대한침구학회지 제23권 제2호(2006년 4월)
The Journal of Korean Acupuncture & Moxibustion Society

Case Report

A Case of Gouty Arthritis Patient Treated with Collaborative Oriental and Western Medicine with Acute Inflammation and Liver Injury

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Abstract

Objectives : To examine the effects of the collaborative Oriental and Western medicine, we treated a gouty arthritis patient with acute inflammation and liver injury with a combination of Oriental and Western treatments.

Methods : Acupuncture, Bangphungtongsung-San(Fangfengtongsheng-san)', 'Kangwhaljetong-Um (Qianghuochutong-yin)', and 'Sosiho- Tang(Xiaochaihu- tang) were offered to an acute gouty arthritis patient with NSAIDs, Corticosteroids and allopurinol. Laboratory data were observed for the duration of hospital days.

Results : In spite of Oriental treatments, NSAIDs administration caused liver injury, but continuous Oriental treatments with small amount of Corticosteroids and allopurinol brought recovery of liver function and gouty arthritis.

Conclusion : Collaborative treatments of Oriental and Western medicine are better than independent Western treatment for gouty arthritis with acute inflammation and liver injury. Further studies will be required to ascertain the collaborative treatment with Oriental and Western medicine for gouty arthritis and other diseases.

Key words : gouty arthritis, acute inflammation, liver injury, collaborative treatment with Oriental and Western medicine

· **Acceptance** : 2006. 3. 18. · **Adjustment** : 2006. 3. 21. · **Adoption** : 2006. 3. 21.
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Ⅰ. Introduction

Among fundamental life of human beings, the eating habits are the most basic activity for maintaining our life. First of all, the mode of individual eating habits is formed under the social and cultural influences, and is been changing a lot along with industrialization and globalization advance. The eating habits of Korean people have been variously changed since the economic growth and accelerated trades with the foreign countries[1].

Also based on the national statistics, after 1980s, the average alcohol consumption of a Korean increased every year and reached till about 7kgs, which makes Korea to be one of the top alcohol-consuming countries in the world[2]. As the result, the amount of gout patients in Korea are also increasing by Europeanizing of eating habits and changing of the mode of living etc[3].

In Oriental medical concept, gout is similar to Tongpung(痛風)[4], and regarded as one of the most prevailing metabolic diseases in Korea. Abnormal purine metabolism causes hyperuricemia and the deposition of monosodium urate crystals in synovial fluid or soft tissues results acute gouty arthritis attack and tophus in the soft tissues of the body[5].

The factors related to the acute gouty attack include alcohol, operation, hemorrhage, infection, some kinds of drug administrations, overeat, overwork, excessive exercises and trauma. The age that has an acute gout attackis sometimes taken ill in the young age group according as the eating habits become westernized in Korea increasingly. So, it is considered that these changes of the age which has an acute gout attack is caused by the external factors, such as a diet or eating habits, of the people who have possibilities of gouty attack[6].

Three western treatments currently available for acute gouty arthritis attacks are nonsteroidal anti- inflammatory drugs(NSAIDs), colchicine and corticosteroids. Among them, colchicine is most beneficial in the treatment of acute gouty arthritis, but this agent has toxic side effects, including bone marrow supression and renal or hepatic cell damage[7]. Also NSAIDs have adverse reactions such as gastrointestinal hemmorrhage or transaminase elevation[8].

Based on such facts, we'd like to report a case of an acute gout patient who suffered from the liver injury and treated with collaborative treatment of Oriental and Western medicine. According to the result of treatment, the gouty arthritis as well as the liver injury of the patient were all recovered after the NSAIDs treatment based on the Lab F/U such as LFT, CRP, Uric acid levels.

