The Treatment of Chronic Low Back Pain
with Traditional Chinese Medicine

A Presentation
By
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Introduction:

My name is Amy Brose, and I am a licensed acupuncturist. I studied TCM, or Traditional Chinese Medicine, at the Oregon College of Oriental Medicine. I received my master’s degree in Acupuncture and Oriental medicine in 2004. Prior to my Chinese medical studies, I worked in clinical research in the Department of Gastroenterology and Hepatology at Oregon Health and Sciences University for several years. My position at OHSU brought me into contact with patients with cirrhosis of the liver, Crohn’s disease and ulcerative colitis.

Chronic Lumbar Pain:

Today I will be talking with you about the treatment of chronic low back pain. I will start by discussing the current Western medical understanding of chronic lumbar pain. Then I will present an overview of Traditional Chinese Medical theory, diagnosis and treatment. I will finish by presenting research findings from trials examining Traditional Chinese Medicine as a treatment for chronic lumbar pain.

Low back pain is defined as pain, stiffness or muscle tension located below the ribs and above the meeting point of the leg and buttock. Sciatica, or pain that radiates from the back into the buttocks or down the leg, may or may not be associated with low back pain. Chronic lumbar pain is defined as such when pain persists for three months or longer (Clinical Evidence, June 2003).

Chronic lumbar pain represents a significant burden on the United States health care system. At any given time, nine million people in the U.S. are disabled by back pain and 2.6 million are disabled chronically (Smith-Fassler, 2001). In developed countries, 70-
80% of the population will experience low back pain at some point during their lives (Barker LR., 1999). Low back pain is thought to be the most economically burdensome ailment of working-age adults (Frank, J, 1996, Guo, 1999). It is estimated that back pain in general costs the U.S. up to $25 billion annually (Meng, 2003).

Back pain has become one of the most frustrating medical conditions for our modern healthcare system. Low back pain disability is on the rise, even as we learn more about pain and people’s reaction to it. High-tech treatments for spinal afflictions do not effectively treat simple, chronic backache (Waddell, 1998).

Symptoms of chronic lumbar pain affect a person’s overall well-being significantly. Patients often experience disturbed mood, a decrease in normal social activity, stress, anger, and decreased employment. The effect of chronic back pain on a person’s ability to work is profound, particularly if the pain stems from an injury incurred on the job. Most people return to work quickly after an acute attack of back pain. But if a patient with back pain stops work, they have a 1-10% chance of still being out of work a year later. Once they are out of work for a month, they are at 20% risk of long-term disability. After 6 months of being away from their job, they have a 50% chance of ever returning to their job. Thus begins a vicious cycle of disability that affects not only the patient, but society in general in the form of lost wages, lost production and increased health care costs (Waddell, 1998).

Risk factors for the development of chronic lumbar pain include history of previous back pain, manual work that involves repetitive muscle strain or lifting/ twisting, weak trunk muscle strength, low level of physical fitness, monotonous job, lack of satisfaction with job and the use of tobacco. When acute back pain is present the following are predictors for the progression to chronic lumbar pain: belief that pain is work-related, radiating leg pain, weak trunk muscles, limited straight leg raise test and signs of nerve root irritation (Waddell, 1998).
Western viewpoint:

Historical Perspective:
Historically, clinicians have had a difficult time determining the specific cause of chronic lumbar pain. In the 1800’s, physicians believed that back pain was due to a build up of ‘rheumatic phlegm’ in the muscles, and they believed that cold and damp aggravated this pathogen. Treatment modalities were focused on ridding the body of phlegm via diuresis or treatment of the bowels. In 1828, Dr. Brown of Glasgow attributed back pain to a problem with the nervous system and the vertebral column. This was the first time a physician had considered a structural connection to the cause of lumbar pain. In the latter half of the 19th century, physicians began to believe that injury and cumulative repetitive trauma was the cause of back pain. World War I gave physicians the opportunity to treat orthopedic injuries and see first hand the long lasting consequences of trauma to bone and tissue (Waddell, 1998).

