Synergistic Effect of Wild Ginseng Complex Pharmacopuncture Combined with Korean Medicine Automobile Insurance Treatment on Two Obese Inpatients with Systemic Symptoms: Case Series

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Objectives: Symptoms caused by traffic accidents can be divided into localized pain and systemic symptoms. Edema and pain can be increased due to obesity. During hospitalization of obese patients after traffic accident injury, obesity and systemic symptoms such as edema, dizziness, abdominal fullness and heavy body feeling might increase more by decreased physical activity due to pain. Methods: This report details on two cases of obese female inpatients with systemic symptoms after a car accident who were treated with wild ginseng complex (WGC) pharmacopuncture combined with Korean Medicine (KM) automobile insurance treatment. The Numeric Rating Scale (NRS), Neck Disability Index (NDI) and the Oswestry Disability Index (ODI) were evaluated before and after treatment for comparison. Body composition was also measured. Results: Localized pain improved with a decrease in patients’ NRS, NDI and ODI scores. Systemic symptoms increased during hospitalization were also improved with changes of body composition. Conclusions: Combining WGC pharmacopuncture with KM automobile insurance treatment may be synergistically effective for the treatment of obese patients with systemic symptoms such as edema, heavy body feeling and abdominal fullness.

Key words: whiplash associated disorder, traffic accident, wild ginseng complex pharmacopuncture, KM automobile insurance, obesity, case series

Introduction

In Korean medicine (KM), whiplash associated disorder has been recognized and treated as one disease based on the pathological concept of qi stagnation and static blood in the relationship between qi and blood. Symptoms caused by traffic accidents can be divided into localized pain on the neck, low back, head, shoulder, extremities (Ex), and etc.; systemic symptoms such as numbness, edema, convulsions, oppression in the chest, abdominal fullness, dizziness, nausea,
fatigue, general weakness, and etc.; and mental symptoms such as unclean spirit, palpitations, anxiety and irritability, insomnia, fear, and etc. KM treatment can be expected to be effective for patients with traffic accidents by eliminating static blood at the injured site and regulating the worsening blood circulation1-4).

The relationship between obesity and musculoskeletal disorders such as back pain5-7) and degenerative arthritis8,9) has been extensively studied domestically and abroad10,11). It is well known that overweight or obesity increases the risk of musculoskeletal disorders. Obesity is a state of excessive accumulation of body fat due to energy imbalance12-14), which has been studied in relation to metabolism7), pain, and edema15,16). In relation to pain and edema, obesity can be increased due to decreased physical activity due to pain, and edema and pain can be increased due to obesity15,16). During hospitalization for severe pain after traffic accident, patients may experience systemic symptoms such as edema, abdominal fullness, and numbness and so on associated with circulatory problems caused by reduced metabolism due to decreased daily activities.

Although there have been many reports of KM treatment for musculoskeletal diseases caused by traffic accidents1-4), there have been few cases reported in relation to the degree of obesity or systemic symptoms such as edema, heavy body feeling, and abdominal fullness. In this study, we observed the synergistic effect of wild ginseng complex (WGC) pharmacopuncture combined with KM automobile insurance treatment on two obese female patients with an occurring heavy body feeling, edema, digestive discomfort, dizziness and abdominal fullness during hospitalization after traffic accident.

Case

We studied 2 obese female patients (Obesity is defined as body mass index (BMI) \(\geq 25\) and waist-hip ratio (WHR) \(\geq 0.9\) for men or \(\geq 0.85\) for women) who were admitted after traffic accident. This report is one of retrospective chart reviews and approved by the Institutional Review Board (IRB) of Gachon Korean Medical Hospital (IRB No. GIRB-19-102) with patients’ consent.

1. Case description (Fig. 1)

1) Case 1 (F/49)

1) Chief complaint (C/C)

(a) Localized pain: neck pain, pain radiating from upper extremities (U/Ex), lower back pain (LBPI), and headache

(b) Systemic symptoms: heavy body feeling, edema, and abdominal fullness with increased waist circumference

2) Onset (O/S): 2017.12.4

3) Mode of O/S: She was injured in the passenger seat while driving by a left rear-end crash. Her car was heavily damaged and it underwent major repairs.