Ⅱ. Case Presentation

1. Name : Jin, 00(M/32)

2. Active Problem :

Severe pain in the Rt ankle, including erythema, warmth, limited range of motion and swelling

3. Date of onset : 2006. 1. 20.

4. Past History : none

5. Family History : none

6. Present Illness :

Above patient has hot-tempered character and eats meat, sweetbread ordinarily.

From Aug, 2005 till Jan, 2006, he consumed amounts of alcohol and ingested large amounts of protein. After that time, He got an acute gouty attack on 2006.1.20 and in spite of medical treatment he suffered from severe pain, he admitted to Dept. of Acupuncture & Moxibustion, Oriental Medical Clinic, Daejeon Univ.

7. Laboratory data

Laboratory data on the admission day are mentioned in Table 1.

8. X-ray Film :

The radiographic findings of Rt. Foot are nonspecific. Soft tissue swellings are found around the joint, and joint spaces are preserved. Bony abnormalities are not found(Fig. 1-3.).

1) Treatment

(1) Acupuncture Treatment

Needles are used at different points along the daily conditions of the patients, but usually used points were HT8, SP3, LU8, KI10, LR1 and remained inserted for 30 minutes once a day. The needles used for the treatment are stainless still 'Eternity' brand acupuncture needles produced by the Zeus Korea Acupuncture develop co., 30mm long and 0.25mm in thinkness.

(2) Herbal Treatment

Mainly used herbal formulas are 'Kangwhaljetong-Um(Qianghuochutong-yin)', 'Bangphungtongsung-San (Fangfengtongsheng-san)', and 'Sosiho-Tang (Xiaochaihu-tang)'.

'Kangwhaljetong-Um(Qianghuochuton-yin)' relieves severe pain in a gouty arthritis. 'Bangphungtongsung-San(Fangfengtongsheng-san)' eliminates the foreign matter of body and purifies the blood. 'Sosiho-Tang(Xiaochaihu-tang)' is used to relieve the symptoms usually accompanied in a severe inflammation, such as fever, chilling sign, anorexia, and nausea. 'Sosiho-Tang(Xiaochaihu-tang)' also has recovery faculties in drug induced liver injuries.

Table 64. Laboratory data on the admission

AST	27 IU/L
ALT	45 IU/L
ALP	72 U/ℓ
γ-GTP	65 IU/L
Uric acid	3 mg/dℓ
CRP	16.11 mg/dℓ
WBC	16.02×10^3㎣
ESR	43 mm/hr
Urine color	amber
Urobilinogen	+
Bilirubin	+++

(3) Western treatment

The patient received NSAIDs for the initial relief of acute gouty arthritis. Since transaminase elevation,

Fig. 1. Lt. Foot

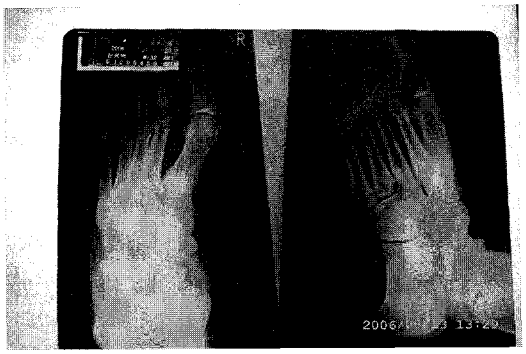

Fig. 2. Rt. Ankle

Fig. 3. Rt. Shoulder

the patient received Corticosteroids instead of NSAIDs. At the final stage of the treatments, allopurinol was used to prevent recurrent attacks.

9. Progress

1) Jan. 23rd~Feb. 1st (9days) : Acupuncture and herbal treatment with NSAIDs administration

On the admission day, the uric acid level was lower than normal, while the WBC and CRP level were higher than the normal, which indicated the accompanied inflammation in the gout-affected joints. The acupuncture and NSAIDs treatments were both carried out for the stage. The joint pain reduced as long as the NSAIDs remained active, but became severe once again as the drug became inactive. The erythema, limited range of motion and swelling on the Rt ankle remained unaffected. After 06. 1. 31, pain, erythema, warmth, and swelling also appeared on the Lt. ankle.

