



Case Report

A Patient with Guillain-Barre Syndrome Treated with Combined Korean Medicine Treatments



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ABSTRACT

Article history:

Submitted: October 04, 2020

Revised: December 09, 2020

Accepted: January 21, 2021

Keywords:

Guillain-Barre syndrome, Korean traditional medicine, facial paralysis, numbness, paresthesia

A patient diagnosed with Guillain-Barre syndrome (GBS) suffering from numbness in the toes and fingers, paralysis in the face, and back pain received intravenous immunoglobulin on December 28, 2019. Without an improvement in symptoms the patient was admitted to a Korean medicine hospital on January 1, 2020 to receive combined Korean medicine treatment including herbal medicine (Sipjeondaebo-tanggami and Hyangbujasunkipalmul-tang), acupuncture treatment, moxibustion, cupping treatment, and physical therapy. Treatment was administered over 51 days, of which 17 days were during hospitalization. Paralysis of facial muscle, and numbness in fingers and toes were evaluated using the Yanagihara score and numeric rating scale (NRS) score, respectively. Facial paralysis improved (21 to 40 based on Yanagihara score) and paresthesia of the hands and feet disappeared (NRS score 6-7 to NRS score 0). There were no side effects or sequela. This study suggested combined Korean medicine treatment may be effective for the treatment of GBS.

<https://doi.org/10.13045/jar.2020.00318>
pISSN 2586-288X eISSN 2586-2898

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Introduction

Guillain-Barre syndrome (GBS) is an immune-mediated disease characterized by multiple neuritis affecting the peripheral nervous system causing flaccid paralysis. It is one of the most frequently occurring acquired demyelinating lesions. GBS is rare with an incidence of 0.75–2 per 100,000 individuals, and the etiology remains unclear [1]. An epidemiological study in 2006-2007 of 100 patients with GBS determined that approximately 69% of affected individuals had previously had an infection causing gastroenteritis up to 6 weeks before the onset of GBS suggestive of an aberrant immune response [2]. GBS is characterized by symptoms of hypoesthesia progressing symmetrically from the distal parts of the body, hypokinesia, and ascending paralysis. The weakening of muscles begins at the distal limbs and may progress to the trunk, facial and respiratory muscles, among which respiratory paralysis

could be serious. The condition typically affects the peripheral nerves but in 25% of cases, the cranial nerves are also affected, which is bilateral in approximately 50% of patients. Among these, the facial nerve is most commonly affected [1,3].

The most severe symptoms appear around a week from the date of onset, and after 2–4 weeks, the symptoms gradually improve in the reverse order of appearance. In addition, sensory loss may occur, but it is less severe than motor paralysis. Recovery generally occurs within 2–18 months, but even after this period, complete recovery may not be anticipated. While most patients show a good prognosis, weakened muscles may remain as an after-effect [4].

A few clinical case reports regarding GBS have been published in the field of Korean medicine. One report discussed the effects of Korean medicine treatment in a case with ataxia preceded by an infectious disease [5,6], and another reported the effects of Korean medicine treatment in a case showing lower limb weakening and

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facial paralysis of moderate severity [7].

The present study reports a case of mild GBS where the chief complaints included dysesthesia and facial paralysis without gait disturbance, weakened limbs or a preceding infectious disease. Combined Korean medicine treatment was performed, and significant improvement was found.

This study was exempt from IRB deliberations (IRB no.: DJDSKH-20-E-15-1).

Case Report

Participant

Kim, OO (F / 37)

Treatment period

Inpatient treatment: January 2 – January 18, 2020 (17 days)

Outpatient treatment: January 20 – February 22, 2020 (34 days)

Chief complaints

Facial paralysis (Left > Right), numbness in bilateral fingers and toes

Onset and cause

December 28, 2020

Unexpectedly

Past history

2018, 2019

Cesarean section × 2

Family history

None

Self-medication

None

Present illness

On December 28, 2019 numbness of the toes and fingers, and facial paralysis sequentially was experienced by the patient. A brain computed tomography (CT) scan, autonomic function test, electromyography, electrocardiography (EKG), and X-ray were performed, and GBS was diagnosed and treated with intravenous immunoglobulin (IVIg) at a previous hospital. The patient did not show improvement in symptoms and she was hospitalized at the Korean medical hospital on January 01, 2020.

Remarks

The patient, who had given birth to a second baby 4 months previously, was not breast-feeding and recently complained of having backache every night. There was no fecal incontinence but paresthesia of the sphincter existed.

