Clinical Report 1 (Acupuncture)

A Case of Acupuncture Treatment for Pain in the Etremities of Unknown Origin

Tomoko Sasaoka
Acupuncture Specialty, Department of Health Sciences, Tsukuba Univercity of Technology

1. Introduction

In this case report, the patient presented with an unknown illness with symptoms similar to those of neuropathy and signs of anhidrosis. The patient was suspected of having Acquired Idiopathic Generalized Anhidrosis (AIGA), which is an incurable disease. The onset, mechanism, cause of symptoms, and effective treatments of AIGA have yet to be elucidated. I report a rare case of treating a symptom of unknown origin and with similar characteristics to those of AIGA using acupuncture.

2. Case study

Chief complaint: pain of the extremities

A 78-year-old Japanese male patient presented with pricking and burning pain sensation in both extremities that had started approximately 2 years earlier. The pain was described as being similar to a burning sensation, with numbness and anhidrosis. Immediately after the patient became aware of his symptoms, he consulted a neighborhood internal medicine clinic. The cause of the pain remained unclear. However, because mildly elevated blood pressure and cholesterol levels were detected, he was administered a hypotensive agent, lipid-lowering drug, and Kampo medicine. After 1.5 years from the onset of the disease, the patient visited another hospital for a detailed examination by specialists in neurology and orthopedic surgery. The examinations included blood tests, angiography of the lower-extremity vessels, cervical spine X-rays and magnetic resonance imaging (MRI), and measurement of the nerve conduction velocity in all extremities. However, the etiology of the condition remained undetermined following these examinations. Therefore, the neurologist referred the patient to a doctor at the department of Traditional Herbal Medicine of the Center for Integrated Medicine affiliated with the Tsukuba University of Technology. In this hospital, the patient was subjected to thermography examination and MRI (lumbar spine). His clinical examination did not reveal any abnormalities.

Suspicions of spondylopathy, myelopathy, entrapment neuropathy, diabetic neuropathy, pesticide-induced toxic neuropathy, obstructive arteriosclerosis, Sjögren's syndrome, and restless leg syndrome were cleared through various examinations; the underlying cause of the symptoms in this case remained undetermined. The examination dates have been summarized in Table 1. The patient was subsequently referred to our department, and we started acupuncture treatment.

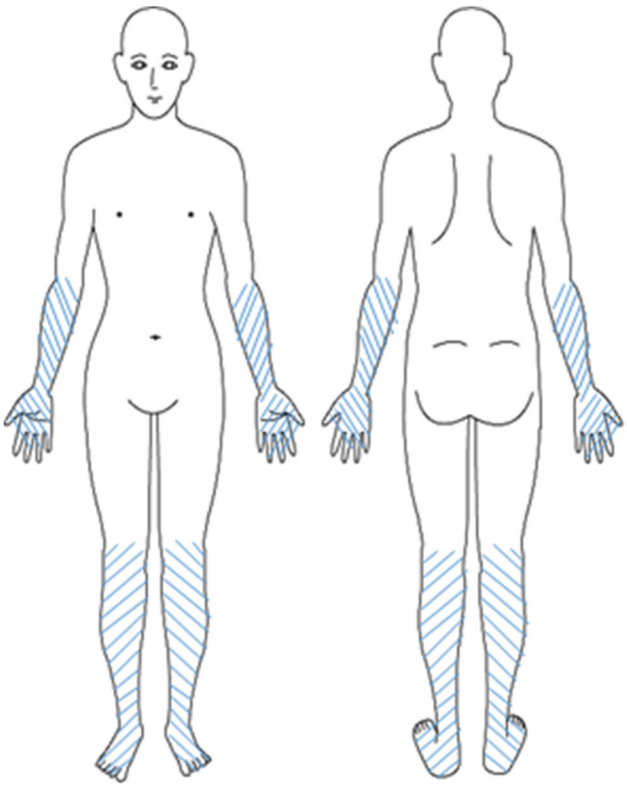

Figure 1 Affected regions

Details of the chief complaint

The symptoms affected the entire forearms and the lower legs, and included sharp pain and numbness associated with heat sensation. The symptoms were continuously present, and the attacks intensified by several aggravating factors (see below). Edema was observed in the same locations. During the attacks, the affected regions additionally developed generalized rubor (Fig. 1).

Aggravating factors

The symptoms were paroxysmally intensified by several aggravating factors, including bathing, putting on shoes and walking, going to sleep, and eating irritants like red pepper.

Alleviating factors

The symptoms were alleviated by cooling and stroking the extremities.

Other factors associated with the condition of the patient included dry skin and dry mouth. As sleep was also affected by attacks occurring before going to sleep, the patient's quality of life (QOL) was markedly impaired.