4) Past history (P/H): She has a dust allergy and after a menopause a year previously, she had a weight increase of over 10 kg and was recently warned about metabolic syndrome due to cholesterol levels during health screening.

5) Social history (S/H): 163 cm/68 kg, no history of drinking and smoking.

6) Family history (F/H): none

7) Diagnosis: She was diagnosed with degenerative spondylolisthesis in C, L-spine on the x-ray, and broad-based disc herniation, mild diffuse central stenosis, and C3-4, C4-5, C5-6, C6-7 in C-spine CT examination (Fig. 2). In addition to T-Cholesterol \(>220\), there were no abnormalities in urine and blood tests.

8) Present Illness (P/I): On the day of the traffic accident, she visited our hospital due to neck pain, pain radiating from U/Ex, LBPI, and headache. For intensive examination and treatment and stabilization, she decided to be admitted to inpatient care. During hospitalization, even though she reduced her food intake, her second systemic symptoms, such as heavy body feeling, edema, and abdominal fullness with increased waist circumference to the extent that her usual pants were not covered, occurred with stagnant pain improvement and increased headache.
2) Case 2 (F/50)

(1) C/C
(a) Localized pain: neck pain, left shoulder pain and headache
(b) Systemic symptoms: heavy body feeling, edema, dizziness and abdominal fullness and hardening feeling

(2) O/S: 2018.12.24
(3) Mode of O/S: She was injured in the driver seat while driving by a left side crash.
(4) P/H: She has a history of left breast cancer surgery in 2012. Because of this, she cannot receive any injection or acupuncture on her left shoulder and U/Ex region. After
surgery, she has been taking medication (Lenara Tab 1T) once a day and experiencing a weight gain known as a typical side effect of this drug.

(5) S/H: 153 cm/62.5 kg, no history of drinking and smoking.

(6) F/H: none

(7) Diagnosis: She was diagnosed with degenerative spondylosis in C-spine and (R/O) shoulder impingement syndrome in left shoulder on the x-ray (Fig. 3). In addition to T-Cho 221 (>220) TG 224 (>45~150), there were no abnormalities in urine and blood tests.

(8) P/I: Two days after the traffic accident, for intensive examination and treatment and stabilization, she decided to be admitted to inpatient care. During hospitalization, her second systemic symptoms such as heavy body feeling, edema, dizziness and abdominal fullness and hardening feeling occurred with stagnant pain relief and increased headache.

2. Intervention

At first, they were treated with KM automobile insurance treatment including acupuncture, pharmacopuncture with TA extract, physical therapy, chuna, and herbal medicine. After the occurrence of the second symptom, pharmacopuncture with wild ginseng complex (WGC) was added.

(1) KM automobile insurance treatment: Acupuncture was performed using a disposable stainless steel needle (0.30×40 mm for low back and buttocks and 0.25×0.30 mm for other parts) on GV4, GV3, BL23, BL24, BL25, BL26, GV30, GB20, GV14, EX-HN5, GB21, GV20, and ouch points, and electrical stimulation between BL23 and BL26, GB20 and GB21 by STN -330 (Stratek, KOREA), with tolerable intensity and infra-red irradiation therapy applied together during 15 minutes.

TA (60.5 mg/ml, Scutellariae Radix 10 mg/ml, Phellodendri Cortex 10 mg/ml, Pulsatilla Koreana 10 mg/ml, Sophorae Subprostratae Radix 10 mg/ml, Aucklandiae Radix 5 mg/ml, Aquilaria agallocha 0.5 mg/ml, Carthami Tinctorii Fructus 15
mg/ml) extract for pharmacopuncture was provided in a sealing vial by Namsangcheon extramural herbal medicine dispensary facility (Yongin, Korea). TA pharmacopuncture was applied on GB20, GV14, EX-HN5, GB21, GV3, BL24, BL25, and ouch points with 0.05 ml per point, with a total of 1 ml using 1.0 ml disposable insulin syringe (31G, Shinamed, Ansung, Korea).