2) Feb. 2nd~Feb. 9th (8days) : Because of transaminase elevation, acupuncture and herbal treatment independently

As the effects of NSAIDs subside, the patient complained about the severe pain in both ankles (Rt>Lt), with erythema, warmth, limited range of motion and swelling, and since 06. 2. 6, patient felt pain on the Rt. shoulder joint too. The patient, also, complained about the pain of neck and lumbago due to the situation which have to lie on the bed for long time. The pain was so severe that acupuncture treatments were carried out 3 to 4 times a day, and it relieved the pain a little thereafter. After the day when the NSAIDs administration was halted, the patient experienced severe joint pain for about 3 days. However, with the continuous treatment the invasive joint pain, swelling and warmth appeared to be decreased since then.

3) Feb. 10th~Feb. 15th (6days) : Acupuncture and herbal treatment with corticosteroids administration.

The pain on both sides of the ankle subsided considerably, but the erythema, warmth, and the swelling of the affected joints still remained. Pain on the shoulder joint also decreased gradually. Patient began the ankle exercise, but couldn't stand on for himself .

4) Feb. 16th~Mar. 1st (14days) : Acupuncture and herbal treatment with allopurinol for the prevention of gout attacks, and reduced administration of allopurinol gradually.

Patient was able to stand on for himself for minutes, and began to walk for himself depending on the walker. Swellings, warmness and pain on the affected joints also decreased.

5) Mar. 2nd~Mar. 4th (3days) : Acupuncture and herbal treatment with reduced administration of allopurinol.

The patient was discharged with weak dull pain on both ankles, based on the judgement that the patient can return to his normal life. On 06. 3. 10, patient visited the hospital once again, and the observation showed that he could maintain his normal life without experiencing the joint pain or other symptoms. Thereafter the patient was ordered to stop the allopurinol administration, and is still having the Oriental medical treatment continuously against the future illnesses.

Ⅲ. Discussion

Gout is a disease resulting from the deposition of monosodium urate crystals in synovial fluid

and other tissues or the formation of uric acid stones in the kidney. The disease is often, but not always, associated with elevated serum uric acid levels caused by the overproduction or underexcretion of uric acid[7].

Most common cause of gout is hyperuricemia and uric acid , the end product of purine metabolism is synthesized in liver. About two thirds of all uric acid produced daily is excreted by the kidneys. The gastrointestinal tract eliminates the others, underexcretion by the kidneys and overproduction of uric acid can cause hyperuricemia. In 90 percent of patients, gout is caused by the underexcretion of uric acid. Risk factors for acute gout attack include trauma, operation, alcohol consumption, starvation, purine-rich diet and some drugs which give occasion for uric acid concentration. Above all alcohol can increase uric acid concentration in the serum and obstruct the excretion of uric acid[9].

Although hyperuricemia is a risk factor for the development of gout, the exact relationship between hyperuricemia and acute gout is unclear. Acute gouty arthritis can occur in the presence of normal serum uric acid concentrations. Conversely, many persons with hyperuricemia never experience an attack of gouty arthritis[7].

The peak incidence of acute gout occurs at the age of 40[9]. Pain and inflammation are produced when uric acid crystals activate the humoral and cellular inflammatory process[7].

The symptoms of acute gout attack are pain, a low glade fever and swelling, so it may be misdiagnosed as cellulitis. The pain is severe and becomes worse at night, and sometimes leukocytosis is continued for a few days or weeks[9].

Initial gout attacks are usually monoarthric. However, polyarthric attacks can also occur. More than 75 percent of acute gout attacks affect a joint in the lower extremity, especially the first metatasophalangeal joint. Podagra, an acute attack of gout in the great toe, accounts for over 50 percent of all acute attacks. Patients with recurrent attacks of gout have a longer duration of illness and are more likely to have polyarthric disease. Joint involvement in polyarthritic attacks appears to have an ascending, asymmetric pattern. In addition to the great toe, other areas affected include the insteps, heels, ankles, knees, fingers, wrists and elbows[7].