Table 2 Laboratory findings

	Right	Left
Nerve conduction velocity (m/sec) * latency in either case within normal range		
Median nerve MCV (m/sec)	55.1	52.4
SCV (m/sec)	57.9	59.1
F-wave (%)	81	63
Ulnar nerve MCV (m/sec)	51.7	52.4
SCV (m/sec)	58.3	58.1
F-wave (%)	94	94
Deep fibular nerve MCV (m/sec)	44.8	44.1
SCV (m/sec)	-	-
F-wave (%)	-	-
Posterior tibial nerve MCV (m/sec)	39.2	44.4
SCV (m/sec)	-	-
F-wave (%)	100	100
Sural nerve MCV (m/sec)	-	-
SCV (m/sec)	7.0	12.3
F-wave (%)	-	-
Pallesthesia (medial malleolus)	mildly decreased 4/5	mildly decreased 4/5
MRI, X-ray (neck)	mild deformation of cervical spine	
MRI (lumbar region)	mild deformation of lumbar spine	
Thermography (no endurance test)	N.P.	
Angiography (lower extremities)	N.P.	N.P.
Blood examination (general blood tests (biochemistry, blood cells), including renal function, liver function, blood glucose, inflammatory reaction)	N.P.	

Table 1 Overview of medications taken over time

Date	April of year X-1	September of year X-1	February of year X	May of year X
Used medications	Olmetec	Olmetec	Olmetec)	Olmetec
	Atelec	Atelec	Atelec	Adalat
	Adalat	Adalat	Nifelantern CR	BI・Sifrol
	Bezatol SR	Bezatol SR	Bezafibrate	
	Keishibukuryogan (Tsumura #25)	Sanmotsuogonto extract granules (Tsumura #121)	Keihikajutsubuto extract granules (Tsumura #18)	

Patient's circumstances before the onset of the attacks

The patient was pruning the garden trees using a chain saw under the care of the municipality in the residential area when the attacks were first experienced. The pruning time by far exceeded the vibration exposure time (2 hours/day) specified in a notification by the Labor Standards Bureau of the Health, Labor and Welfare Ministry. Immediately before the attacks, the patient had sprayed pesticides onto the trees.

Patient's social/mental environment

The patient lives with his wife, who is suffering from cognitive impairment. As she requires constant supervision, he has no time for physical and mental rest. His role as head of the residents' association is another source of stress. However, as his position is a source of income, he cannot quit.

Oriental medical findings

Pulse patterns: Deep, moderate deficiency.

Abdominal patterns: Weakness of the lower abdominal region, para-umblical tenderness, and resistance.

Tongue patterns: Dark red color, dry, and yellow coating.

Other findings: (1) heat with agitation in the palms, soles, and chest; (2) no sweating; (3) dry mouth; (4) large amounts of sputum; (5) loss of appetite; (6) tension of skin and muscles; (7) muddy stools; (8) low back pain (aching pain); (9) increased muscle tension of the entire legs; and (10) ingestion of 2 liters of water per day.

Physical characteristics:

The patient was 162 cm tall, weighed 66 kg, and had a body mass index (BMI) of 25.1 kg/m^2.

Medications

The administered medications included Olmesartan medoxomil, Cilnidipine, Nifedipine, Bezafibrate, Cinnamon Twig, and Poria Pill (桂枝茯苓丸エキス顆粒: Tsumura #25, Tsumura & Co, Tokyo, Japan).

Past medical history

The patient had previously experienced severe alveolar pyorrhea and had many missing teeth .

Family history

There were no appreciable diseases noted in the patient's family history.

Figure 2 Symptom diary

Date	Bedtime	Time of rising	Frequency of attacks during the night	Frequency of cooling arms and legs with water during the night	Frequency of attacks during the day	Frequency of cooling arms and legs with water during the day	NRS * Please refer to the notes below.	Comments Changes in physical condition or events during daily life etc.

NRS notation. The most uncomfortable condition before acupuncture treatment is given a score of 10 points, while total absence of symptoms receives 0 points. Please evaluate in general how irritating your symptoms were today and assign a score between 0 and 10 points to the condition.

