS Respiratory Insufficiency Score[9] were 6, 5, and 4, respectively, indicating a poor functional status. Six courses of plasma exchange (PE) were administered; however, the treatment was ineffective. The patient remained ventilator dependent, and the muscle strength of her four limbs deteriorated further to MRC grade 0. All the above-mentioned scores remained unchanged. A detailed workup for other potential diseases such as autoimmune disorders, infectious diseases, and malignancies was conducted. A blood test revealed the presence of anti-Ro/SSA and anti-La/SSB antibodies, suggesting the existence of SS. Subsequently, abnormal findings from parotid scintigraphy, minor salivary gland biopsy, and Schirmer's test were compatible with Vitali's criteria for SS[10]. Accordingly, the patient reported that she experienced dry eyes and mouth for at least 6 months previously.

As the plasma exchange therapy was unsuccessful, we administered intravenous immunoglobulin (IVIg) therapy for 5 days (total dose, 2 g/kg body weight) together with an immunosuppressive agent, hydroxychloroquine (200 mg bid). Both were started 9 days after the completion of PE. The patient dramatically improved at the end of the IVIg treatment and was extubated successfully. A posttreatment neurological examination revealed that the muscle strength of the upper limbs was MRC grade 5/5 proximally and 4/5 distally, and that the muscle strength of the lower limbs was MRC grade 3/5 proximally and 2/5 distally. She was discharged from the hospital 1 month later. At her 1-year follow-up appointment, the patient had full recovery of her muscle strength and sensory perception, although the NCSs showed some residual abnormalities (Table 1).

DISCUSSION

pSS can present as a broad spectrum of clinical manifestations, including neurological disorders. Previous studies have shown that neurological involvement occurred in about 20% of patients[11]. Interestingly, neurological manifestations may precede the typical sicca symptoms in 40–93% of cases[3,12]. Thus, the diversity of clinical symptoms in pSS may result in delayed diagnosis.

Several types of peripheral neuropathy have been identified in pSS, including symmetric sensorimotor polyneuropathy (most frequently occurring), symmetric sensory neuropathy, sensory neuronopathy, autonomic neuropathy, mononeuropathy, mononeuropathy multiplex, and cranial neuropathy (especially trigeminal neuropathy)[4,12].

Co-occurrence of GBS and pSS is extremely rare, with only a few cases reported[13,14]. Pryszmont et al. described a patient with SS diagnosed at age 23 years who then developed very severe GBS with involvement of the peripheral and central nervous system at 37 years of age[13]. Awad et al. reported the case of a patient who developed a rare form of GBS (acute motor axonal neuropathy) in

association with serological and pathological signs of pSS without xerostomia or xerophthalmia[14].

A retrospective multicenter study revealed that improvement of neurological symptoms was observed in approximately 90% of patients with GBS after a median of five sessions of PE[15]. In addition, six exchanges were no more beneficial than four exchanges for mechanically ventilated patients, in terms of either short-term or 1-year outcome[16]. Thus, refractory GBS can refer to cases that are unresponsive to or even deteriorate after five sessions of PE. Moreover, about 10% of patients with GBS have treatment-related fluctuations (TRF), defined as improvement in GBS disability scale by at least one grade after completion of immunotherapy, followed by worsening of the disability scale by at least one grade within the first 2 months after disease onset[17]. In such instances, repeat treatment may improve the outcome . Our patient showed continuing worsening of clinical symptoms after completing PE, making the diagnosis of TRF unlikely.

A previous study showed that PE therapy is as effective as IVIg in the treatment of AIDP[19]. However, our patient did not respond to PE but dramatically responded to IVIg. This suggests that the therapeutic efficacies of these treatments differ when AIDP is present with other autoimmune diseases. In their study, Keiko et al. found that corticosteroid may be a good candidate for multiple mononeuropathy and multiple cranial neuropathy, whereas favorable improvement may be observed in painful sensory neuropathy and radiculoneuropathy with IVIg therapy[20]. IVIg therapy was also shown to be effective in a patient with SS who had vasculitic peripheral neuropathies resistant to glucocorticoids or immunosuppressive therapy[21]. One case report showed that a patient with GBS of acute motor axonal subtype had a more favorable response to IVIg therapy than to PE therapy[14]. The good therapeutic response to IVIg was also observed in our patient, who was initially refractory to PE. The findings imply that the clinical benefits of IVIg treatment may depend on the specific clinical subtype of peripheral neuropathy. Further studies are needed to investigate its mechanism of action.

