Effect of Hwangyeonhaedok-tang Pharmacopuncture on Pressure Ulcer: A case report

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ABSTRACT
This case report describes the effect of Hwangyeonhaedok-tang (黃連解毒湯) Pharmacopuncture on pressure ulcer. A 38-year-old male patient had coccyx pressure ulcer of stage 3 of National Pressure Ulcer Advisory Panel Staging System (NPUAPSS). Hwangyeonhaedok-tang Pharmacopuncture was injected obliquely, towards the affected area from 0.5 cm apart from the lesion. 0.15 cc of per point and a total amount of 1 cc of Hwangyeonhaedok-tang Pharmacopuncture was used for three times a week for 12 weeks, conventional medication and dressing were maintained. The size of pressure ulcer significantly decreased from 6×4 cm to 2.5×0.7 cm, and tissue regeneration was observed. Also, 4-5 times a day of loose stool pattern was decreased to 1-2 times a day of normal stool after taking Yijung-tang (理中湯). Frequency of night sweating decreased about 50%. We suggest that Hwangyeonhaedok-tang Pharmacopuncture may be available for treating pressure ulcers.

Key words: Hwangyeonhaedok-tang, pharmacopuncture, acupuncture point injection, pressure ulcer, anti-inflammatory activity

I. Introduction

Pressure ulcer that known as decubitus ulcer or bedsore, is region of localized damage to skin and deeper tissue layers affecting muscle, tendon and bone as a result of constant pressure due to impaired mobility. The pressure leads to poor circulation and eventually contributes to cell death, tissue damage and the development of an open wound1.

Recently the incidence rate of pressure ulcer is on the rise due to increase of cerebrovascular diseases, traffic accidents and industrial accidents2.
One cross-sectional European study found that approximately 18% of hospital patients had a pressure ulcer. According to National Pressure Ulcer Advisory Panel (NPUAP) report, the incidence of pressure ulcer in the USA ranged from 0.4% to 38% in acute care settings, 2.2% to 23.9% in long term care, and 0% to 17% in home care.

Modern medical care disinfects wounds to prevent infection and uses specialized cushion, mattress, and bed to relieve pressure of surface. Also through surgical operation, skin grafts are performed on affected area, after removing dead tissue. But the relapse rates are more than 50% and pressure ulcer can trigger serious medical or surgical complications including sepsis.

Pharmacopuncture - injection at an acupuncture point of a small amount of drug, saline or plant extract - is a recent innovation of traditional acupuncture and aims to enhance and prolong the effect of stimulation of acupuncture points.

Hwangyeonhaedok-tang (黃連解毒湯) consists of four herbs, namely, Coptidis Rhizome (黃連), Scutellariae Radix (黃芩), Phellodendri Cortex (黃柏), and Gardeniae Fructus (梔子). Hwangyeonhaedok-tang has been known as an effective prescription with antibiotic, anti-inflammatory, antioxidative activity. Therefore we used Hwangyeonhaedok-tang Pharmacopuncture on pressure ulcer. Here we are reporting a case of improvement of pressure ulcer treated with Hwangyeonhaedok-tang Pharmacopuncture.

II. Case Presentation

A 38-year-old male patient, without family and past history, had hypoxic brain damage (Fig. 1) due to acute myocardial infarction (AMI) on December 14th, 2011. After 2 months treatment, he was transferred to our hospital on February 14th, 2012.

Fig. 1. Brain MRI(2011.12.20).

Hypoxic brain damage Bilateral and symmetrical signal alterations at basal ganglia, thalami and cerebral hemispheres included centrum semiovale at temporal, parietal and occipital lobes while frontal and anterior temporal lobes has been spared.

At admission. He was in bed ridden state because of stuporous mentality and quadriplegia. He had a pressure ulcer on coccyx which had occurred during the intensive care unit (ICU) admission. Even though debridement was performed on January 11th, 2012, the size of pressure ulcer was 6×4cm and National Pressure Ulcer Advisory Panel Staging System (NPUAPSS) grade 3.

According to the NPUAPSS is divided into 4 stages (Table 1), the characteristic of stage 3 is "Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling."
Stage 1: An intact or open/ruptured serum-filled blister.

Stage 2: Partial thickness loss of dermis presenting as a shallow open ulcer with a red, pink wound bed without slough. May also present as an intact or open/ruptured serum-filled blister.

Stage 3: Full thickness tissue loss. Subcutaneous fat may be visible, but bone, tendon, or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.