When x ray technology came into use, physicians would adhere to any radiographic findings, assuming that any apparent lesion seen on a film must be the source of back pain. Many lumbar surgeries were performed in the 1920’s and 1930’s in an effort to fix these anomalies with unimpressive results. Patients were still suffering from back pain. As time has passed, our understanding of the spine has developed. We now better understand the nervous system and the concepts of musculoskeletal sprain and strain (Waddell, 1998).

Western treatment:
When a patient presents with chronic lumbar pain, a physician begins with a medical and surgical history and physical exam. Exam may include observation, range of motion assessment, specific orthopedic tests and neurological screening. Most importantly, physicians must rule out any serious or dangerous pathologies. These require urgent attention and include cancer, metabolic disorder, infection, fracture, acute abdominal aneurysm or significant disc herniation. Visceral referred pain from internal organs must also be ruled out (National Guideline Clearinghouse, 2004).
Differential Diagnosis:
A physician works with the following differential diagnoses when assessing a patient with low back pain:

- **Facet joint syndrome**: degenerative changes can lead to decreased range of motion, muscles in chronic spasm
- **Ligaments/ fascia injury**: pain due to overuse and trauma, lack of flexibility may be due to low physical fitness/ weak core muscles
- **Intervertebral disc prolapse or degeneration**: lack of flexibility may lead to herniation. Improper lifting of heavy loads affects spinal mechanics.
- **Vertebral injury/ fracture**: affects nerves and structure/movement of spine
- **Nerve root compression**: due to anatomic misalignment
- **Muscle spasm, sprain, strain**: due to trauma, lifting, twisting, lack of fitness and flexibility

More than one of these diagnoses may be present in the same patient, complicating treatment strategies and treatment success. Diagnostic tests may include x rays, MRI, EMG study or CT myelogram (Waddell, 1998).

Western therapy for low back pain includes narcotics, antidepressants, muscle relaxants and NSAIDs (non-steroidal anti-inflammatory drugs). Narcotics, such as Vicodin, Oxycodone or Percocet relieve pain by working as opiate receptor agonists. Tricyclic antidepressants such as amitriptyline, aid in sleep and may affect neurotransmitter activity in a way that relieves pain. Muscle relaxants such as diazepam, relieve muscle spasms in the back to relieve pain. Aspirin and ibuprofen are NSAIDs that block the inflammatory process, thus reducing pain (Nursing Drug Handbook, 2005). Trigger point and facet injections with steroids or analgesics may also be employed. Referrals may be made to massage therapists, chiropractors or physical therapists. Patients may be told to participate in low impact exercise and stretching and to avoid the activity that may have caused the initial injury. Most importantly, they should keep moving, as inactivity has been shown to greatly worsen the course of lumbar pain (Wadell, 1998).
Research has shown that some of these treatments have mixed success. Opioids and antidepressants have shown some positive effect on the treatment of low back pain (Schnitzer, 2000). A randomized controlled study found that tramadol, an opiate pain reliever, led to improved function and a decrease in pain (Ruoff, 2003). In several studies, antidepressants were found to significantly increase pain relief (Salerno, 2002). Studies of NSAIDS have shown to be of some benefit. In one randomized, controlled trial of 37 patients, naproxen (an NSAID) relieved pain significantly better than placebo (Van Tulder, 2002). One study has shown that muscle relaxants may be of some benefit. This randomized, controlled study found that the use of tetracepam led to significantly more pain relief than placebo (Van Tulder, 1997). A systematic review of the research literature showed that there is no benefit from epidural steroid injections and facet joint injections. Two randomized, controlled trials found no significant difference between corticosteroid injections versus placebo saline injections for low back pain relief (Clinical Evidence, June 2003). Limited evidence exists to demonstrate the effectiveness of trigger point injections. Exercise is the one treatment modality that has been shown in research studies to positively affect lumbar pain. Three trials have studied exercise versus inactivity and found that exercise for low back pain significantly reduces pain. (Clinical Evidence, June 2003). Weight reduction, corrected posture, and improved muscle strength all lead to a decrease in pain. (Beers M, 1999)

