

Correlation between the Constitution of Sasang and Sexual Difference in the Hypersensitive Reaction of Sweet Bee Venom

Kwangho Lee*

Department of Acupuncture & Moxibustion Medicine, Sangji University College of Oriental Medicine, Wonju, Korea

Key Words

anaphylaxis; constitution; hypersensitive reaction; sasang; sweet bee venom

Abstract

Objectives: The aim of this study is to investigate the correlation between the constitution of Sasang and the bee venom hypersensitive reaction, as well as the hypersensitive reaction occurrence ratio between males and females, for patients treated with sweet bee venom (SBV) and who had undergone an examination of the constitution of the Sasang.

Methods: All 81 patients enrolled in the study were treated with SBV and underwent an examination of the constitution of Sasang from January 2010 to July 2012. We divided them into two groups for the hypersensitive reaction and no response and compared the distributions of the Sasang-constitution types for the two groups as well as the hypersensitive reaction occurrence ratio between males and females.

Results: No significant differences were found between the hypersensitive-reaction group and the no-response group ($p = 0.390$), but the hypersensitive-reaction occurrence ratio was statistically higher in females than in males ($p = 0.001$).

Conclusions: Hypersensitive reactions do not seem to be related to the Sasang-constitution types, but the possibility of hypersensitive reactions among females seems to be higher than it is among males.

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1. Introduction

Bee venom therapy is a new treatment combining the efficacy of acupuncture with the biochemical pharmacological actions of bee venom by injecting on acupoints venom that is artificially extracted and refined from live honey bee (*Apis mellifera*) and is the pharmacopuncture therapy most often used in Korean medicine. Bee venom is known to have anti-inflammatory and analgesic actions, to adjust actions in the immune system, to invigorate the blood system and to cause anti-bacterial actions and resistance against radiation and is widely used for immune disorders, musculoskeletal disorders, nervous system disorders and so forth [1]. However, hypersensitive reactions may occur when using bee venom, with other venoms, and especially anaphylactic shock makes it difficult to use bee venom [2,3], so sweet bee venom (SBV) devoid of enzymes and high-molecular-weight substances such as allergens was created to solve these problems [4].

SBV has been reported to inhibit significantly allergic responses both locally and throughout the whole body [5,6]. However, as Kwon et al. [7] reported, anaphylactic shock may occur when using SBV, and we also observed anaphylaxis and other hypersensitivities when using SBV at our clinic. Therefore, we conjectured that a particularly hypersensitive group for stimulation by bee venom might exist, so we investigated the correlation between bee venom hypersensitive reactions and the constitution of Sasang for patients who had undergone SBV treatment and Sasang-constitution diagnosis at the Oriental Medicine Hospital of Sangji University (SOMH). We also compared the hypersensitive-reaction occurrence ratio between males and females.

2. Materials and methods

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*Corresponding author

Kwangho Lee, Department of Acupuncture & Moxibustion, Sangji University College of Oriental Medicine, 283 Woosan-dong, Wonju, Gangwon 220-955, Korea.

Tel: +82-33-741-9257

E-mail: redphilips@hanmail.net

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2.1. Patients

Reviewing medical records at SOMH from January 2010 to July 2012, 81 patients who had been treated with SBV, more than one time at the department of Acupuncture & Moxibustion and who also had undergone Sasang-constitution examination at the department of Sasang-constitution Medicine enrolled in this study.

2.2. Methods

2.2.1. Sasang constitution analysis

An analysis of the four types of Sasang constitutions was conducted using the QSCC-II questionnaire, the Phonetic System for Sasang Constitution (Voice One Co., Korea), and an interview by a specialist in Sasang constitution medicine.

2.2.2. Selection of hypersensitive reaction patients

Hypersensitive reactions experienced after SBV treatment are as in follows;

- (1) Local · immediate hypersensitive reactions,
- (2) Local · delayed hypersensitive reactions,
- (3) Systemic · immediate hypersensitive reactions,
- (4) Systemic · delayed hypersensitive reactions.

Local · immediate hypersensitive reactions and Local · delayed hypersensitive reactions show symptoms such as a skin rash, rubor, swelling and unbearable itching immediately (immediate) or after 4-12 hrs (delayed) on the local area of injection. Systemic · immediate hypersensitive reactions refer to a condition in which symptoms manifest all over the body, regardless of the area of injection. Such reactions appear immediately or within 15 mins of administration. Systemic · delayed hypersensitive reactions are allergic reactions with general body pain etc. and appear everywhere 1-2 hrs and up to 6-12 hrs after injection [1].

2.2.3. Statistical analysis

First, we divided the 81 patients enrolled in this study into the hypersensitive-reaction and the no-response groups. Then, we investigated the distributions of Sasang-constitution types and compared the hypersensitive-reaction occurrence ratio between males and females for the two groups. All data were expressed as means \pm standard deviations. Statistical analyses, including the correlation between the "hypersensitive reactions" and the "Sasang constitution", as well as the correlation between the "hypersensitive reactions" and the "sexual difference", were performed by using a nonparametric chi-square test followed by Fisher's exact test in IBM SPSS Statistics 19; $p < 0.05$ was considered statistically significant.