Case 1 was prescribed Whallak-tang gagambang (8 g Chaenomelis Fructus, Chelidonii Herba, Corydalis Tuber, Clematidis Radix 6 g, Osterici Radix, Angelicae Pubescentis Radix, Angelicae Gigantis Radix, Rehmanniae Radix, Paeoniae Radix Rubra, Atractylodis Rhizoma, Citri Pericarpium, 3 g Carthami Flos, Amomi Fuctus, 2 g Glycyrrhizae Radix, 4 g Persicae Semen), one of the commonly used prescriptions for traffic accidents, which has the efficacy of activating blood and relieving the obstruction of collateral vessels and pain. Depending on the patient’s condition, some herbs were added. Case 2 was also prescribed Whallak-tang gagambang for the first day but did not want more herbal medicines, so the medication was no longer prescribed.

Chuna therapy was performed every other day according to the symptoms and physiotherapy with microwave therapy was performed every day.

(2) WGC pharmacopuncture: WGC (107 mg/ml, Wild ginseng 100 mg/ml, Bovis Calculus 2 mg/ml, Fel Ursi 3 mg/ml and Moschus 2 mg/ml) extract for pharmacopuncture was provided in a sealing vial by Namsangcheon extramural herbal medicine dispensary facility (Yongin, Korea). Patients received WGC pharmacopuncture treatment at private expense in addition to KM automobile insurance treatment. WGC pharmacopuncture applied on CV4, CV6, ST25, ST27, SP14, and SP15 with 0.5 ml per point, and a total of 5 ml using 1.0 ml disposable insulin syringe (31G, Shinamed, Ansung, Korea).

3. Examination
The patients’ pain intensity was evaluated using the numeric rating scale (NRS) every day. Neck disability index (NDI) and Oswestry disability index (ODI) were also evaluated and compared at admission and discharge. Body weight (BW), BMI, body fat mass (BFM), percent body fat (PBF), WHR, skeletal muscle mass (SMM), and basal metabolic rate (BMR) were measured with a bio-impedance body mass analyzer (Inbody 520, Biospace Inc., Seoul, Korea).

4. Clinical outcomes
1) Case 1
(1) 2017.12.4~2017.12.7: At the time of admission, she had posterior neck pain and neck-right shoulder region pain (NRS 7 and NDI 35), both U/Ex radiating pain especially below the elbow (NRS 4), lower back and right buttock pain with tenderness (NRS 7, ODI 17), and bilateral temporal headache which increased when sitting (NRS 3). Pain was slightly improved on the 3rd day of admission.
(2) 2017.12.8~2017.12.10: However, on the 4th day of admission, she complained about increased headache (NRS 4) with systemic symptoms such as edema, heavy body feeling, and abdominal fullness. On the 5th day, in a slightly increased state of overall symptoms, she was treated with WGC pharmacopuncture besides basic KM treatment. On the night of the procedure, her headache decreased and on the next day, her headache and both U/Ex radiating pain which when occurring felt like an electric shock in both the lower arms when one is seated for a long time, with the numbness disappearing and neck pain decreasing.
(3) 2017.12.11: At discharge, overall pain was improved to neck pain (NRS 3, NDI 21) with radiating pain (NRS 0), LBP (NRS 3, ODI 13), and headache (NRS 0) compared with 1st day of hospitalization. Additionally, on the 4th night of hospitalization, she could not sleep due to increased pain and discomfort, and her blood pressure went up to 150/110 so she had to receive acupuncture and stabilize with bedding. Her situation was improved with decreasing pain and remained below 120/80 from the 7th day of hospitalization (Fig. 4).
On the other hand, when results before and 3 days after WGC pharmacopuncture were compared, it was found that her systemic symptoms including heavy body feeling, edema, and abdominal fullness almost disappeared and her body composition was improved from BW 69.1 kg to BFM 26.2,
Fig. 4. Changes in pain score during hospitalization (Case 1).
(A) NRS score (B) NDI score (C) ODI score. NRS : Numeric Rating Scale, U/Ex : upper extremity, LBP : low back pain, WGC : wild ginseng complex pharmacopuncture, NDI : Neck Disability Index, ODI : Oswestry Disability Index.

