Chapter 7

Kampo, a Traditional Japanese Medicine, for the Body, Mind, and Soul

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Abstract

Traditional Japanese (Kampo) medicine is widely used to treat numerous conditions. Kampo medicine includes herbal formulas, acupuncture, moxibustion, and massage. After the Great East Japan Earthquake (GEJE), Kampo medicine was used to treat the imbalances in the body, mind, and soul in severely affected areas. The effects of the Kampo medicine saikokeishikankyoto (SKK) for the treatment of post-traumatic stress disorder (PTSD) have been proven in our clinical study. In this chapter, we have summarized both our reports from the Kampo medical clinics that were set up after the GEJE disaster and our findings of the clinical study on PTSD treatment in disaster survivors.

Keywords: Japan, Kampo, Tsunami, Disaster, Earthquake

1. Introduction

1.1. The history and current status of traditional Japanese (Kampo) medicine

Traditional Japanese medicine, known as Kampo, originated from China and was introduced to Japan via Korea in the sixth century. Kampo medicine is widely used to treat numerous conditions, including imbalances in the body, mind, and soul. Kampo treatment includes herbal formulas, acupuncture, moxibustion, and massage, and treatment is determined based on the diagnosis according to the original Kampo concept. The diagnosis involves obtaining

the history of the illness and a physical examination (i.e., tongue examination, pulse examination, and abdominal examination). Kampo education has been conducted at all 80 medical schools in Japan since 2005 [1]. Currently, Kampo is used by approximately 84% of clinical practitioners in Japan [2]. Powdered extract preparations of Kampo formula are used widely in Japan, and 148 formulae are covered by the National Health Insurance [3]. The clinical study of Kampo medicine has gradually been increasing; 378 randomized controlled trials (RCTs) of Kampo medicine were reported in the Evidence Reports of Kampo Treatment by the Special Committee for Evidence-Based Medicine, the Japan Society for Oriental Medicine [4].

1.2. Imbalances of the body, mind, and soul associated with the Great East Japan earthquake (GEJE) and tsunami

The coastal areas of eastern Japan were devastated by a massive earthquake and tsunami on March 11, 2011(Figure 1). Tsunami waves reached a maximum height of approximately 16 m at the Miyagi fishery port of Onagawa, sweeping away people, cars, houses, and entire communities. It was reported that approximately 18,000 people died or were missing, and that at least 400,000 houses were completely or partially destroyed (Figure 2) [5]. More than 400,000 people were forced to evacuate to temporary shelters. Many schools and community centers were converted into evacuation centers. These evacuation centers were isolated due to inundated and severed roads in the Miyagi Prefecture, which prevented communication with other areas of the country. The nuclear power plant in Fukushima Prefecture was also destroyed by the tsunami, causing radiation contamination along the eastern coast of Fukushima. Severe problems with the supply of air, water, food, and shelter emerged due to radiation pollution. The government urged people living within a 20- to 30-km radius of the Fukushima Nuclear Power Plants to evacuate to distant and safer areas (Figure 1) [6]. Everyone in eastern Japan experienced anxiety, irritability, sadness, and despair.