Diabetes mellitus (DM) has been noted to be associated with immune-mediated neuropathies such as GBS and chronic inflammatory demyelinating polyneuropathy (CIDP)[22-23]. Moreover, diabetic

Table 1. Nerve conduction studies before (Pre) and after (Post) IVIg and immunosuppressive agent therapy

Nerve	Time	F wave	Distal latency (ms)	Amplitude (μV)	Velocity (m/s)
Motor					
Right median	Pre	Absent	13.5	1755	34
	Post	28.8	4.3	9271	47
Right ulnar	Pre	Absent	4.5	4687	46
	Post	30.7	3.3	13580	52
Right tibial	Pre	Absent	8.0	2031	36
	Post	57.9	4.4	8776	38
Right peroneal	Pre	Absent	No pick-up	No pick-up	No pick-up
	Post	Absent	5.7	763	32
Sensory					
Right radial	Pre		2.9	24	37
	Post		1.7	51	59
Right median	Pre		No pick-up	No pick-up	No pick-up
	Post		3.7	47	38
Right ulnar	Pre		6.8	21	21
	Post		3.1	57	45
Right sural	Pre		7.3	2	43
	Post		2.8	12	51

neuropathy combined with GBS or CIDP can occur. One study found that fasting plasma glucose level in the acute phase of GBS correlates with the severity of GBS and may predict short-term prognosis[23]. The diabetic neuropathy superimposed in GBS in our patient cannot be completely excluded, although she had no symptoms of diabetic neuropathy prior to the event. Besides, the status of diabetic control in our patient can possibly influence the severity of GBS.

In conclusion, our case report underscores that concomitant pSS should be suspected as a cause of refractory GBS, particularly in elderly women. Co-occurrence of GBS and pSS can cause severe disability and difficulty in weaning from mechanical ventilation. We observed a remarkably positive response to combined treatment with IVIg and an immunosuppressive agent in a patient unresponsive to PE. Appropriate clinical management, including early investigation of other potential diagnoses upon treatment failure, can improve patient outcomes.