**The need for a complementary treatment modality:**

While some of the standard allopathic drug regimens may be of some use to patients, the side effect profiles from these medications are significant. Opioid analgesics have the potential to be addictive and may cause marked drowsiness, constipation, decreased appetite, sleep disturbance and possible respiratory depression. Muscle relaxants may cause dependency, sleepiness, withdrawal seizures and dizziness. NSAIDS have many side effects including gastritis, gastrointestinal bleeding, nausea, and renal dysfunction. The use of antidepressants may lead dry mouth, tiredness, nausea, fecal frequency and anorgasmia (Nursing Drug Handbook, 2005).
Facet joint injections may lead to infection, and in rare cases neurological damage and chemical meningitis (Clinical Evidence, June 2003).

Because of these side effects and the inconclusive evidence for the use of several of these medications, it seems prudent to look for modalities that either effectively treat chronic lumbar pain and/or ameliorate the potential side effects of Western medications. Traditional Chinese Medicine, particularly acupuncture, is one such treatment modality that has the potential to effectively work in conjunction with Western medicine to treat chronic lumbar pain.

**Overview of TCM theory and treatment:**

Chinese medicine has a long and remarkable history. It is not a static, rigid system. On the contrary, it is a dynamic form of medicine that has evolved and changed over thousands of years. Several aspects have been removed from the system (i.e. the use of endangered species or dangerously toxic herbs from the Chinese herbal pharmacopoeia). Much has been added to the system over time by nations and cultures outside of China.

Acupuncture originated several thousand years ago with the use of ‘bian’ stones, or ‘needle’ stones. These instruments were originally used as knives and scrapers to drain abscesses and perform bloodletting. Turtle shells and bones from the Shang Dynasty (3000 years ago) have hieroglyphs representing acupuncture and moxibustion. The basic tenets of Chinese medical theory, which incorporate a holistic view of humans and their interactions with their environment, developed during this time period (CAM, 1987).

During the third century B.C., documentation of Chinese medical theory began. The first classic text, *The Yellow Emperor’s Classic of Medicine* (or the *Huang Di Nei Jing*), was written during this time. It details the ideas of yin and yang, qi, blood, the five elements and the meridian system used in the practice of acupuncture. More importantly, it emphasizes the significant relationship between a human and his or her natural environment. As a seminal book on Taoist philosophy and medicine, it formed the
foundation for all future writings on the subject (Maoshing, 1995). Many texts on Chinese herbal medicine, internal medicine and acupuncture/moxibustion were written in the following centuries.

In the 16th century, Western medical concepts were first introduced to China. Within two centuries, Western medicine had begun to replace traditional medicine as the primary treatment modality in China. By the end of the 19th century, traditional Chinese medicine had completely fallen out of favor. In 1925, the Chinese government even made an attempt to ban it all together. Traditional medicine in China saw a resurgence during the Communist era. The Communists recognized traditional medicine as an inexpensive way to bring health care to the masses. Mao Zedong referred to traditional medicine as “the great treasure house.” In the 1950’s, information on traditional medicinal modalities were gathered together and an institute for “Traditional Chinese Medicine” was founded. Colleges of TCM were founded soon after in an effort to quickly train practitioners, who would be sent to villages throughout China (Zhang, 1995).

Since that time, China has made efforts to fully integrate traditional knowledge into modern hospital and clinical practice. Traditional Chinese Medicine achieved recognition in the United States in 1971 when James Reston, a reporter for the New York Times, experienced acupuncture in China just prior to Nixon’s historic trip. After a bout of appendicitis and surgery to remove the appendix, Reston received acupuncture treatments for post-operative pain. He was impressed with the amount of pain relief achieved and wrote about this unusual treatment in the New York Times (Reston, 1971). Americans now knew about China’s healing traditions and interest in this medicine began to grow. Today there are over 50 colleges of Chinese medicine in the United States and over 10,000 acupuncturists practicing in the U.S. (AAOM, 2004).
Theoretical Foundations of TCM: (Kaptchuk, 2000, Xinnong, ed., CAM, 1987 2nd ed.)