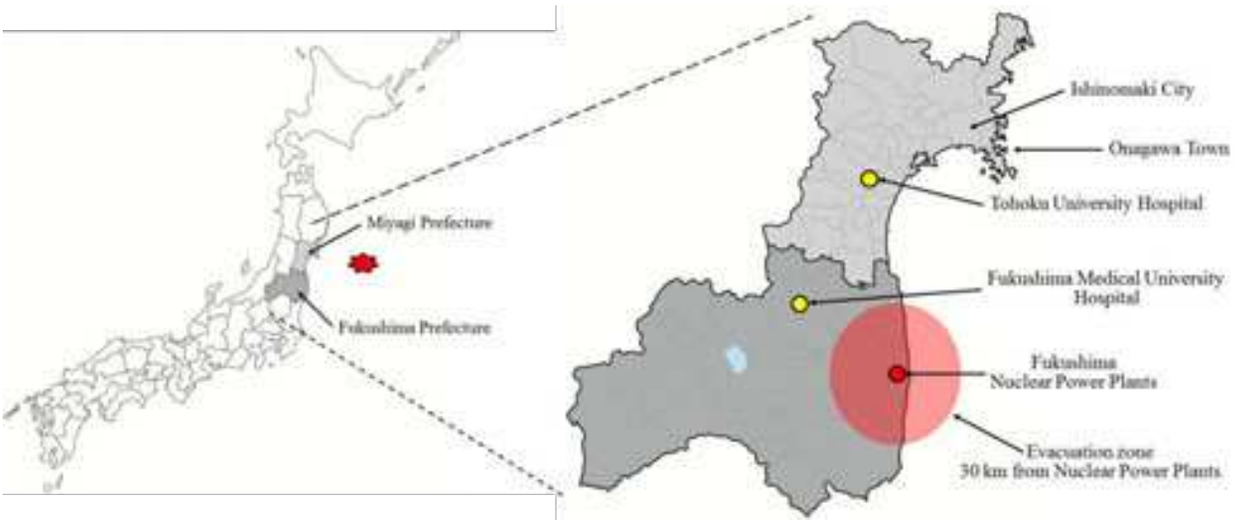

Figure 1. The seismic center of the GEJE and the locations of the Miyagi and Fukushima Prefectures, the Tohoku University Hospital in the Miyagi Prefecture, and the Fukushima Medical University Hospital in the Fukushima Prefecture [6].

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Figure 2. A scene from the Onagawa peninsula after the GEJE and tsunami.

1.3. Purpose

After the GEJE, we provided Kampo treatment to residents in the severely stricken disaster areas of the Miyagi and Fukushima Prefectures. Our experience demonstrated the potential efficacy of traditional medicine after this massive natural disaster [6-10]. We then performed a clinical study of Kampo medicine for the treatment of PTSD in disaster survivors [11]. In this chapter, we have summarized both our reports from the Kampo medical clinics that were set up after the GEJE disaster and our clinical study of PTSD treatment in disaster survivors.

2. Kampo medicine clinics in the Miyagi and Fukushima Prefectures after the GEJE [6-10]

We set up 12 Kampo medicine clinics at the evacuation centers in Onagawa and Ishinomaki in the first 72 days after the disaster. We treated 172 patients during the acute period (1–14 days after the disaster), 117 patients during the subacute period (15–42 days), and 47 patients during the chronic period (43–73 days). Figure 3 shows the treatment operations conducted at one evacuation center [7, 8].

Figure 3. Kampo treatment at an evacuation center [7, 8].
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During the acute period, many patients presented with the common cold, hypothermia, and enterocolitis (Figure 4). For patients with acute symptoms of the common cold, Kampo preparations such as kakkonto and keishito were used, whereas ninjinto was used to treat hypothermia

During the acute period, many patients presented with the common cold, hypothermia, and enterocolitis (Figure 4). For patients with acute symptoms of the common cold, Kampo preparations such as kakkonto and keishito were used, whereas ninjinto was used to treat hypothermia (Figure 5). Patients with prolonged symptoms that failed to improve with antibiotic or anti-inflammatory medication were prescribed shosaikoto and other similar Kampo preparations. Goreisan was used to treat enterocolitis accompanied by diarrhea or vomiting that was not relieved by antidiarrheal agents or intestinal regulators.

During the subacute period, allergic symptoms such as persistent cough, pharyngeal pain, runny nose, and itchy eyes were common (Figure 4). Although many patients had already received antihistamines and other antiallergy medications, many complained of decreased efficiency in daily activities due to adverse drug reactions such as drowsiness and impaired attention. These patients were prescribed Kampo preparations with antiallergy properties such as shoseiryuto.

During the chronic period, an increase in psychiatric symptoms such as irritability, anxiety, lightheadedness, and insomnia as well as somatoform disorders were observed (Figure 4). For these symptoms, we prescribed Kampo preparations with tranquilizing properties, such as yokukansan and kamikihito. Many patients complained of constipation and were prescribed cathartics such as mashiningan and junchoto.