Stage 4: Full thickness tissue loss with exposed bone, tendon, or muscle. Slough or eschar may be present on some parts of the wound bed. Often includes undermining and tunneling.

Table 1. National Pressure Ulcer Advisory Panel Staging System (NPUAPSS)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>An intact or open/ruptured serum-filled blister.</td>
</tr>
<tr>
<td>2</td>
<td>Partial thickness loss of dermis presenting as a shallow open ulcer with a</td>
</tr>
<tr>
<td></td>
<td>red, pink wound bed without slough.</td>
</tr>
<tr>
<td>3</td>
<td>Full thickness tissue loss. Subcutaneous fat may be visible, but bone,</td>
</tr>
<tr>
<td></td>
<td>tendon, or muscle are not exposed.</td>
</tr>
<tr>
<td>4</td>
<td>Full thickness tissue loss with exposed bone, tendon, or muscle. Slough or</td>
</tr>
<tr>
<td></td>
<td>eschar may be present on some parts of the wound bed. Often includes</td>
</tr>
<tr>
<td></td>
<td>undermining and tunneling.</td>
</tr>
</tbody>
</table>

The shaded region corresponds to the patient’s condition

To treat pressure ulcer, we used Hwangyeonhaedok-tang Pharmacopuncture with conventional dressing maintained. The affected area was cleaned by chlorhexidine and the surrounding by potadine once a day. Then we spreaded hydrogel, and covered it with gauze, and applied foam on top. After cleaning the wound, we injected Hwangyeonhaedok-tang Pharmacopuncture obliquely towards the affected area from 0.5 cm apart from the lesion using short insulin syringes (30 Gauge x 8 mm, Becton, Dickinson and Company, Franklin Lakes, NJ, USA). 0.15 cc per point was given at a total amount of 1cc for three times a week for 12 weeks. Hwangyeonhaedok-tang Pharmacopuncture was made by the method of filtering vapor-distill-cooling liquid at the aseptic pharmacy of Kyung Hee University Hospital at Gangdong. 2 g of Coptidis Rhizoma (黃連), Scutellariae Radix (黃芩), Phellodendri Cortex (黃柏), and Gardeniae Fructus (梔子) was boiled in 200 ml of distilled water, and boiled. Then NaCl was added to adjust the body salt concentration 0.9% and the pH was adjusted to reduce pain and irritable feelings when injected.

The size of pressure ulcer gradually decreased. a reduction of pressure ulcer’s size was observed from 6 x 4 cm to 2.5 x 0.7 cm after 12 weeks treatments (Fig. 2, Fig. 3) but there was no change in NPUAPSS stage.

Fig. 2. Change of Pressure Ulcer.

A : 2012.02.15, 6 x 4 cm, NPUAPSS* stage 3, Foam was drenched the next day. Severe slough formation.
B : 2012.02.22, 5.5 x 4 cm, NPUAPSS stage 3.
C : 2012.02.27, 5 x 3.5 cm, NPUAPSS stage 3.
D : 2012.03.08, 5 x 3.5 cm, NPUAPSS stage 3, Pressure ulcer became pink and granulate.
E : 2012.04.16, 3.2 x 1 cm, NPUAPSS stage 3, Few slough and exudation.
F : 2012.05.04, 2.5 x 0.7 cm, NPUAPSS stage 3, Few slough and exudation.
* NPUAPSS : National Pressure Ulcer Advisory Panel Staging System
During hospitalization, general conditions also got better. 4-5 times a day of loose stool pattern was decreased to 1-2 times a day of normal stool after taking Yijung-tang (理中湯). Also frequency of night sweating, decreased about 50% so that wheelchair ambulation could be started from May.

### III. Discussion

The patient was in high-risk group of pressure ulcer with Braden Scale point 9 (Table 2) and NPUAPSS stage 3 after debridement. There was trivial change in the lesion despite continuous conventional dressing was applied, while being admitted in previous hospital. After transferring to our hospital, we used Hwangyeonhaedok-tang Pharmacopuncture maintained along with conventional medication and dressing. As a result, pressure ulcer significantly decreased in its size, from 6×4 cm to 2.5×0.7 cm. This improvement is thought that because of the anti-inflammatory effect of Hwangyeonhaedok-tang Pharmacopuncture around the lesion. Hwangyeonhaedok-tang Pharmacopuncture, used in this case, is made from Hwangyeonhaedok-tang. Several studies demonstrated that each component of Hwangyeonhaedok-tang exerts anti-inflammatory, antibiotic, antioxidative activities\textsuperscript{11-13}. Characteristics of these are cooling blood, removing dampness and toxicity, therefore these subsidize acute inflammation and pain. According to the study of effect of Hwangyeonhaedok-tang extracts on DNCB-induced allergic contact dermatitis, Hwangyeonhaedok-tang significantly reduced erythema and edema by 0.4–1% of DNCB treatment, as compared to the control group. These results showed that Hwangyeonhaedok-tang could be used as a pharmaceutical material with anti-inflammatory effects\textsuperscript{11}. 

