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## A case report of ankylosing spondylitis treated by acupuncture

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### Original Research

**Abstract:** The following is a case study of a patient with Ankylosing Spondylitis (AS). She presented to our clinic seeking pain relief/control after having exhausted all pharmaceutical options. A regimen of Acupuncture treatment plan was not only successful in relieving her pain but was helpful in preventing future episodic relapses. This patient is no longer taking pain medications prescribed beforehand.

**Key words:** Ankylosing Spondylitis; Acupuncture; Traditional Chinese Medicine; Pain Management.

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### Introduction

Ankylosing Spondylitis (AS) is a chronic inflammatory disease affecting the spinal vertebrae and sacroiliac joints, causing debilitating pain and loss of mobility. It is commonly treated by a combination of immunosuppressant, pain management and physiotherapy.

The etiology is not well understood. AS often presents with extra-skeletal manifestations. Fatigue is a common symptom (1). AS is also specifically related to cardiovascular and pulmonary complications, in addition to uveitis, psoriasis and osteoporosis (2-4).

Patients often go to multiple specialists for treatment. Western medicine uses pain killers and immunosuppressant to control the inflammation and pain (5-7). Research indicates that it is uncertain whether immunosuppressant can slow damage to the joints or ease tenderness and swelling of the ligaments (5). Prolonged opioid usage can lead to serious side effects including euphoria, sedation, respiratory depression and birth defect (7). Also, with prolonged use there is an increased tolerance to analgesic property, dependency on the drug and ever increasing demand for higher doses.

Acupuncture has been used since ancient time in China to treat various diseases including pain management (8). There have been a number of randomized controlled trials conducted by western and Chinese researchers to confirm its efficacy in treating chronic knee pain and heel pain (9-10). More randomized controlled trials are still being conducted for pain management in general (11-12).

In our case, the patient had consulted various professionals including rheumatologists, chiropractors and physical therapists in previous treatment. However, the pain and stiffness kept deteriorating and pain medication lost its effectiveness even at the maximal allowed dosage. In desperation, she came to be treated by acupuncture.

### Case history

JP, a 33 years old female, complained of chronic low back pain since high school. It was an insidious onset of pain and stiffness, which gradually moved up to the thoracic area and extended to the neck and shoulders. She was diagnosed with AS at age 16, and was experiencing periods of flare up and remission. The excruciating pain severely disturbed her sleep. She suffered from extreme fatigue that led to disturbing and alarming somnolence. She had episodes of falling asleep while driving or at work. The severe pain resulted in complete loss in range of motion (ROM) along her spine.

JP came to our teaching clinic at the New York College of Traditional Chinese Medicine (NYCTCM) in 9/2011 and began acupuncture treatment. She signed the informed consent which stated that she consented to be treated by student interns who are in training and under the supervision of an acupuncturist licensed in the state of New York.

### Musculoskeletal evaluation

Musculoskeletal evaluation was done during her initial visits in 9/2011. She was extremely tender to touch on her neck, shoulders and her entire back. The musculature of the Erector Spinae Group exhibited hypertonicity. There was tension and tenderness in the Trapezius, Scalenes and the two Splenius muscles (Splenius Capitis and Splenius Cervicis) (Table 1, 2).

The pain on her cervical region was controlled by medications before she came to our clinic. Therefore there has been no significant change of cervical ROM during the period of 9/2011 and 9/2015.

### Diagnosis made by western medicine

Patient's blood test is positive for generic marker HLA/B. Family history shows her mother as having AS. MRI report of 2/3/2007 confirms reversal of cervical cur-

**Table 1.** Musculoskeletal evaluation at visit of 9/2011.

Cervical Range Of Motion 9/2011			Lumbar-pelvic Range of Motion 9/2011	
	Normal	JP	Normal	JP
<b>Flexion</b>	90	70	80	30
<b>Extension</b>	70	30	20 – 30	10
<b>R/L Rotation</b>	90	70	45	20
<b>R/L Lateral Flexion</b>	45	35	35	10

Patient reported that her lumbar ROM was 0 during relapses.