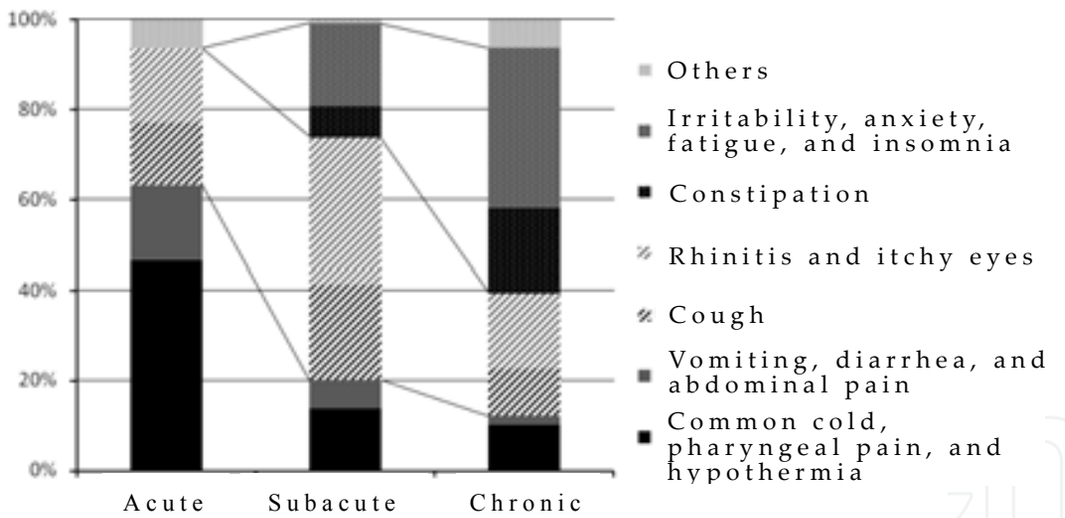

Figure 4. A comparison of symptoms during the acute (1st to 14th day after the disaster, n = 72), subacute (15th to 42nd day, n = 117), and chronic (43rd to 73rd day, n = 47) periods. This figure was modified from [7] and [8].

We also performed massage therapy and acupuncture at seven evacuation centers in the Miyagi and Fukushima Prefectures (Figures 6 and 7, respectively). Massage therapy was performed manually, as shown in Figure 6. Both traditional acupuncture needles and press tack needles were used to administer the acupuncture therapy (Figures 8 and 9, respectively). In total, 553 people were treated (mean age, 54.0 years; 206 men, 347 women). The interview assessments showed that the most common complaint was shoulder/back stiffness (Table 1) (Figures 10 and 11). Many people indicated that they experienced both physical and psycho-

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logical relief with therapy, and 92.3% were satisfied with the therapeutic outcome. These findings indicate that massage therapy and acupuncture at the time of a disaster offer both mental and physical relief and may be a therapeutic approach that can be effectively used in combination with Western medica

Figure 5. Examples of the extract powders of the Kampo formulae used in the evacuation centers.

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Figure 6. A scene from the massage therapy conducted in one of the evacuation centers in a coastal area of the Miyagi Prefecture [7, 10].

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Figure 7. A scene from the acupuncture therapy conducted in the living quarters of an evacuation center in the Fukushima Prefecture.

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Figure 8. An example of the acupuncture needles used in the acupuncture therapy.

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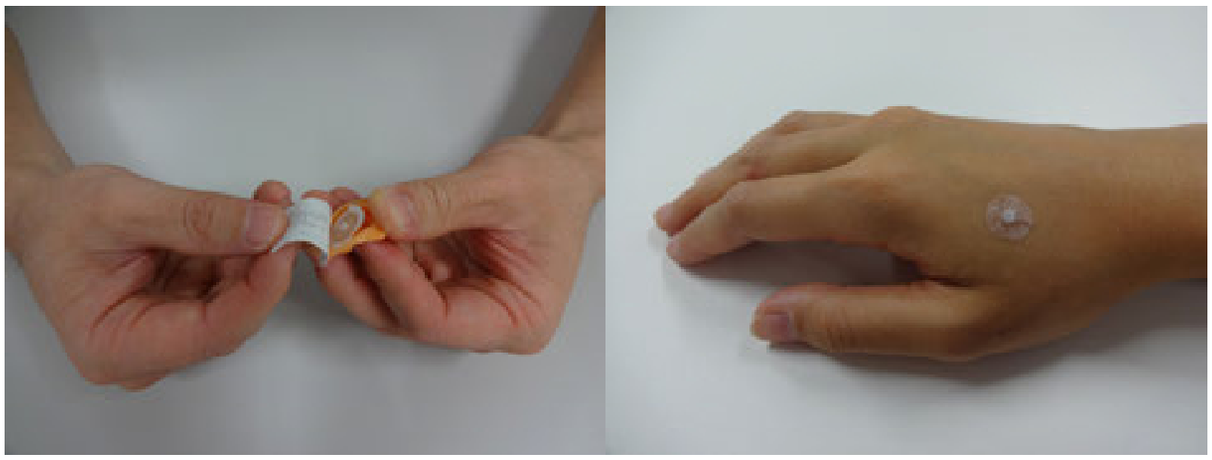