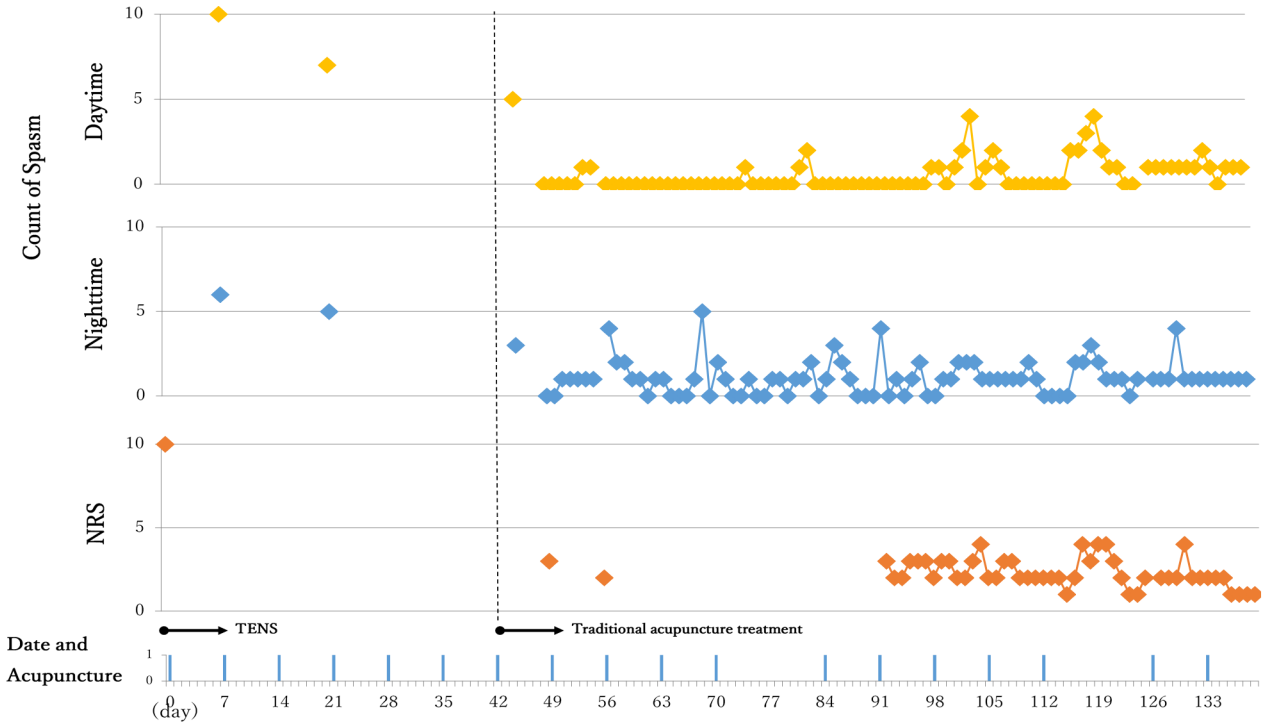

Figure 3 Clinical course

Personal history

The patient was a smoker, with a Brinkman index (the number of cigarettes smoked per day multiplied by the number of years of smoking) of 3,300; no alcohol drinking was reported.

Social history

The patient is unemployed (no occupation) but is active as the head of the residents' association.

Western medicine diagnosis

Unknown.

Oriental medicine diagnosis

A diagnosis of Bi-syndrome (fixed impediment and heat impediment) and kidney deficiency was made.

Treatment

Starting from the 1st to the 6th session, a 50-Hz low frequency Transcutaneous Electrical Nerve Stimulation (TENS) was administered for 20 min to the regions of pain to alleviate the pain and reduce muscle tension. This treatment was combined with needle retention on the lower back and legs. After the 7th session, the goal of the traditional acupuncture treatment was changed to draining dampness, clearing heat, and nourishing yin; thus, acupuncture was administered to Dazhong (KI6), Sanyinjiao (SP6), and Qu Chi (LI11).

Evaluation method

The Numerical Rating Scale (NRS) was used to score the originally prepared symptom diary (Fig. 2).

3. Results

The results are shown in Fig. 3. Since we started documenting the patient's symptoms in the diary from the 7th session, I wrote down the clinical process from the 1st to the 6th session based on the medical interview. From the 1st to the 6th session, a decrease in the frequency of the attacks and increase in the mobility of the legs were observed, with no marked improvement. After changing the traditional

acupuncture treatment plan starting from the 7th session, both severity of the symptoms and frequency of the attacks significantly decreased, with day-to-day variations. The NRS score also dropped to 3 by the 8th session. In conjunction with these changes, the large amounts of sputum also decreased by this time; by the 10th session, the patient had almost completely stopped expectorating. Furthermore, the mouth dryness had markedly improved, and sweating could be observed by the 16th session.