**Table 2.** Musculoskeletal evaluation at visit of 3/2015.

Cervical Range Of Motion 3/2015			Lumbar-pelvic Range of Motion 3/2015	
	Normal	JP	Normal	JP
<b>Flexion</b>	90	70	80	80
<b>Extension</b>	70	30	20 – 30	10
<b>R/L Rotation</b>	90	70	45	45
<b>R/L Lateral Flexion</b>	45	35	35	15

Patient also had pain along the thoracic region upon deep breathing.

vature which is consistent with muscle spasm, and sclerotic change in SI joint with partial fusion. The result from these medical exams as well as the history of chronic low back pain established the diagnosis of AS. Patient's sleep study confirmed Narcolepsy.

#### **History of medication taken**

Before Acupuncture treatment, patient had taken the following medications for 5 years: Vicodin 7.5mg 5-6 pills daily; Xyrem 2.25mg twice per day (Xyrem is a schedule III controlled substance GHB); Percocet 5.25mg 5 to 6 pills daily (Percocet is a schedule II drug); and Methotrexate injection done at the rheumatologist's office.

#### **Assessment by traditional chinese medicine (TCM)**

The TCM Four Diagnosis Method not only looks at the chief complaint but also requires thorough examination of patient's overall condition in great details in order to reach a conclusion. It includes inquiry (of present and past medical history), observation, palpitation, and pulse and tongue inspection.

Patient has a tendency to be cold with cold hands and feet; she has an aversion to cold. She reports disturbed shallow sleep and restlessness; she easily wakes up with nightmare sweating profusely. She feels thirsty and prefers drinking cold water. Patient has poor appetite. Patient feels depressed, has poor memory and loses of concentration.

Her tongue color is red with redder tip. Tongue body is thin with cracks. It has tooth marks with scattered petechiae. It quivers when tested. It exhibits a layer of thin white coating with no coating along its two sides (GB/LR). The pulse is wiry, slightly fast; deep in Chi position and weak in Cun position. Sometimes it is irregular and slippery.

TCM theory indicates the root cause for this condition is the weakness of upright (Zheng) Qi. When wind, cold and dampness invade the body, they lodge in muscles, tendons, bones and meridians, impede Qi and blood circulation. Blockage of Qi and blood circulation causes pain as well as malnourishment of the internal Zhang/Fu organs. It is a vicious cycle that the weaker the upright Qi, the

more severe the blockage and pain can be and vice versa.

The TCM diagnosis for this case is Bi-syndrome (pain caused by blockage) with deficiency of all 5 Zang organs (KD, LR, SP, LU, HT) and empty heat flares up.

#### **Treatment principle**

Taking into consideration her overall condition, we have established a treatment plan. The treatment principle is to alleviate pain by removing stagnation; to enhance/nourish Liver, Kidney, calm the Shen, and raise clear Yang and clear Empty Heat.

The priority is to relieve pain. Each session, Ms. JP came in with Visual Analog Scale (VAS) pain of 5 to 9/10. At the end of the session, we aim to reduce it to below 2/10.

#### **Acupuncture points selection**

Point selection is based on the principles of:

- (1) Point specificity.
- (2) When symptom is at the left, needle the right and vice versa.
- (3) When symptom is at one end of the channel, needle the other end.
- (4) Somatotopic arrangement.

Select from the following points alternatively for each treatment.

- Use back-shu points in combination with the yuan-source points (of the Yin meridians) and Luo-connecting points. This is in order to dredge the channel, promote Yang, and directly tonify the five Zang organs.