Figure 9. An example of the press tack needles used to administer acupuncture.

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Age (year old)	Gender	Symptoms					Affected sites					
		Pain	Stiffness	Numbness	Edema	The others	Head	Shoulder and back	Upper limb	Lumbar	Lower limb	The others
Age < 20	Male (n = 6)		5			1	2	3		2	2	1
	Female (n = 5)	2	3	2				3	2	2	1	
20 ≤ age < 40	Male (n = 6)	3	5					3		5	1	
	Female (n = 13)	2	10	1		1	2	9	1	6	4	
40 ≤ age < 60	Male (n = 17)	7	10	2	1			12		6	5	
	Female (n = 26)	5	17	4	3	1	4	20	6	9	7	
60 ≤ age < 80	Male (n = 11)	3	6	1	2	1		7		6	4	
	Female (n = 34)	25	18	1	2		2	20	5	14	14	1
80 ≤ age	Male (n = 5)	5	3					3	1	3	2	
	Female (n = 5)	1	3		2			2			2	1
Total	N = 128	53	80	11	10	4	10	82	15	53	42	3
	%	41.4	62.5	8.6	7.8	3.1	7.8	64.1	11.7	41.4	32.8	2.3

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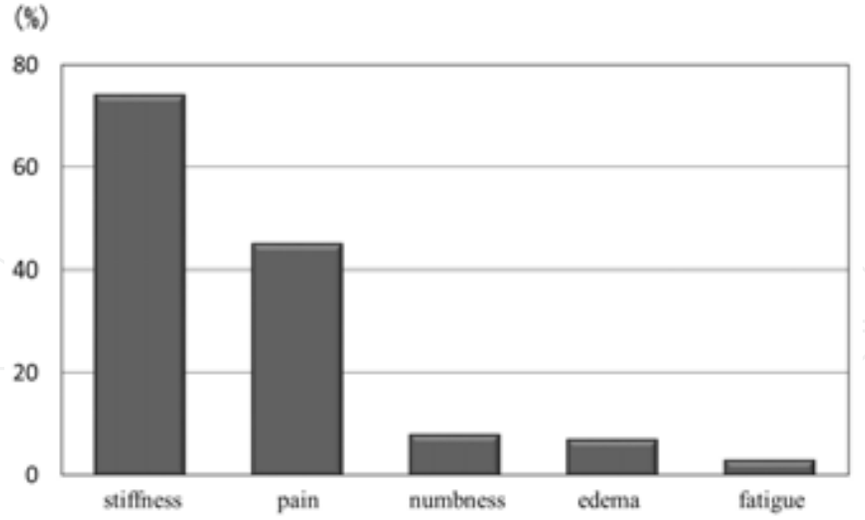

Figure 10. The total number of evacuees that report each symptom [10].