Laboratory findings

Blood test and urinalysis (January 3, 2020.)

Liver function test (LFT) : Total protein 9.5 g/dL High

Complete blood count (CBC) : White blood cell (WBC) $3.8 \times 10^3/\mu\text{L}$ Low, Erythrocyte sedimentation rate (ESR) 31 mm/hr High

Urinalysis : Leukocyte 2+, Blood 3+, Red blood cell (RBC) 2-3 (microscopy, high power field)

Herbal medicine treatment

The patient was prescribed Sipjeondaebo-tanggami during hospitalization (January 2 – January 18, 2020) and Hyangbujasunkipalmul-tang as an outpatient (January 20 – February 22, 2020). She took the herbal medicine 3 times daily, 1 hour after each meal. Table 1 shows herbal composition and daily dosage of Sipjeondaebo-tanggami and Hyangbujasunkipalmul-tang.

Acupuncture, pharmacopuncture, and moxibustion treatment

Acupuncture

The patient received acupuncture daily in the morning and afternoon. Acupuncture was performed with 0.20×30 mm sterilized disposable stainless steel DongBang needles (DONGBANG Medical Co., Ltd., Boryeong, Korea) for 20 minutes using infrared. Acupoints including GV20, BL2, EX-HN4, TE23, EX-HN5, TE17, ST4, ST6, LI4, PC6, EX-LE10, EX-UE9, SP6, ST36, ST40, GB41 were used and the needle insertion depth was 10 mm to 20 mm [6,8]. After discharge, the same treatment was conducted 3 times a week.

Pharmacopuncture

During hospitalization, a skin test to determine bee-venom allergy was performed [9] prior to treatment. Pharmacopuncture was administered 5 times a week using sweet bee venom 10 which had been extracted and refined from bee toxin to produce 99.9% pure melittin at a concentration of 0.1 mg/mL (Korean-Pharmacopuncture-Research-Institute). A 1 mL syringe was used and each dose of 0.1 mL was subcutaneously administered on the left EX-HN4, EX-HN5, ST4, ST2, and bilateral TE5, ST36, SP6 with 13 mm × 30-gauge needles. After being discharged, Jungsongouhyul pharmacopuncture (Korean-Pharmacopuncture-Research-Institute) was applied on bilateral TE5, ST36, ST41 using a total of 0.6 mL, with 0.1 mL per acupoint administered intramuscularly by using 13 × 30 mm-gauge needles 3 times a week for decreasing numbness [8].

Moxibustion

Moxibustion at CV4 was performed daily (except on Sundays) during hospitalization [10]. Moxa treatment was administered by combusting 3 moxa cones (DONGBANG Medical Co., Ltd., Boryeong, Korea) in an indirect ceramic moxibustion container (DONGBANG Medical Co., Ltd., Boryeong, Korea) for 20 minutes.

Cupping treatment

Cupping was performed daily (except on Sundays) between January 2 to January 13, 2020 on the patients back to reduce back pain [11].

Table 1. Daily Amounts of Sipjeondaebo-tanggami and Hyangbujasunkipalmul-tang.

Sipjeondaebo-tanggami		Hyangbujasunkipalmul-tang	
Scientific name	g	Scientific name	g
Astragali Radix	24	Cyper Rhizoma	13.3
Rehmanniae Radix Preparat	24	Angelicae Gigantis Radix	10.7
Ginseng Radix	16	Paeoniae Radix Alba	10.7
Atractylodis Rhizoma Alba	16	Atractylodis Rhizoma Alba	8
Poria	16	Polygoni multiflori Radix	8
Angelicae Gigantis Radix	16	Ligustici Rhizoma	8
Eucommiae Cortex	12	Citri Pericarpium	8
Dipsaci Radix	12	Glycyrrhizae Radix	8
Paeoniae Radix Alba	8	Linderae Radix	8
Ligustici Rhizoma	8	Angelicae Dahuricae Radix	5.3
Bambusae Caulis In Taeniam	8	Bombycis Corpus cum Bartyticatus	5.3
Acori Graminei Rhizoma	8	Aurantii Fructus Pericarpium	5.3
Coptidis Rhizoma	8	Zingiberis Rhizoma Siccus	2.7
Achyranthis Radix	8	Bambusae Caulis In Taeniam	4
Cinnamomi Cortex Spissus	4	Aaurantii Immaturus Fructus	4
Glycyrrhizae Radix	4	Zingiberis Rhizoma Recens	16
Zingiberis Rhizoma Recens	24	Zizyphi Fructus	10.6
Zizyphi Fructus	16	Platycodi Radix	5.3
		Cinnamomi Cortex Spissus	5.3
		Clematidis Radix	5.3
		Aucklandiae Radix	5.3
		Crataegii Fructus	5.3
		Massa Medicata Fermentata	5.3
		Oryzae Fructus Germinatus	5.3
		Amomi Fructus	5.3