![Fig. 3. Change of Pressure Ulcer Size (Width & Length).](image)
Table 2. Braden Scale

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensory perception</td>
<td>completely Limited</td>
<td>Very Limited</td>
<td>Slightly Limited</td>
<td>No Impairment</td>
</tr>
<tr>
<td>Moisture</td>
<td>Constantly Moist</td>
<td>Very Moist</td>
<td>Occasionally Moist</td>
<td>Rarely Moist</td>
</tr>
<tr>
<td>Activity</td>
<td>Bedfast</td>
<td>Chairfast</td>
<td>Walks Occasionally</td>
<td>Walks Frequently</td>
</tr>
<tr>
<td>Mobility</td>
<td>Completely Immobile</td>
<td>Very Limited</td>
<td>Slightly Limited</td>
<td>No Limitation</td>
</tr>
<tr>
<td>Nutrition</td>
<td>Very poor</td>
<td>Probably Inadequate</td>
<td>Adequate</td>
<td>Excellent</td>
</tr>
<tr>
<td>Friction &amp; shear</td>
<td>Problem</td>
<td>Potential Problem</td>
<td>No Apparent Problem</td>
<td></td>
</tr>
</tbody>
</table>

The shaded region corresponds to the patient's condition

Pressure ulcers are not easy to be healed. Complete healing of pressure ulcer case is estimated as low as 10%\textsuperscript{15}. Healing rates for stage 3 pressure ulcers may be as high as 59\% during 6 months, but other patients require a treatment duration of up to a year. Only third of stage 4 pressure ulcers heal after 6-month of therapy, but one half of patients admitted with pressure ulcers die during this time period\textsuperscript{16}. Up to now, the most effective treatments to heal pressure ulcers are unclear\textsuperscript{17}. The patient scored 9 point, representing high-risk group. Even its bad condition, patient's pressure ulcer decreased in its size.

As thinking, herbal medicine also can help recovery of pressure ulcer. After taking Yijung-tang, patient improved in its defecation condition, 4-5 times a day of loose stool pattern to 1-2 times a day of normal stool pattern. Therefore, we were able to prevent pressure ulcer from getting worse.

This report suggests that \textit{Hwangyeonhaedok-tang} Pharmacopuncture may be available for treating pressure ulcers as additional therapy method to conventional dressing. Further studies about efficacy of this treatment on pressure ulcers will be needed.
황련해독탕 약침으로 호전된 욕창 1례

두경희, 이지현, 이동혁, 김수경, 조승연, 박성욱, 배형섭, 고창남
경희대학원한의과대학 강동경희대학교병원 중풍뇌질환센터 한방내과

초 록

욕창에 황련해독탕 약침치료 및 한방치료를 통해 호전된 case 1례를 보고하고자 한다. National Pressure Ulcer Advisory Panel Staging System (NPUAPSS) 3단계 욕창에 기존 드레싱을 유지하면서 환부 및 환부주변을 세척 후 일회용 주사기 이용하여 황련해독탕 약침액을 환부 주변 0.5 cm 부분의 정상피부 둘레에서 환부 쪽으로 사자를(斜刺)하여 1point 당 0.15 cc씩 총 1 cc를 주입하는 시술을 주 3회, 총 35회 시행하였다. 욕창의 크기가 6×4 cm에서 2.5×0.7 cm로 뚜렷하게 감소하였으며, 피부 재생 효과를 보였다. 또한 1일 4-5회의 무른변 양상이 이중탕 복용 이후 1일 1-2회 보통변으로 개선되었고, 야간에 배부(背部)로 발생하던 도한(盜汗)도 50% 정도 감소하여 욕창을 악화시킬 수 있는 요인이 개선되었다. NPUAPSS Grade 3의 중증도 욕 창에 Dressing 외 추가적으로 시행할 수 있는 한의학적 치료 방법으로 본 임상증례를 보고하는 바이며, 향후 황련해독탕 약침으로 욕창을 치료한 다양한 임상증례 및 연구가 필요할 것으로 사료된다.

중심단어: 황련해독탕, 약침, 욕창, 항염효과

References