Tianzhu (BL 10), Dazhu (BL 11), Feishu (BL 13), Jueyinshu (BL 14), Xinshu (BL 15), Shentang (BL 44), Geshu (BL 17), Ganshu (BL 18), Pishu (BL 20), Weishu (BL 21), Shenshu (BL 23), Dachangshu (BL 25), Weizhong (BL 40), Feiyang (BL 58), Baihui (GV 20), Daizhui (GV 14), Mingmen (GV 4), Jinsuo (GV 8), Sishencong (Ex), Shenmen (HT 7), Neiguan (PC 6), Taiyuan (LU 9), Lieque (LU 7), Taixi (KI 3), Taichong (LR 3), Xuanzhong (GB 39), Sanyinjiao (SP 6)

- Use Jia Ji (Cervical, Thoracic, lumbar) points to activate Qi and blood circulation on the spine (Figure 1A).
- Enhance body's upright Qi: Guanyuan (CV 4), Qihai (CV 6), Zhongwan (CV 12), Zusanli (ST 36) with Far-Infrared Radiation Therapeutic Lamp (TDP) Lamp.
- Narcolepsy control: Regulate Yang Motility and Yin Motility Extraordinary Meridians: Shenmai (BL 62), Zhaohai (KI 6), Anmian (N-HN-54).
- Remove stagnation at collaterals: TDP Lamp with applying Kwan Koon Oil on patient's back, along with Tuina, cupping and bloodletting.

### Needling technique

Fu (floating) Puncture and Activating Qi (Dong Qi) needling techniques were applied.

Fu (Floating) Puncture is where the needles are inserted transversely at the superficial myofascial layer. This technique is to treat muscle Bi-syndrome with coldness coagulation which results in stiffness and tightness.

Activating Qi (Dong Qi) technique is to ask patient to actively move the body while the practitioner manipulates the needles (Figure 1B, 1C). The following points were used to alleviate pain at different body parts:

For low back pain, use YaoTongXue (N-UE-19), Shousanli (LI 10), Shenting (GV 24), Baihui (GV 20), Zanzhu (BL 2).

For neck and shoulder pain, use Luozhen (M-UE-24), Chongzi (Tung;s 2.01) & Chongxian (Tung's 2.02), Houxi (SI 3), Linggu (Tung's 2.05) & Dabai (Tung's 2.04), San-chasan (Tung's 2.14),

For hip (buttock) pain, use Jianzhong (Tung's 4.06), Shangqu (Tung's 4.16), Jianyu (LI 15), Jianliao (SJ 14) (13).

We also used retained cups and collateral pricking (Figure 1D). These techniques are applied after the needles are removed.

### Treatment schedule

JP received weekly acupuncture treatment from 9/2011 until the time of this paper (9/2015). She also indicated



**Figure 1.** Acupuncture, cupping and collateral pricking treatment. **A.** Cervical JiaJi. **B.** Floating (Fu) Puncture. **C.** Floating (Fu) Puncture. **D.** Cupping and collateral pricking.

that she would like to continue the treatment going forward. The initial therapeutic session was 1.5 hours and each follow up session lasted about 45 minutes. JP did not receive any other form of TCM treatment and stopped physiotherapy before coming to our clinic. She continued to see her rheumatologist concurrently with the acupuncture treatment.

### Results

Average weekly VAS of pain and energy are recorded during her visits. Table 3 is calculated as the mathematical mean value of the weekly data at selected milestone intervals when patient's condition showed significant improvement.

Patient started infertility treatment in 9/2012. It is important to note that she had stopped pain medication at that time. She had 1 miscarriage. She followed with 5 inter-uterine insemination attempts and 1 in vitro fertilization. Finally she became pregnant, and gave birth to a full term healthy baby. She continued weekly acupuncture treatments all along.