Physical therapy

Microwave therapy and interferential current therapy (ICT) was performed between January 2 to January 13, 2020 to treat her back pain. After the back pain had resolved, electrical stimulation treatment (EST) was implemented for both sides of the forearms and lower limbs during the period from January 14 to January 18, 2020.

Assessment using the Yanagihara grading scale (5-point scale)

Left facial palsy was evaluated using the Yanagihara grading scale. A total of 10 categories were scored in 5 stages with 0-4

points per category, and then the total was calculated. The highest score indicating normal was set at 40 [12,13], and the evaluation was conducted at 6 AM (Table 2).

Assessment using the numeric rating scale

Numbness of both fingers and feet, and mid-back pain were evaluated using the numeric rating scale (NRS) [14].

Treatment progress

During the hospitalization, facial paralysis showed a remarkable improvement and numbness disappeared from the 3rd to the

Table 2. Yanagihara Grading Scale.

	Scale of 5 point rating				
At rest	0	1	2	3	4
Wrinkle forehead	0	1	2	3	4
Blink	0	1	2	3	4
Closure of eye lightly	0	1	2	3	4
Closure of eye tightly	0	1	2	3	4
Closure of eye on involved side only	0	1	2	3	4
Wrinkle nose	0	1	2	3	4
Whistle	0	1	2	3	4
Grin	0	1	2	3	4
Depress lower lip	0	1	2	3	4
Total	/40				

5th fingers. At discharge the 1st and 2nd fingers and all toes of both feet were still numb. Prior to Korean medicine treatment the Yanagihara score, the NRS score of finger numbness, and the NRS score for toe numbness were 22, 6, and 7, respectively, and at discharge (January 16, 2020) the scores were 27, 3, and 6, respectively. Although symptoms remained, the patient was

discharged to resume normal everyday life. Since then, she received hospital outpatient treatment 3 times a week for 2 weeks and showed gradual improvement until her return to normality. On January 29, 2020 the Yanagihara score was 40 and NRS scores were 0. In the follow-up outpatient appointment at the Korean medicine hospital on January 22, 2020 sequela was reported not to have appeared. In the follow-up outpatient appointment (February 11, 2020) at the hospital where the patient was diagnosed with GBS, it was determined using electromyography, that the patient had recovered, and no further follow-ups were needed. There was no adverse reactions during the Korean medicine treatment. Table 3 and Fig. 1 show the progress of symptoms and treatment.

Discussion

The natural course of GBS recovery is typically within 2-18 months [1]. However, the patient in this case recovered from GBS 33 days after the onset of symptoms showing rapid progress. A symptom of GBS is dyskinesia, but this patient only had paresthesia which was limited to the fingers and toes without muscle weakness or dyskinesia. This was despite electromyography findings (to determine a conduction block in the peripheral nerves) of the limbs which were slightly lower (except for paralysis of the facial muscles). In addition, it has been reported that GBS may be preceded by an infection in about 69% of patients [2], but this patient did not have a history of an infection. However, considering that the patient gave birth in 2018 and 2019, and GBS occurred 4 months after childbirth in 2019, it is thought that the main cause of GBS was the weakening of immunity.

In this case facial paralysis occurred on the left side, and it was evaluated on the Yanagihara scale. Yanagihara grading is an unweighted regional grading scale that evaluates 10 areas of facial function equally, and evaluates them with 3 or 5 points to give a total maximum score of 40 points. There are various scales that