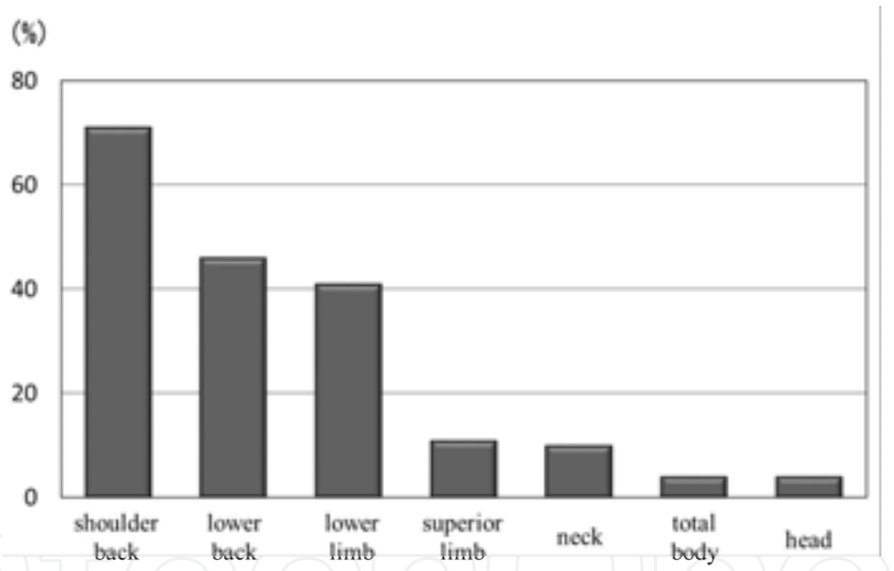

Figure 11. The total number of evacuees with the affected site [10].

3. Clinical study of Kampo medicine for PTSD in GEJE survivors [11]

3.1. Purpose

Many survivors had an elevated risk of developing PTSD after the GEJE and tsunami. Therefore, a randomized, observer-blinded, controlled trial was conducted to examine the efficacy and safety of the traditional Japanese herbal formula SKK in treating PTSD in disaster survivors.

3.2. Methods

3.2.1. Participants

Subjects were recruited from the outpatient clinic at the National Sendai-Nishitaga Hospital in Sendai, Japan. All participants completed an intake assessment that included a medical history, physical examination, and standard blood examination as well as an Impact of Event Scale-Revised (IES-R) to assess the severity of PTSD at baseline. The inclusion criteria were as follows: survivors of the GEJE and tsunami who (1) were older than 20 years, (2) were diagnosed with PTSD according to the Diagnostic and Statistical Manual (DSM)-IV TR, and (3) had an IES-R score ≥ 25 (cut-off point). The exclusion criteria were as follows: (1) major medical illness such as neoplastic disease, acute inflammation, or any other disease that would most likely prevent the completion of this study; (2) psychosis due to other disorders such as schizophrenia, depression, and/or dementia; (3) delirium due to drugs, alcohol, metabolic intoxication, or inflammation; and (4) the use of neuroleptics, antianxiety drugs, antiepileptic drugs, antidepressants, or herbal remedies during the past two months.

3.2.2. The study protocol

The study protocol was performed with the intention to treat. The SKK extract was prescribed to the patients in the SKK group. The SKK extract (TJ-11) was processed by Tsumura (Tokyo, Japan), and it contained the following mixture of dried herbs: Radix Bupleuri (6 g), Trichosanthis Kirilowii (3 g), Cinnamomi Cassiae (3 g), Radix Scutellariae Baicalensis (3 g), Concha Ostreae (3 g), Radix Glycyrrhizae (2 g), and Rhizoma Zingiberis (2 g). These herbs are registered in the Japan Pharmacopoeia (15th Edition). Each participant in the SKK group received 2.5 g of SKK powder (1.17 g extract) 3 times per day for 2 weeks. The processes involved in the production and supply of SKK comply with the Good Manufacturing Practices for Kampo products and are also approved by the Ministry of Health, Labour, and Welfare of Japan. Participants understood that those randomized into the control group could receive any treatment after completion of the whole trial if they wanted. Patients were free to withdraw from the study at any time. Clinical assessments were performed at baseline and at the study endpoint.

3.2.3. Outcome measurement

The primary clinical outcome measure was the severity of PTSD symptoms as measured by the total IES-R. The secondary outcome measures were the 3 IES-R subscale scores: avoidance, hyperarousal, and intrusion.

3.2.4. Statistical analysis

The analyses were performed as a modified intention to treat. All statistical analysis was performed using the SPSS software (version 16.0, SPSS Japan Inc., Tokyo, Japan). Measurements (mean and SD) were calculated at baseline and at the endpoint for all continuous primary and secondary measures. A two-way analysis of variance (ANOVA) was conducted to compare outcomes between the SKK and control group. The changes in each group from

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baseline to the endpoint were compared using a post-hoc paired t-test when the intergroup difference was significant ($P < 0.05$).