REFERENCES

1. Yuki N, Hartung HP. Guillain-Barré syndrome. N Engl J Med 2012;366:2294-2304.
2. Sejvar JJ, Baughman AL, Wise M, Morgan OW. Population incidence of Guillain-Barré syndrome: a systematic review and meta-analysis. Neuroepidemiology 2011;36:123-133.
3. Lafitte C, Amoura Z, Cacoub P, Pradat-Diehl P, Picq C, Salachas F, Leger, JM, Piette JC, Delattre JY. Neurological complications of primary Sjögren's syndrome. J Neurol 2001;248:577-584.
4. Gemignani F, Marbini A, Pavesi G, Di Vittorio S, Manganelli P, Cenacchi G, Mancia D. Peripheral neuropathy associated with primary Sjögren's syndrome. J Neurol Neurosurg Psychiatry 1994;57: 983-986.
5. Zhang J, Niu S, Wang Y, Hu W. Myasthenia gravis and Guillain-Barré cooccurrence syndrome. Am J Emerg Med 2013;31:1264-1267.
6. Shugaiv E, Kiyat-Atamer A, Tüzün E, Deymeer F, Oflazer P, Parman Y, Akman-Demir G. Coexistence of Guillain- Barré syndrome and Behçet's disease. Clin Exp Rheumatol 2013;31:88-89.
7. Lau KK, Goh KJ, Lee HC, Chan YT, Tan CT. The co-occurrence of serologically proven myasthenia gravis and Miller Fisher/Guillain Barré overlap syndrome: a case report. J Neurol Sci 2009;276:187-188.
8. van Koningsveld R, Steyerberg EW, Hughes RA, Swan AV, van Doorn PA, Jacobs BC. A clinical prognostic scoring system for Guillain-Barré syndrome. Lancet Neurol 2007;6:589-594.
9. Walgaard C, Lingsma HF, Ruts L, Drenthen J, van Koningsveld R, Garssen MJ, van Doorn PA, Steyerberg EW, Jacobs BC. Prediction of respiratory insufficiency in Guillain-Barré syndrome. Ann Neurol 2010;67:781-787.
10. Vitali C, Bombardieri S, Jonsson R, Moutsopoulos HM, Alexander EL, Carsons SE, Daniels TE, Fox PC, Fox RI, Kassan SS, Pillemer SR, Talal N, Weisman MH. Classification criteria for Sjögren's syndrome: a revised version of the European criteria proposed by the American-European Consensus Group. Ann Rheum Dis 2002;61:554-558.
11. Tobón GJ, Pers JO, Devauchelle-Pensec V, Youinou P. Neurological Disorders in Primary Sjögren's Syndrome. Autoimmune Dis 2012;2012:645967.
12. Mellgren SI, Conn DL, Stevens JC, Dyck PJ. Peripheral neuropathy in primary Sjögren's syndrome. Neurology 1989;39:390-394.
13. Pryszmont M, Sierakowski S, Poplawska T, Domyslawska I, Pryszmont J, Pawlak-Tumiel B. Guillain-Barré syndrome in a patient with primary sicca syndrome. Neurol Neurochir Pol 2000;34:1235-1241.
14. Awad A, Mathew S, Katirji B. Acute motor axonal neuropathy in association with Sjögren syndrome. Muscle Nerve 2010;42:828-830.
15. Kaya E, Keklik M, Sencan M, Yilmaz M, Keskin A, Kiki I, Erkurt MA, Sivgin S, Korkmaz S, Okan V, Doğu MH, Unal A, Cetin M, Altuntaş F, Ilhan O. Therapeutic plasma exchange in patients with neurological diseases: multicenter retrospective analysis. Transfus Apher Sci 2013;48:349-352.
16. Appropriate number of plasma exchanges in Guillain-Barré syndrome. The French Cooperative Group on Plasma Exchange in Guillain-Barré Syndrome. Ann Neurol 1997;41:298-306.
17. Kleyweg RP, van der Meche FG. Treatment related

fluctuations in Guillain-Barré syndrome after high-dose immunoglobulins or plasma-exchange. J Neurol Neurosurg Psychiatry 1991;54:957-960.

18. van Doorn PA, Ruts L, Jacobs BC. Clinical features, pathogenesis, and treatment of Guillain-Barré syndrome. Lancet Neurol 2008;7:939-950.
19. Hughes RA, Wijdicks EF, Barohn R, Benson E, Cornblath DR, Hahn AF, Meythaler JM, Miller RG, Sladky JT, Stevens JC. Practice parameter: immunotherapy for Guillain-Barré syndrome: report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology 2003;61:736-740.
20. Mori K, Iijima M, Koike H, Hattori N, Tanaka F, Watanabe H, Katsuno M, Fujita A, Aiba I, Ogata A, Saito T, Asakura K, Yoshida M, Hirayama M, Sobue G. The wide spectrum of clinical manifestations in Sjögren's syndrome-associated neuropathy. Brain 2005;128:2518-2534.
21. Levy Y, Uziel Y, Zandman GG, Amital H, Sherer Y, Langevitz P, Goldman B, Shoenfeld Y. Intravenous immunoglobulins in peripheral neuropathy associated with vasculitis. Ann Rheum Dis 2003;62:1221-1223.
22. Lotan I, Hellman MA, Steiner I. Diagnostic criteria of chronic inflammatory demyelinating polyneuropathy in diabetes mellitus. Acta Neurol Scand 2015;132:278-283.
23. Wang Y, Li G, Yang S, Gu X, Li X, Liu M, Wu X, Guan Y, Press R, Zhu J, Zhang HL. Fasting glucose levels correlate with disease severity of Guillain-Barré syndrome. PloS one 2015;10:e0145075.