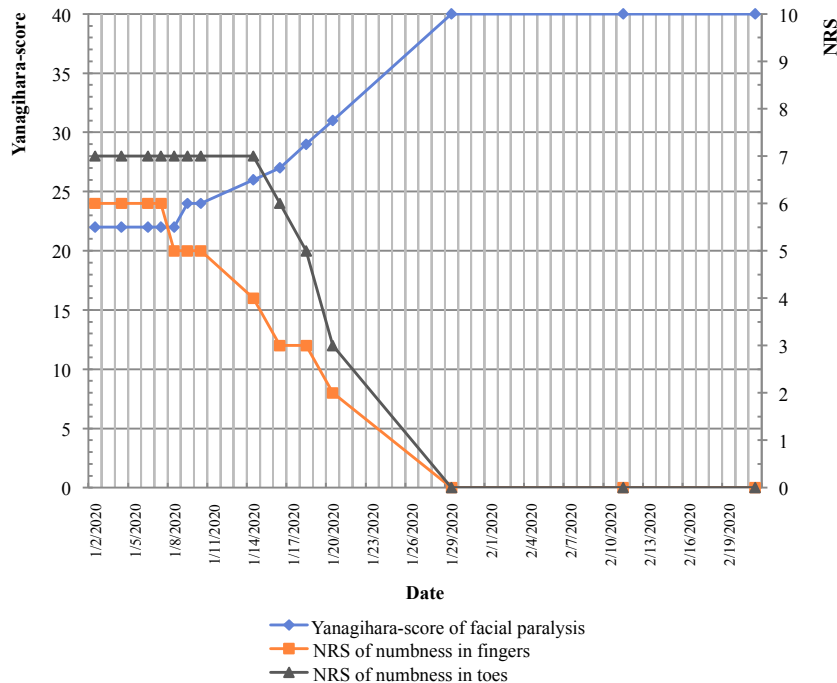


Fig. 1. Progress of symptoms. NRS, numeric rating scale.

can assess facial palsy such as the House Brackmann grading system or FEMA grading system, but the Yanagihara 5-point scale is relatively simple to implement without special tools [15]. The paresthesia that the patient complained of was a form of numbness and was evaluated by NRS. The maximum intensity of pain on the NRS scale is 10, and no pain is 0, the numbness of fingers and toes and back pain was rated as an NRS score [14]. Considering that the patients immunity may be reduced and her level of energy may have decreased after childbirth, Sipjeondaebotang-gami herbal medicine was administered during hospitalization. Sipjeondaebotang-gami alleviates postpartum symptoms, aids sympathetic nerve control, and improves immunity [16]. At discharge from hospital, the patient was given a combination of Hyangbujapalmul-tang (used for disease caused by stress) [17], and Ohyaksungi-san (to have regenerative effects on the immune response and repair nerve damage) to help the patient cope with the high stress of childcare whilst numbness at the extremities of her limbs remained [18].

Acupuncture is a method to increase the electrical activity of the muscles to treat numbness and it was applied to the brachioradialis and intercostal muscles of the upper extremities, and extensors and intercostal muscles of the lower limbs. Acupuncture treatment for paralysis of the facial muscles was in accordance with facial nerve palsy treatment [8] and included acupoints GV20, BL2, EX-HN4, TE23, EX-HN5, TE17, ST4, ST6. Additional acupuncture was performed using LI5, PC6, SP6, and ST36 to improve blood circulation [6].

Pharmacopuncture treatment was performed on the face and limbs. Initially, it was bee venom pharmacopuncture to regulate the immune system and promote blood circulation [9], and after discharge pharmacopuncture was performed with Jungsongouhyul to improve various symptoms caused by asthenia, lower blood flow, and peripheral nerve disorder [8].

The treatment methods for GBS are plasma exchange and IVIg generally. However, these treatments are recommended for patients with severe GBS who have symptoms including paralysis, and inability to walk independently, and treatment of patients with mild GBS is unclear [19]. In addition, no other treatment has been authorized for treatment for GBS in the last 20 years, and the results of whether plasma exchange and IVIg treatment are effective according to the severity of GBS symptoms have not been substantiated [20].

This is a study of a mild case of GBS which occurred after childbirth, without prior history of an infection, and it is considered that there is significance in reporting the possibility that Korean Medicine treatment was effective in a mild GBS case with symptoms of facial paralysis and limb numbness. However, this is 1 patient, and there is a major limitation in that it was not possible to evaluate the extent that Korean medicine treatment contributed to the improvement of patient symptoms because the patient was admitted to the Korean medical hospital after receiving IVIg a few days earlier. Following combined Korean medicine treatment over 57 days the patient showed great improvement as assessed by the Yanagihara score and the NRS score. Development of combined Korean medicine treatment for GBS in the future will involve controlled clinical studies on the effectiveness of Korean medicine treatment for GBS.

Conflicts of Interest

The authors have no conflicts of interest to declare.

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