Table 1. The Changes of Body Composition in Case 1 after WGC Pharmacopuncture

| Case 1 | Before WGC treatment | 3 days after WGC treatment (at discharge) |
|--------|----------------------|----------------------------------------|
| Body Weight (kg) | 69.1 | 68.3 |
| BMI (kg/m²) | 26.0 | 25.7 |
| BFM (kg) | 26.2 | 25.3 |
| PBF (%) | 37.9 | 37.0 |
| WHR | 0.97 | 0.93 |
| SMM (kg) | 23.2 | 23.6 |
| BMR (kcal) | 1287 | 1300 |

WGC : wild ginseng complex, BMI : body mass index, BFM : body fat mass, PBF : percent body fat, WHR : waist to hip ratio, SMM : skeletal muscle mass, BMR : basal metabolic rate.

PBF 37.9%, WHR 0.97, BMI 26.0, SMM 23.2 kg and BMR 1287 kcal to BW 68.3 kg BFM 25.3, PBF 37.0%, WHR 0.93, BMI 25.7, SMM 23.6 kg, and BMR 1300 kcal (Table 1). At discharge, she wanted to receive one more WGC pharmacopuncture and she was treated one more time. After the WGC pharmacopuncture, there was no specific adverse reactions besides slight bruises.

(4) F/U: Through the follow-up by phone, the symptoms of pain after discharge were slightly decreased with few systemic symptoms and decreased BW and the patient was satisfied with the treatment she received at our hospital. Due to her busy schedule, the patients were not able to receive
any additional treatment and the symptoms seemed to be remained.

2) Case 2

(1) 2018.12.26~2018.12.27: At the time of admission, she had posterior neck pain and neck-left shoulder region pain (NRS 8 and NDI 34), left shoulder pain (NRS 8), and left lateral temporal headache (NRS 3). There was a slight improvement in pain during the first 2 days after admission.

(2) 2018.12.28~2018.12.30: However, on the 3rd day of admission, she complained about continued headache (NRS 3) with systemic symptoms such as heavy body feeling, edema, dizziness, digestive discomfort and abdominal fullness and hardening feeling, and was treated with WGC pharmacopuncture besides basic KM treatment. From the next day, her headache and systemic symptoms began to improve.

(3) 2018.12.31~2019.1.8: On the 6th and 9th day of admission, WGC pharmacopuncture was performed twice more besides basic KM treatment to help improve symptoms. On the 7th day, headache was disappeared (NRS 0) and on the 10th day, she felt a decreased neck pain (NRS 4), abdominal fullness with softened abdomen and a disappearing of digestive discomfort, edema and dizziness.

(4) 2019.1.9: At discharge, overall pain was improved to neck pain (NRS 3, NDI 17), left shoulder pain (NRS 6), and headache (NRS 0) compared with 1st day of hospitalization. However, left shoulder that received only moxa and physiotherapy had little improvement (Fig. 5).

On the other hand, when results before and after 3 times treatments of WGC pharmacopuncture were compared, it was found that her systemic symptoms including heavy body feeling, edema, dizziness, digestive discomfort and abdominal fullness and hardening feeling almost disappeared and her body composition was improved from BW 62.5 kg, BFM 24.8, PBF 39.7%, WHR 0.94, BMI 26.7, SMM 20.5 kg and BMR 1184 kcal to BW 61.8 kg, BFM 23.7, PBF 38.1%, WHR 0.93, BMI 26.4, SMM 21.4 kg, and BMR 1200 kcal (Table 2). After the WGC pharmacopuncture, there was no specific adverse reactions besides slight bruises.

(5) F/U: As a result of F/U in outpatient clinic 1 week after discharge, the symptoms of pain were almost similar decreased with few systemic symptoms and the patient was satisfied with the treatment she received at our hospital. However, due to her busy schedule, she stated that she would not receive further treatment in the future.