TCM is a holistic medicine that looks at the body as a whole, and regards its relationships to its environment as important. Central to Chinese Medicine is the notion that a single symptom is a part of a patient’s entire life experience. Symptoms are a result of a person’s activities, lifestyle and relationship with nature. A Chinese medical practitioner aims to find the root cause of a symptom of disease. Patterns of disharmony are diagnosed and treated with acupuncture and herbal therapy.

The Eight Principles:
When evaluating a patient from a Chinese medical perspective, a practitioner begins with the eight principles. Symptoms can be characterized as follows:

- Yin or Yang
- Exterior or Interior
- Cold or Hot
- Deficiency or Excess

Yin/Yang:

The theory of yin and yang forms the basis of all Chinese medicine theory. This concept explains the dual aspect to all that we observe. Without day there could not be night. Heat and cold oppose each other, but they may also transform into each other. Yin and yang oppose each other, they are dependent on each other, they support and consume
each other, they transform into each other, and they are infinitely divisible. Some aspects of yin and yang are listed below:

<table>
<thead>
<tr>
<th>YIN</th>
<th>YANG</th>
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<tbody>
<tr>
<td>Night</td>
<td>Day</td>
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<tr>
<td>Dark</td>
<td>Light</td>
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<td>Cold</td>
<td>Hot</td>
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<td>Matter</td>
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<td>Below</td>
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<td>Earth</td>
<td>Heaven</td>
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<td>Slow</td>
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<td>Interior</td>
<td>Exterior</td>
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<td>Deficiency</td>
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The idea of yin and yang can be used diagnostically. For example, if a patient feels hot, has a rapid pulse and appears frenetic, we would say that the person is exhibiting more yang characteristics at that moment. Because yin and yang depend on each other, a deficiency of one may lead to an excess of another. This becomes important diagnostically for the Chinese medical practitioner.

**Exterior/Interior:** Exterior conditions are those which are a result of a pathogen attacking the body from the outside. Symptoms of an external attack include fever/chills, a superficial pulse (felt on the surface), intolerance to cold or wind and a rapid onset of symptoms. From a Western perspective, these conditions are often a way to describe the common cold, flu, or other bacterial or viral infection.

**Interior** conditions are those which are a result of an imbalance within the body. This can be due to an exterior pathogen diving deep within the body or it can be due to stress,
a change in the body’s normal routine, improper diet or emotional strain. Symptoms will differ based on the area and level of involvement.

**Cold or Hot:** A practitioner must look at the symptoms exhibited by a patient to determine if these symptoms can be described as ‘hot’ or ‘cold.’ A patient may exhibit signs of heat or cold if they have been attacked by a ‘hot’ or ‘cold’ pathogen. These natures may also exist due to too much or too little yin or yang. For example, an excess of yang would manifest with symptoms of heat, whereas an excess of yin might manifest as cold.

**Deficiency/Excess:** This concept is important, as it describes the relative strengths and weaknesses of the material and energetic substances in the body.

*Deficiency* suggests emptiness or a lesser amount of something. For example, yin or yang could be deficient, and these deficiencies would present with different symptoms. Because they are interdependent, a deficiency of yin might lead to a preponderance of yang. This would show up in the more ‘yang’ symptoms of heat, dryness, acuity. If yang were deficient, yin would be in excess because it would not be controlled. Therefore, more ‘yin’ symptoms of longer term coldness and dampness would be present.

*Excess* conditions tend to be those caused by an exterior pathogen attacking the body, although interior imbalances may lead to excess as well. ‘Stagnation’ is considered an ‘excess’ condition in the body, and it can be caused by a deficiency of energy or blood in an area of the body. This will be clarified shortly.