3.2.5. Ethical committee

The study protocol was approved by the Institutional Review Board of Sendai-Nishitaga National Hospital in Sendai, Japan, and registered with the University Hospital Medical Information Network (UMIN) clinical trial registry (UMIN000010890, http://www.umin.ac.jp/ctr/index.htm).

3.2.6. Results

The 43 participants were randomized into the SKK (n = 21) and control (n = 22) groups (Table 2). The magnitude of changes in the total IES-R scores differed significantly between the two groups ($p<0.001$). A post-hoc analysis showed that the total IES-R score improved significantly in the SKK group, from 49.6 ± 11.9 to 25.5 ± 17.0 ($p<0.001$) (Figure 12). The subscale scores improved significantly in the SKK group (avoidance, $p=0.003$; hyperarousal, $p<0.001$; intrusion, $p<0.001$) (Figure 13).

	Group		*P* value
	SKK	Control	
n	21	22	
Sex (m/f)	9/12	13/9	0.45
Age (year)	52.3 ± 13.0	48.0 ± 20.9	0.42
IES-R (baseline)	49.6 ± 11.6	43.7 ± 13.7	0.14

Table 2. Characteristics of the SKK and control groups.

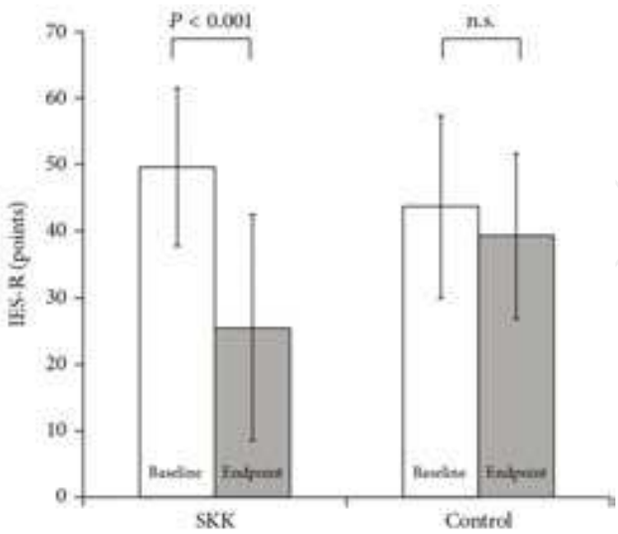

Figure 12. Changes in the total IES-R scores. The two-way ANOVA showed a significant difference between the groups ($p<0.001$), and a post-hoc analysis showed that the total IES-R scores were significantly improved in the SKK group only.