3. Results

3.1. Patients characteristics (Table 1)

The 81 patients enrolled in this study were composed of 33 men and 48 women, with a mean age of 53.25 ± 15.83 yrs (mean \pm SD). Of the 16 patients who experienced hypersensitive reactions, 1 was male and 15 were female. The mean age was 51.88 ± 11.10 yrs. Of the 65 no-response patients, 32 were male, and 33 were female. The mean age was 53.59 ± 16.84 yrs. More women than men seemed to be experience hypersensitive reactions ($p = 0.001$).

3.2. Distribution of hypersensitive reaction types (Table 2)

Of the 16 cases of hypersensitive reactions, 8 were local ·

Table 1 Patients characteristics and hypersensitive reaction ratio between males and females

	Hypersensitive Reactions	Response	Total	<i>p</i> -value*
Males	1	32	33	0.001
Females	15	33	48	
Total	16	65	81	
Age	$51.88 \pm 11.10^\dagger$	53.59 ± 16.84	53.25 ± 15.83	

* Fisher's Exact Test, $p < 0.05$

† Mean \pm SD

delayed hypersensitive reactions, 2 were systemic · immediate hypersensitive reactions and 6 were systemic · delayed hypersensitive reactions, but no local · immediate hypersensitive reactions were noted. Of the 8 local · delayed hypersensitive reactions, 3 included Tai-eum people and 5 So-yang people. Both systemic · immediate hypersensitive reactions were Tai-eum people, and of the 6 systemic · delayed hypersensitive reactions, 2 were Tai-eum people, 1 was a So-yang person and 3 were So-eum people.

Table 2 Distribution of hypersensitive reaction types

	LJ*	LD†	SI‡	SD§
TE	0	3	2	2
SY¶	0	5	0	1
SE#	0	0	0	3
Total	0	8	2	6

* Local · immediate hypersensitive reactions

† Local · delayed hypersensitive reactions

‡ Systemic · immediate hypersensitive reactions

§ Systemic · delayed hypersensitive reactions

|| Tai-eum person

¶ So-yang person

So-eum person

3.3. Distribution of four types of Sasang constitution (Table 3)

Of the 81 patients enrolled in this study, 45 were Tai-eum people (55.6%), 20 were So-yang people (24.7%) and 16 were So-eum people (19.8%). Seven Tai-eum people (43.8%), 6 So-yang people (37.5%) and 3 So-eum people (18.8%) were included in hypersensitive-reaction group, and 38 Tai-eum people (58.5%), 14 So-yang people (21.5%), and 13 So-eum people (20.0%) were included in the no-response group. In this respect, no significant differences were noted between the two groups ($p = 0.390$).

Table 3 Distribution of the four types of Sasang constitutions

	Hypersensitive Reactions	No Reponse	Total	<i>p</i> -value*
TE†	7	38	45	0.390
SY‡	6	14	20	
SE§	3	13	16	
Total	16	65	81	

* Fisher's Exact Test, $p < 0.05$

† Tai-eum person

‡ So-yang person

§ So-eum person

4. Discussion

SBV is made by removing allergens with molecular weights greater than 10,000 from the bee venom through gel filtration chromatography and propionic acid/urea polyacrylamide gel electrophoresis. As allergens causing hypersensitive reactions from bee venom are removed, SBV significantly inhibits local allergic responses, has many more flexible clinical usages and works better than bee venom [1]. However, as Kwon et al. [7] reported, anaphylactic shock may occur when SBV is used.

According to Oh [8], if a person with yang pattern or a yang person were to be treated with bee venom, the hot properties of bee venom would put them in danger due to the rapid stimulating effect of bee venom. Thus, different patients have different responses to the same amount of bee venom, and very distinct differences were noted among individuals. Therefore, we must classify patients into several groups and set the first dosage according to the group.

SBV is not just a lower concentration form of bee venom, but is devoid of most allergens because of the manufacturing process and significantly inhibits allergic responses. Thus, patients with SBV hypersensitivity are more sensitive to bee venom. If the frequency of hypersensitive reactions in one group is significantly higher than it is in other groups, the people belonging to that group are more vulnerable to stimulation by bee venom. Hence, we suggest that a Tai-yang person or a So-yang person, as a yang person, has more possibility of a hypersensitive reaction than a Tai-eum person or a So-eum person, as a yin person, for the four Sasang constitution types.

In this study, 16 patients experienced hypersensitive reactions, 1 male and 15 females. Although the mean ages and the age distributions were not similar between the two groups (hypersensitive-reaction and no-response groups), women were more likely to experience hypersensitive reactions than men ($p = 0.001$).

The proportion of So-yang people in the hypersensitive-reaction group (37.5%) is higher than that of So-yang people among all patients (24.7%) or that in the no-response group (20.0%). A patient with a yang constitution like a So-yang person seems more likely to experience a hypersensitive reaction, but this result was not statistically significant ($p = 0.390$). Meanwhile, the hypersensitive-reaction group included more women than men, so the physical is thought to be a more important factor than the difference in Sasang constitution, for hypersensitive-reaction occurrence. In addition, other factors increasing the possibility of hypersensitive reactions, for example, patient's condition like a yang pattern, weakness followed by long-term illness, large bee venom dosage, etc. [1,8] should also be considered. The limitation of this study include few samples and a small amount of data on dosage and patient's condition, so further detailed studies are required to investigate the correlation between Sasang constitution and bee venom response.

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