Gouls of the treatment for gout are to terminate acute painful attack, prevent recurrences and consider managements for hyperuricemia. Most currently available treatments for acute gouty arthritis are NSAIDs, Colchicine, ACTH, and Corticosteroids. Among them the right treatments are selected according to the patient's conditions[6]. Cold-pack and splint around a joint are recommended for better healing with the drug therapy[10].

NSAIDs, Colchicine, Corticosteroids are mostly available and Allopurinol is usually used for the prevention of an gout recurrences, NSAIDs are currently the most favored treatment for acute gout attacks. All NSAIDs can have serious gastrointestinal side effects, including bleeding and ulceration[7]. Unfortunately, the use of NSAIDs is limited by side effects. NSAID therapy should be avoided in patients with peptic ulcer disease, low creatinine clearance, liver disease and poorly compensated congestive heart failure, and in patients receiving anticoagulation therapy. Side effects of NSAIDs are also more pronounced in elderly patients[11].

Colchicine is an effective alternative to NSAIDs in the treatment of acute gouty arthritis. Colchicine has anti-inflammatory activity but no analgesic activity[7]. Although colchicine is effective in treating acute gout, 80 percent of patients experience gastrointestinal side effects, including nausea, vomiting and diarrhea, at therapeutic dosages. Improper intravenous colchicine therapy has been associated with bone marrow suppression, renal failure, disseminated intravascular coagulation, tissue necrosis from extravascular extravasation and death[11].

Corticosteroids, administered intra-articularly, intravenously, intramuscularly or orally, have been

shown to be effective in the treatment of acute gout. In cases where one or two accessible joints are involved, intra-articular injection of corticosteroid can be used with minimal side effects[11].

Allopurinol is currently the only readily available inhibitor of uric acid synthesis. Side effects from allopurinol include rash, gastointestinal problems, headache, urticaria and interstitial nephritis. The most feared adverse reaction is hypersensitivity syndrome associated with fever, bone marrow suppression, hepatic toxicity, renal failure and a systemic hypersensitivity vasculitis[11].

This patient whose liver was damaged by excessive drinking for six months administered to the hospital with acute gouty arthritis. The pain was severe, and the lab findings revealed the inflammation on the affected joints. As the primary pain relief, the patient received NSAIDs with the Oriental treatment. But as it was revealed that the patient also had damaged liver, he mainly received an Oriental medical treatment with small amounts of corticosteroids to reduce the pain. At the final stage of the treatments, allopurinol was used in order to reduce the chance of recurrence by lowering the uric acid level.

The Tongpung(痛風) in the classics of Oriental medicine, has similar features to the gout of the Western medicine, and as gout in Western medicine was recognized as a disease that must be distinguished from the other kinds of joint diseases such as acute rheumatoid fever, rheumatoid arthritis, traumatic arthritis, orthoarthritis, suppurative arthritis, cellulitis, bursitis, tendinitis and phlebitis. Tongpung in Oriental medicine was recognized as a kind of Tongbi(痛痺) which should be distinguished from the Chakbi(着痺) or Hangbi(行痺)[4].

The symptoms of Tongpung include swelling and pain. The pain was described like 'the tiger's bite', which used the same meaning as its nickname, Bakhoyeukjolpung(白虎歷節風). The other symptoms include shortness of breath, vertigo, and curvings of the fingers[9].

The causes of Tongpung were thought to be the external factor at first, but amounts of alcohol, much delicious food and excessive fatigue were regarded as the main causes[4]. Among them, moist heat and polluted blood were regarded as the main causes, which gave birth to the formulas such as Sopungwhalhyel-Tang (Shufenghuoxie-tang), Daekangwhal-Tang (Daqianghuo- tang), Jungtong-San (Dingtong-san), and Youngsunjetong-Em (Lingxianchutong-yin)[9].