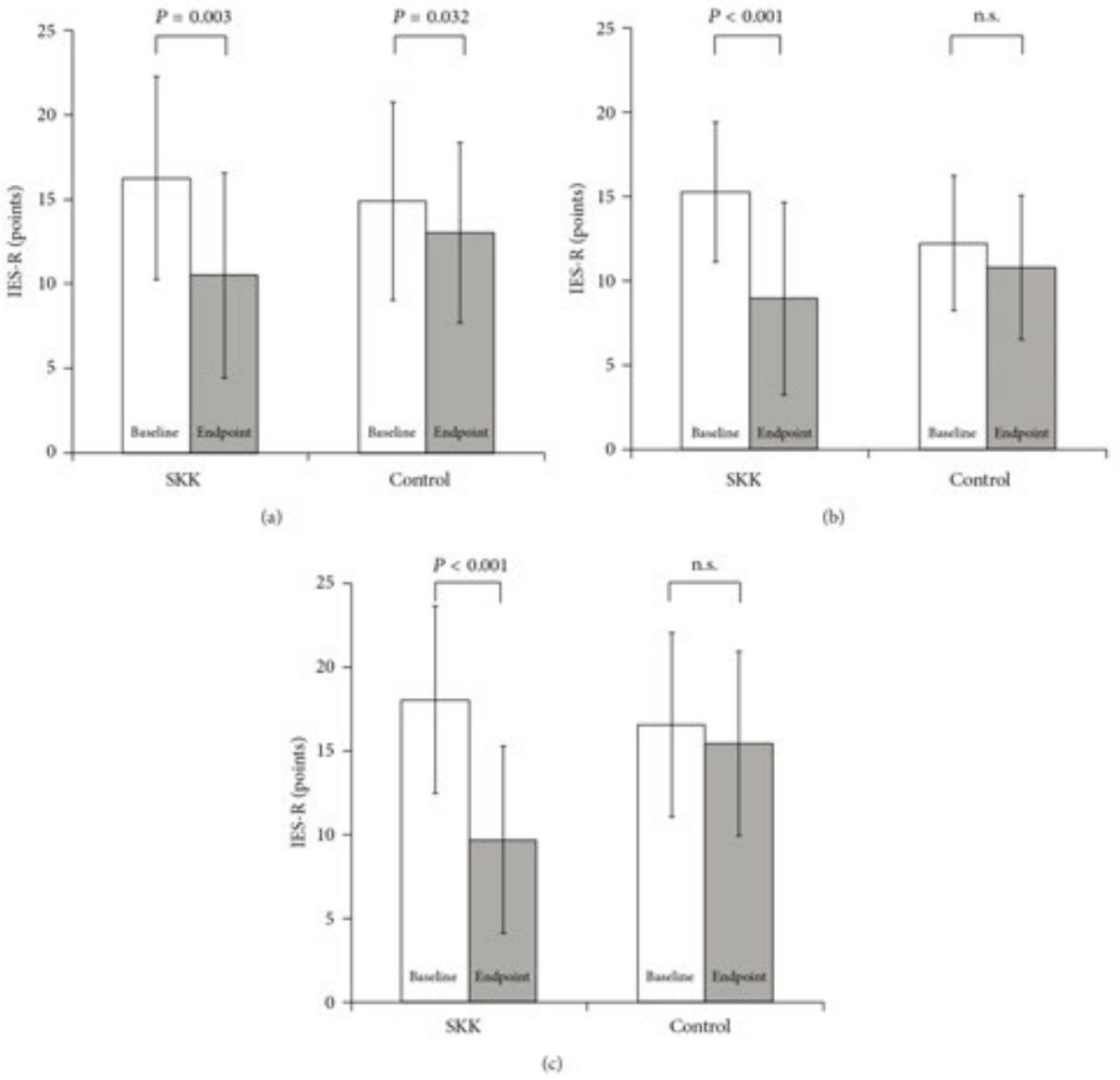

Figure 13. (a) Changes in the IES-R avoidance subscale score. (b) Changes in the IES-R hyperarousal subscale score. (c) Changes in the IES-R intrusion subscale score. The two-way ANOVA showed that each subscale differed significantly between the SKK and control groups ([a] p=0.025, [b] p=0.005, [c] p=0.001). Post-hoc analyses showed that all subscale scores changed significantly from baseline to the endpoint in the SKK group ([a] p=0.003, [b] p<0.001, [c] p<0.001). In the control group, only the avoidance subscale score showed a significant change ([a] p=0.032, [b] n.s., [c] n.s.).

4. Discussion

4.1. Medical operations with Kampo medicine in the Miyagi and Fukushima Prefectures after the GEJE

Approximately one month after the GEJE, an increase in psychiatric symptoms such as insomnia, irritability, lightheadedness, and anxiety as well as somatoform disorders was

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observed. These symptoms may be attributed to fatigue related to the extended stay of the evacuees at the evacuation centers and to the stress experienced from recurring aftershocks. In addition, patient complaints of constipation may be attributed to the composition of the distributed meals, which consisted mainly of carbohydrates. In this disaster medical operation, we observed that Kampo treatment relieved symptoms in our patients. Kampo treatment is generally applied after taking a history of the patient's illness and conducting a physical examination [5], and was a useful tool for this particular natural disaster when commonly used medical supplies were scarce. The powder extract preparations of Kampo medicine have been used widely in Japan, and their cost is subsidized by the National Health Insurance. There also were occasions in which Kampo preparations were used as treatments for symptoms that emerged during the chronic period, such as psychiatric disorders and constipation. Kampo therapy imparted beneficial effects on both physical and mental/emotional symptoms in patients.