Discussion and Conclusions

The increase of the supply of automobiles caused the increase of traffic volume and diversified and speeded transportation, and consequently traffic accidents are causing serious socio-economic problems today. According to the Traffic Accident Analysis System (TAAS), the number of patients visiting KM clinics and hospital after a traffic accident increased by 50% in 2016 compared to 2014, and their medical expenses increased by 68.9%. After a traffic accident, the patients can physically suffer from various symptoms such as sprains and strains, contusions, fractures/dislocations, wounds, and herniated discs. Patients suffering minor injuries such as sprains and concussions are significantly more than patients suffering from serious injuries. Under KM automobile insurance, various treatments, such as acupuncture and moxibustion, pharmacopuncture, chuna, KM physiotherapy, and so on, have been performed and their clinical effects have been reported1-4).

In patients with traffic accidents, pain-related physical symptoms such as neck pain, LBP, headache, shoulder pain, and extremity pain, are sometimes accompanied by systemic symptoms and mental symptoms1,3). Because the patient’s stress or psychological condition, immediately after a traffic accident, can affect the course of the symptoms, it was reported that other factors, such as psychological factors besides physical symptoms, can affect the prognosis17). In addition, as a characteristic group, pregnant women18) and children19) have been reported. However, there have been few reports of treatment outcomes considering other factors such as obesity, hormone change and edema. In this study, the improvement on pain and systemic symptoms with the combined treatment KM automobile insurance treatment and WGC pharmacopuncture for the obese patients with the
hormone change due to the menopausal state in Case 1 or anti-breast cancer drug in Case 2 was confirmed.

The energy obtained by food intake is consumed by essential basic energy, physical activity, adaptive heat induced by cold or food intake, and so on. It is regarded as an energy balance when intake and consumption energy are the same. In general, most healthy adults maintain a constant energy balance through a balance of caloric intake and consumption, as well as weight and energy storage by the mechanism of maintaining homeostasis\(^{14}\).

In KM, pharmacopuncture involves injecting pharmaceutical agents such as herbal medicines into acupoints or fat areas based on pharmacology and meridian theories\(^{20}\) used

![Fig. 5. Changes in pain score during hospitalization (Case 2).](image)

**(A)** NRS score (B) NDI score. NRS: Numeric Rating Scale, U/Ex: upper extremity, LBP: low back pain, WGC: wild ginseng complex, NDI: Neck Disability Index.

| Case 2        | Before WGC treatment | 12 days after WGC treatment (at discharge) |
|---------------|----------------------|-------------------------------------------|
| Body Weight (kg) | 62.5                 | 61.8                                      |
| BMI (kg/m\(^2\)) | 26.7                 | 26.4                                      |
| BFM (kg)       | 24.8                 | 23.7                                      |
| PBF (%)        | 39.7                 | 38.1                                      |
| WHR            | 0.94                 | 0.93                                      |
| SMM (kg)       | 20.5                 | 21.4                                      |
| BMR (kcal)     | 1184                 | 1200                                      |

WGC: wild ginseng complex, BMI: body mass index, BFM: body fat mass, PBF: percent body fat, WHR: waist to hip ratio, SMM: skeletal muscle mass, BMR: basal metabolic rate.
for obesity treatments. WGC pharmacopuncture, which has been often used to treat abdominal obesity, has been proven safe and effective through preclinical studies\(^2\), clinical trials\(^2\), and many case reports\(^2\),\(^3\). This anti-obesity effect is due to promoting the ability of basal metabolic activity of wild ginseng, a main component of WGC, and the degrading ability of fat cells of musk, a representative highly aromatic substance\(^2\),\(^3\).

Several studies on the relationship between pain and obesity have reported that the improvement of pain is slow in the obese group and that body fat can be increased due to decreased activity due to chronic pain\(^1\),\(^2\). In this study, in the obese group and that body fat can be increased due to obesity have reported that the improvement of pain is slow in the obese group and that body fat can be increased due to decreased activity due to chronic pain1,2. In this study, it is necessary to confirm validity through more case reports and a clinical trial with a larger sample size using the combination treatment of WGC pharmacopuncture and KM automobile insurance treatment in the future.

In conclusion, in this study, despite the cost burden, based on the improvement of pain and other symptoms and the patient’s satisfaction with our treatment, it was thought that when accompanied by obesity and edema, with combined treatment, it could speed up the rate of improvement of a traffic accident’s aftermath.

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