Many oriental classics mentioned that the fishes, 'fishy' foods, the foods made out of flours such as noodles, beans, meats and liquors should be practiced temperance[9]. It seems to be a similar report that recommends the limitation in the consumption of the purine-rich food[4].

In this case, HT8, SP3, LU8, KI10, and LR1 points were used mainly, and needles were remained inserted for 30 minutes once a day. If the patient had other symptoms, other points were chosen for the treatment. The LU8 helps to circulate every Qi of the body, the SP3 improves the gastrointestinal symptoms such as nausea and vomitting, the HT8 is frequently used to treat for the heat symptoms like fever, the KI10 is used to treat for the heat, and the LR1 circulates the Qi of the meridians[12]. It may be viewed that these points were used according to the specific conditions of the patient and the gouty joint pain and other symptoms are reduced as the result.

Herbal formulae used for the treatment were 'Bangphungtongsung-San(Fangfengtongsheng-san)', 'Kangwhaljetong-Um(Qianghuochutong- yin)', and 'Sosiho-Tang(Xiaochaihu-tang)'. Bangphungtongsung-San (Fangfengtongsheng-san) treats the fecal and urinary obstruction caused by the 'heat-poison', detoxicates the liquor[13], and purifies the blood by removing the foreign matter in the abdomen and toxic materials throughout the body[14-15]. In this case, this formula was used to detoxicate the liquor to reduce the gouty arthritic pain and recover the overall function of the liver.

'Kangwhaljetong-Um(Qianghuochutong-yin)' is used to treat the unbearable pain, warmness, and local swellings[13,16]. In this case, this formula was used for the relief of gouty arthritic pain.

'Sosiho-Tang(Xiaochaihu-tang)' have anti-inflammatory effect, especially to the liver and the gall bladder, and inflammation on the Soyang (少陽) meridians[14-15]. In this case, this formula was used for relief of the fever, shiver, nausea, and vomiting, and to recover the liver function.

As the liver activity of patient showed to be low a little due to the excessive drinking for months, and using NSAIDs caused the liver damage, the levels of uric acid, AST, ALT, ALP and γ-GTP were observed during the treatment. The CRP, which is sensitive indicator for the inflammations and tissue damage[17], were also observed. Laboratory data during hospital days is mentioned in Table 2.

AST level usually increases in the cases of liver disease, myocardiac infarction, hemolysis and muscular diseases[17-18]. In this case, the AST level increased from 27 IU/L to 41IU/L after the NSAIDs administration, but as NSAIDs administration was halted, and oriental medical treatments including acupuncture and herbal treatments, alongside with small amounts of corticosteroids reduced the level to 16 IU/L, which was lower than the level measured on the admission date.(Fig. 4.).

ALT is the specific enzyme in the liver, and its level increases in the viral and alcoholic hepatitis, and toxin-induced liver injury[17-18]. In this case, the level increased, from 45 IU/L in the beginning, to 118IU/L after the NSAIDs administration, but dropped to 32 IU/L after the acupuncture and herbal treatment alongside with administration of small amounts of corticosteroids(Fig. 4.).

ALP level is usually increased in the cases like drug-induced liver damage, or liver damage was caused by the viruses other than the hepatitis viruses[17-18]. In this case, the level increased, from 72 U/ℓ in the beginning, to 173 U/ℓ after the NSAIDs treatement, but dropped to 77 U/ℓ after the acupuncture and herbal treatment alongside with administration of small amounts of corticosteroids(Fig. 4.).