4. Discussion

The etiology in this case remained unknown as per Western medicine. However, as the chief complaint was pain, I first attempted to relieve the pain by applying TENS based on the gate control theory. However, as the TENS did not induce sufficient improvement and the patient had several other symptoms like anhidrosis, I switched to an oriental medicine-based treatment plan starting from the 7th session. The patient complained of severe pain associated with a burning sensation and heat stagnation. In terms of Oriental medicine, insufficient chewing during meals because of missing teeth (kidney deficiency) and chronic inappetence (spleen deficiency), frequent diarrhea (spleen deficiency), edema (water-dampness), and ingestion of large amounts of fluids (2 liters of water per day) (spleen deficiency and water-dampness) were also noted. All of these factors, due to aging and kidney deficiency, led to the deterioration of spleen deficiency and stagnation of damp phlegm. Caring for his wife and getting along with neighbors caused mental stress in the patient (liver-spleen disharmony), which also contributed to deterioration of the patient's condition, causing heating up of the stagnant water, leading subsequently to stagnation in the vessels in the four extremities and probably to Bi-syndrome (heat impediment). Local, symptomatic treatment was directed at clearing the heat and expelling phlegm, while root treatment served to improve the kidney deficiency, invigorating spleen, and nourishing yin for tranquilization. The result was an alleviation of both the chief complaint and the associated symptoms, leading to an improvement in the QOL. In oriental medicine, the practitioner uses all five senses to perform the four forms of examination and arrive at a characteristic diagnosis of the condition. These characteristics resulted in a treatment plan in the present patient, who had not been diagnosed based on Western medicine, which has thus worked to his advantage.

On the other hand, the anhidrosis, burning sensation, and heat stagnation of unknown origin were identified as symptoms of AIGA. Until the 1990s, there had been almost no reports on AIGA, which was recognized as a new disease only over the past 20–30 years. The disease is observed mainly in East Asia, while only a few hundred cases have been reported in Japan. Thus, only few facilities are capable of diagnosing AIGA in Japan, where it has been designated in 2015 as an intractable disease. While the mechanism of AIGA onset and etiology are still unknown, a characteristic type of inflammation of the sweat glands is observed and treatment with steroids is markedly effective, increasingly suggesting that it is an autoimmune disease. Moreover, based on characteristic findings obtained through sweating, thermography endurance, and drug tolerance tests, the effective diagnosis of AIGA has been established. In addition, after the first treatment guidelines[1] were published in 2013, a revised edition was published in 2015[2-3]. Patients with AIGA present characteristic clinical symptoms, including a decreased function of the sweat glands. Systemic destruction of the sweat glands may subsequently lead to anhidrosis, burning sensation, and flaring. Since the suppression of sweating impedes heat dissipation, even mild exercise or bathing may cause a heat stroke in patients with a severe condition. Thus, the current guidelines provide patients with AIGA with clear instructions regarding body temperature control and cooling methods.

The present patient also presented with anhidrosis, burning sensation, and flaring. His symptoms became aggravated following exercise, putting on shoes, bathing, going to bed, and similar activities associated with a rise in body temperature or impeded heat dissipation. Since walking barefoot on a cold floor or pouring water on the body relieved the symptoms, this case closely resembled AIGA.

As stated above, AIGA is a rare disease and can currently be treated only at a few medical facilities. Unfortunately, this patient was never checked and treated based on a suspicion of AIGA.

In this case, diagnosis remained uncertain as per Western medicine, but the symptoms closely resembled those of AIGA. The results suggested that acupuncture treatment is effective for alleviating the symptoms of AIGA or other diseases with similar symptoms.

5. Conclusions

Traditional acupuncture treatment was effective in relieving pain of an unknown origin in both limbs and significantly relieved both the chief complaint and its associated symptoms. Detailed examinations at the hospital did not reveal any anomalies, and the diagnosis remained uncertain as per Western medicine. Alleviation of the symptoms following application of an oriental medicine-based approach suggested that this approach can be expected to improve the QOL.

6. Acknowledgement

I would like to thank Editage (www.editage.jp) for English language editing.

7. References

1) Takahiro SATO et al.: Treatment Guideline for Acquired Idiopathic Generalized Anhidrosis, The Autonomic Nervous System, 50(1):67-74, 2013. (Publish in Japanese)
2) Health and Labour Sciences Research Grant (research project into the control of intractable diseases), investigative research team for rare intractable skin diseases, committee for the preparation of the "Treatment Guideline for Acquired Idiopathic Generalized Anhidrosis" etc., Treatment Guideline for Acquired Idiopathic Generalized Anhidrosis, The Autonomic Nervous System, 52(4):352-9, 2015. (Publish in Japanese)
3) Takichi MUNETSUGU, Hiroo YOKOZEKI et al., Revised guideline for the diagnosis and treatment of acquired idiopathic generalized anhidrosis in Japan, The Journal of Dermatology 44(4), Version of Record online, 2017.