Next, it is important to talk about the material and functional substances of the body. These play a major role in diagnostics.
**Qi, Blood, Body Fluid:**

**Qi:**

“Qi” is a difficult concept to define. It is the foundational substance of all matter in the universe. All matter is formed by the movement and changing of qi. Qi is the material substance in a human body and is constantly changing in the body. A simplistic and limited definition would describe qi as a ‘life force’ (Advanced Textbook, 1995).

There are several types of qi in the human body:

- Congenital qi (‘yuan qi’): we are born with this qi, it comes from our parents
- Nutrient qi (‘ying qi’): from the food we eat, provides nourishment, produces blood
- Pectoral qi (‘zong qi’): from air and food taken in, stored in the chest
- Defensive qi (‘wei qi’): a protective force, similar to the concept of ‘immune system’

Qi has many important functions within the body. It promotes the growth and development of the body. It defends the body from external attack, and it is the foundation of other substances in the body.

**Blood:**

Blood is another vital substance in the body, according to TCM theory. It is formed from nutrient qi, which comes from the food we eat. After blood is made, it courses through the vessels in the body to nourish and moisten tissues. It is also necessary for proper mental function. Qi and blood are closely related and work together in the body.

**Body Fluids:**

These include all fluids in the body, such as spinal fluid, sweat, tears, saliva and urine. “Jing,” or the clear body fluids circulate on the surface of the body and moisten the skin. “Ye,” or turbid body fluids moisten joint cavities, nourish the brain and bone marrow and nourish orifices such as the eyes and nose.
**Pathogenesis:**
From a TCM perspective, trouble arises in the body when the free flow of qi, blood and body fluids is compromised. A deficiency of one substance may lead to a failure to nourish a part of the body, leading to a pathologic condition. For example, a deficiency of blood may lead to symptoms such as dry skin and dizziness, due to its failure to moisten the skin and nourish the brain. Qi, blood and body fluids may all be susceptible to a ‘deficiency.’

Another problem that can lead to harmful symptoms is ‘stagnation.’ Deficiencies, heat, cold or trauma may lead to a decreased flow of blood or qi in a particular area. Back pain that is worse in cold weather can be due to a cold-induced ‘stagnation’ of qi and blood. Qi and blood cannot flow smoothly through the channels and collaterals of the body. All pain symptoms in general in the body are due to qi and blood ‘stagnation.’ A successful treatment for pain would focus on moving qi and blood to break up stagnation.

**Channels and Collaterals:**
A system of acupuncture channels covers the body. These channels and their collaterals connect the inside of the body to the outside. They are not blood vessels or nerves. According to TCM theory, channels and collaterals are ‘information highways’ on the body. They form a network of communication lines that connect all parts of the body. As discussed before, qi and blood course through channels and collaterals throughout the body. If both are moving freely without stagnation, a harmonious disease-free state will occur. However, any problems with flow through these channels and collaterals will lead to a disease state. *Channels* run longitudinally on the body. *Collaterals* are smaller branches that run horizontally on the body to more superficial areas. Acupuncture points (over 360 of them) are located along these channels covering the body. By needling these points, qi and blood may be affected in these meridians, thus restoring balance in the flow of substances through them. The twelve main meridians are connected to the twelve main organs, which I will describe next (Kaptchuk, 2000).
**Zang Fu Organs:**
In Chinese medical theory, twelve organs govern the functions of the substances of the body. These organs have the same names as body organs in Western medicine, but they have different conceptual functions. When we talk about the kidneys within the framework of TCM, we are not necessarily talking about the same idea of ‘the kidneys’ in a Western medical sense.

**Zang (Yin) Organs:**
These organs make and store qi, blood and body fluids.

- **Lung:** respiration, disperses and descends qi, regulates skin/hair/water passages
- **Heart:** governs blood and vessels, houses the mind, seen in the face and tongue
- **Liver:** stores blood, ensures smooth flow of qi in body, nourishes tendons, regulates menses, seen in nails and eyes
- **Spleen:** transports and transforms qi, controls blood in vessels, see in muscles, mouth
- **Kidneys:** stores essence, regulates water passages, governs reproduction and development

**Fu (Yang) Organs:**
These hollow organs receive and excrete fluids and wastes. They are paired with their respective zang organs.