γ-GTP increases in the cases such as hepatitis, liver cirrhosis, hepatoma and obstructive jaundice, and shows excessive increase in the case of alcohol-induced liver dysfunction[17-18]. On the admission date, the level was 65 IU/L and indicated the slight alcohol-induced liver dysfunction, and after the NSAIDs administration, the level increased to 167 IU/L, which is 2.5 times larger than before, but decreased to 33 IU/L after the acupuncture and herbal treatments(Fig. 4.).

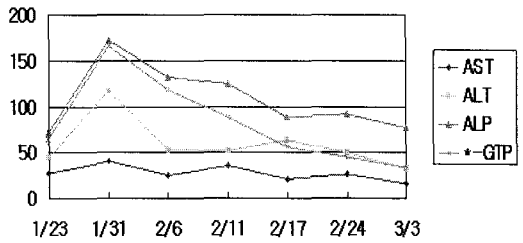

Fig. 4. LFT during total medication duration in acute gouty arthritis patient

Table 65. Laboratory data during hospital days

	After administration of H-med, NSAIDs(06.1.31)	After administration of H-med (06.2.11)	After administration of H-med, allopurinol, corticosteroids(06.3.3)
AST(IU/L)	41	35	16
ALT(IU/L)	118	52	32
ALP(U/ℓ)	173	125	77
γ-GTP(IU/L)	167	89	33
CRP(mg/dℓ)	14.55	10.69	2.84
WBC(×10^3㎣)	8.89	8.34	5.47
Uric acid(mg/dℓ)	5.7	7.4	5.9

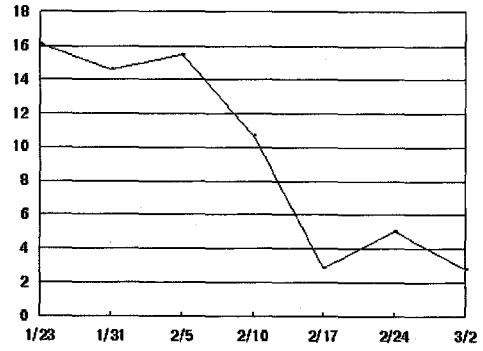

Fig. 5. CRP during total medication duration in acute gouty arthritis patient

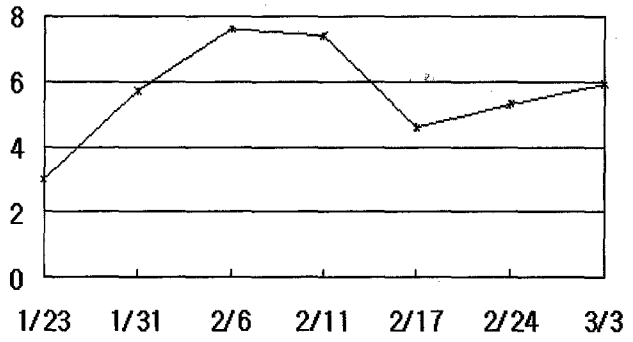

Fig. 6. Uric acid during total medication duration in acute gouty arthritis patient

Generally, CRP is used as the sensitive indicator of the acute inflammation[17-18]. The CRP level of the patient was 16.11 mg/dℓ on the admission day and showed no changes during the NSAIDs administration period, but began decreasing when acupuncture and herbal treatments began and, with small amounts of corticosteroids, the level decreased to normal. The pain were relieved and the overall condition of the patient also improved(Fig. 5.).

Hyperuricemia is a risk factor for the development of gout, But it does not coincide with gout[17-18]. The uric acid level of the patient on the admission date was 3㎎/dℓ, lower than the normal level, but soon increased to 7.6㎎/dℓ, and as the oriental medical treatments and allopurinol administration continued, decreased to 5.9㎎/dℓ (Fig. 6.).

This case demonstrates collaborative treatments of oriental and Western medicine are better than independent Western treatment for the liver injury occurred by excessive drinking or NSAIDs administration in gouty arthritis

Further studies will be required about the effects of the oriental and Western treatments for gouty arthritis and other diseases.

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