Clinical evidence supports the effectiveness of Kampo medicines administered to patients affected by the GEJE and tsunami. Based on our experience, we find that Kampo treatment can be performed on a wide range of symptoms. In addition, Kampo treatment can be performed concurrent in many patients over a large area similar to the magnitude affected by the recent GEJE and tsunami. It is our vision and hope that Kampo preparations are included in future medical relief supplies for disaster victims and that Kampo treatments are applied for treating a wide range of medical conditions.

Through the medical operation with massage therapy and acupuncture, we realized that Kampo treatments can alleviate various symptoms when given in combination with Western medical practices even under such difficult circumstances as those encountered after the GEJE and tsunami [7-10]. Moreover, the characteristic symptoms of stiffness and pain started to increase approximately one month after the GEJE. It is said that both systemic changes and psychological symptoms contribute to chronic pain [7]. We speculate that complaints of pain increased due to several factors, including the unaccustomed stay at an evacuation center, lying down in a space too small to roll over, the contents of the distributed meals, environmental problems, psychological shock, and stress. In addition to the relief of pain and stiffness, massage therapy and acupuncture can contribute to the early detection of other problems that evacuees might be prone to develop, because the long therapy sessions allow practitioners to listen attentively to their patients. The therapy satisfaction rate of 92.3% may reflect not only the simple effects of the physical treatment but also the relaxing effects derived from the inherent sense of trust and safety generated by the warmth of the manual treatment and conversation during the therapy sessions. In early April, when voluntary massage therapy and acupuncture was started, running water had not yet been restored at any evacuation center. Under these conditions, evacuees could not bathe or even wash their hands properly. During this period, we performed only massage therapy in consideration of infection risks, and started acupuncture therapy only after the evacuees were again able to bathe. However, under such conditions of inadequate sanitation, the use of contact needles that noninvasively stimulate the skin may be an option. Moreover, the circumstances for setting up a treatment room varied among the evacuation centers.

4.2. Clinical study of Kampo medicine for PTSD in survivors after the GEJE

Our clinical study showed that SKK significantly improved PTSD caused by the disaster. A recent study showed that PTSD was strongly suspected in about 10% of all high school students in the city of Sendai 9 months after the GEJE [12]. Both psychological and pharmacological treatments are effective for PTSD, but there is a severe shortage of psychologists and psychotherapists in the disaster-stricken area. General physicians and primary care doctors must routinely care for PTSD patients. Antidepressants, benzodiazepines, and antipsychotics are used to treat PTSD, but these medications have adverse effects. Drug dependency is common with the use of benzodiazepines. Selective serotonin reuptake inhibitors (SSRIs) are also used to treat PTSD, but continuous treatment is often necessary to prevent relapse. Better pharmacological treatments that are both safe and effective are thus needed. Since the disaster, we have tried traditional herbal medicines such as yokukansan that are known to be effective for the treatment of mental disorders [13]. We observed that patients treated with SKK showed very clear improvements in PTSD symptoms. These clinical observations led us to conduct a clinical trial to test the efficacy of SKK on PTSD. This clinical trial showed that SKK treatment resulted in the marked, rapid, and tolerable amelioration of PTSD symptoms in all participants, with no severe adverse events.

Several pharmacological mechanisms underlying the effects of SKK have been investigated [14-16]. Acute moderate to high stress activates serotonergic neurons in the hippocampus to release 5-hydroxytryptamine (5-HT). 5-HT then activates postsynaptic 5-HT1A receptors that inhibit the process of hippocampal long-term potentiation [14]. The repeated administration of SKK significantly increases 5-HT concentrations in the hippocampus and the corpus striatum and the concentrations of norepinephrine (NE) and 5-HT in the hippocampus [15]. SKK also regulates plasma interleukin-6 and soluble interleukin-6 receptor concentrations and improves depressed mood in climacteric women with insomnia [16]. These findings may partially explain the mechanisms of SKK action in the treatment of mental disorders.

5. Conclusion

We summarized our experiences with Kampo medicine in clinics that were set up after the GEJE and in a clinical study of Kampo medicine for PTSD treatment in GEJE survivors. Kampo medicine, which includes herbal formulae, acupuncture, and massage therapy, is a potentially useful treatment for disorders or imbalances of the body, mind, and soul.

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