### Discussion

This condition is referred to as Bone Bi-syndrome (Gu Bi) in ancient Chinese medical classics. The Chapter of Treatise on the Bi Syndrome, *Plain Questions of the Yellow Emperor's Inner Classics*

(*SuWen*), explained its etiology and described the scooped gesture at its advanced stage. TCM believes that the pain and spinal stiffness are manifestation of disorders of the internal organs, the treatment has been to rectify and strengthen these organs. Herbal medicine has been used both as ingested form and topical for external application (14-15). A search of modern TCM academic papers indicates that herbal medicine is still the main approach in China today and is effective (14-15). However herbal medicine has not been accepted as well as acupuncture in the US. There are a few references of using acupuncture for treatment in China as well as internationally (16-18). However they are either short term treatment with no long term follow up (17-18), or the technique is out of scope of practice in the US (18). The methodologies used in these clinic trials are also different from the treatment principle and technique modalities used in our case.

TCM theory indicates that pain is caused by blockage. Various acupuncture needling technique can invigorate blood circulation and remove blockage. Retained cups are effective at relaxing the muscles and warming the superficial layer of the body. Collateral pricking is a powerful way to stimulate blood circulation. The treatment focuses on breaking up blockages and restoring body's Yin/Yang balance, thus improving the overall condition which in turn strengthens the immunity. Acupuncture has rare side effect.

JP's progress supports the TCM theory. Pain management is key to her treatment regimen. Once the pain is relieved, there is immediate improvement of ROM. She can sleep more soundly which leads to increased energy level. Her body can function better which results in less episodic relapses. And she is able to reduce the dosage of pain medication gradually and eventually completely. (Table 3).



**Table 3.** Progress Records.

Date	VAS of Pain	Medication (daily dosage)	Relapses	Sleep (per night)	VAS of Energy
9/2011	10/10 at night, 8/10 during daytime	Vicodin 5-6 pills, Xyrem 2 pills, Percocet 5 – 6 pills	4 times per year; 2 – 3 weeks each relapse, VAS of pain 10/10 at night.	1 – 2 hours	< 1/10
10/2011–11/2011	7/10 at night	Vicodin 1 pill	2 – 3 days each relapse, VAS of pain 5/10 at night.	6 – 7 hours	2/10
12/2011–1/2012	< 5/10 at night	None	Occasional relapses.	6 – 8 hours	5/10
1/2013 – 9/2015	< 4/10 during daytime. < 1 /10 at night.	None	None	6 – 8 hours	7/10

Energy level is in term of Visual Analog Scale.

ROM seemed to be inversely associated with the pain level. The lumbar-pelvic ROM was significantly improved on flexion and right/left rotation (Table1, Table2). However, not much improvement was obtained on extension and right/left flexion. Patient's X-ray taken before coming to our clinic showed partial fusion of her sacroiliac joint. This could be the reason for the permanent loss of ROM. However, we do not have enough data to prove such conclusion.

Episodic relapse refers to the reoccurrence of symptoms which include pain, reduced ROM and energy level, as well as increased use and reliance on pain medications. Table 3 showed that the frequency and length of each relapse as well as its severity are reduced with acupuncture treatment. And she had no relapses since January 2013.

JP gradually reduced dosage of pain medication during the first 4 months of treatment. Though our record showed she took Vicodine occasionally during the same time period, however the dosage was reduced; it was needed to control the pain reoccurred in between her weekly treatment sessions. By January 2012, she stopped all pain medication.

Patient went through pregnancy and child birth during the 4-year treatment period. Research indicates that pregnancy does not improve the symptoms of AS. In the majority of patients, disease activity is not substantially altered during pregnancy (19). The chance of getting a relapse postpartum could be higher (20). JP had no relapse during gestation or following child birth. We would like to conclude that the improvement in her condition is a result of her acupuncture treatment.

Both Western medicine and TCM need to educate patients about the chronic nature of the illness, which requires patients' commitment to ongoing long term treatments.

However this case demonstrates that acupuncture could be considered as a potentially effective treatment for AS. Nonetheless more cases with long-term follow up are needed to corroborate this.

### Conflict of interest

The authors declare no competing financial interests.

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