- **Bladder:** controls urination
- **Small Intestine:** receives and separates clear from turbid
- **Gallbladder:** stores bile
- **Stomach:** decomposes food
- **Large Intestine:** receives waste and excretes it
**Pathologic Factors:**
Problems with the flow of qi and blood may arise in the channel system because of an internal deficiency or stagnation, but these problems may also be due to external attack. In TCM theory, the body may be attacked by wind, cold, damp, heat, dryness or summer heat. These are important to consider as possible etiologies for low back pain.

**Diagnostic Methods:**
TCM practitioners consider several methods of diagnosis:

- Observation
- Tongue
- Pulse
- Questioning

**Observation:** Does the patient look hot or cold, pale, agitated, angry, sweaty, thin or frail? In general, much can be deduced simply by looking at the patient. Overall deficiencies and excesses may be very apparent on the surface.

**Tongue:** The tongue reflects the state of the body, and a TCM practitioner will look at a patient’s tongue and note changes to its overall color and coating during the course of treatment. For example, a thick, white tongue coat may indicate cold and dampness within the body. After treating a patient for a month, a practitioner may notice that the tongue coat begins to return to a more ‘normal’ thin, white coat. This would indicate that the treatment is working.

**Pulse:** A normal pulse is smooth and even with a medium rate of speed. By palpating the radial pulses (on the wrist), a TCM practitioner may determine if an excess or deficiency condition is occurring. They may also be able to sense pathogenic factors such as dampness or heat.
**Questioning:** A TCM practitioner asks many questions about health history, current complaint, bodily functions, pain, sensations and emotional well-being. This narration helps create an overall picture of the patient’s health and helps the formation of a diagnosis.

**Treatment:**
Once a TCM diagnosis has been made, an acupuncturist determines a proper treatment protocol. This could include acupuncture, the insertion of very fine needles into points on meridians or into tender points (‘ashi’ points) in an area of pain. Metal acupuncture needles are different from hollow large bore hypodermic needles used in Western medicine. Acupuncture needles are solid and hair-thin. Every patient’s experience of acupuncture is different, but most people feel very little pain as needles are inserted. Some patients describe their treatments as very relaxing, while others feel more energy from a treatment (NIH, 2004).

There are over 360 acupuncture points on the main meridians, but other ‘extra’ points have been added through the years bringing the total number of points available to use up to 2000 (NIH, 2004). Needles are placed under the skin until the patient feels a sensation in that area, often referred to as ‘de qi’ or ‘arrival of qi.’ They may feel tingling, warmth, coldness or a minor cramping or heavy sensation. Needles are typically inserted and left in place for 10-30 minutes, depending on the patient’s condition and their constitution (CAM, 1987).

Acupuncture is a very safe treatment with relatively few side effects. Minor side effects include a feeling of faintness, bruises or soreness in the area treated. More serious complications arise from improper technique. Inappropriate deep needling around the area of the chest has the potential to lead to pneumothorax, or a punctured lung cavity. Infection can occur if improperly sterilized needles are used. These complications are very rare. If a properly trained acupuncturist is cautious with their technique and uses
only sterilized disposable needles, patients should feel reassured that their treatment is safe (NIH, 2004).

In addition to regular needling, a fine electrical current may be run through the needles using an electro-acupuncture unit. Electrical stimulation of points can increase the analgesic effect of acupuncture (Sator-Katzenschlager, 2004).

Massage and acupressure might also be used. Points on the ears and on the scalp may be chosen as well. Microsystems of acupuncture exist in these areas, and they are sometimes combined with points on the twelve main meridians to enhance the treatment effects.

**Using acupuncture for chronic lumbar pain:**

**TCM Etiology:** (Maciocia, 1994)

From a TCM perspective, several factors contribute to the development of chronic low back pain:

- **Overwork:** Overuse of muscles/skeleton in low back leads to stagnation of qi and blood, which leads to a deficiency of Kidney qi.

- **Excessive sex:** In Chinese medical theory, engaging in an excessive amount of sex deprives the body of vital essence and depletes the Kidneys, leading to deficiency.

- **Pregnancy and Birth:** The muscles of the back are strained by carrying the baby, but pregnancy also deprives the mother energetically. This makes her more prone to deficiency overall. The process of childbirth also weakens the low back in TCM theory.

- **Cold and Dampness:** Pathogenic cold and damp ‘invade’ the channels of the low back, leading to stagnation of qi and blood. This in itself can cause pain, but cold and damp also affect the warmth of the kidneys, leading to kidney deficiency.
- **Heat and Dampness:** Pathogenic heat and damp ‘invade’ the channels. This affects the yin (cool aspect) of the kidneys and leads to deficiency in chronic cases (Wu, 1997).

**TCM Differentiation:** (Maciocia, 1994 and Wu, 1997)
The Chinese medical differentiation for chronic low back pain includes the following TCM diagnoses:
- Kidney yin deficiency
- Kidney yang deficiency
- Qi and blood stagnation
- Cold/Damp retention
- Heat/Damp retention

**Treatment with Acupuncture:**
The treatment of chronic lumbar pain with acupuncture, as with all conditions, begins with proper diagnosis. Chronic low back pain is always seen as a situation involving Kidney deficiency. Because the kidneys are located in the back, pain in this area can reflect kidney involvement. Again, this is the TCM concept of the kidneys, not the Western function of the kidneys. The goal of treatment would be to tonify and nourish kidney qi, yin or yang to rectify the deficiency.

On top of this chronic deficiency, other excess conditions should be treated. If there is cold/damp, then the goal of treatment would be to choose points and modalities that expel cold and transform damp. If there is qi and blood stagnation, which is true of almost all painful conditions, treatment should be aimed at moving qi and blood.

Proper treatment includes choosing points in the local area combined with points distal to the back pain. Distal points for low back pain are located on the wrists and hands and on the legs and ankles (Maciocia, 1994).
In addition to needling, moxibustion or ‘moxa’ may be used. Moxibustion is a method of burning the herb *Artemisia Vulgaris*, or ‘mugwort,’ over an acupuncture point to heat the area. The herb has ‘blood moving’ properties, which makes it useful for treating stagnation. It is often used in conjunction with acupuncture. This would be an ideal therapy in a situation where warming is needed, as in a diagnosis of cold/damp retention.

The treatment of low back pain may also include newer strategies that don’t necessarily stem from ancient acupuncture technique. Trigger point theory, developed by Dr. Janet Travell in the 1980’s, describes points in muscles with maximum nerve activity. When these points are palpated, they are tender and nodular and the pain refers along predictable pathways. Often these points coincide with traditional acupuncture points. The TCM term for tender points is ‘ashi’ points. When these points are needled, the affected muscle fasciculates or twitches and then relaxes, leading to pain relief. An acupuncturist may search for ashi points in the lumbar region or adjacent areas to needle in an effort to stop muscle spasm (Simons, 1999).

**How Does Acupuncture Relieve Pain?**

**Analgesic effects of Acupuncture:**

**Endogenous opioid effects:**

The mechanism of acupuncture analgesia was definitively understood in a study performed by Professor Ji-Sheng Han in 1982. This study showed that in a rabbit given electro-acupuncture, analgesia could be induced. More interesting was the fact that spinal fluid taken from the initial rabbit was injected into a second rabbit, and the pain relieving effects were apparent in the second animal. At that point, researchers understood that acupuncture was somehow affecting the body’s chemistry (Pomeranz, 2001). Opiate receptors in the brain had already been discovered, so it was hypothesized that acupuncture somehow affected this system of pain-relieving chemical release.

Pomeranz B, et.al, performed studies exploring acupuncture analgesia and the release of endogenous endorphins from the brain. Their research showed that acupuncture was
clearly affecting the brain’s release of endogenous pain-relieving chemicals. This was evident in the fact that mice with deficient opiate receptors and deficient endorphins showed poor response to acupuncture analgesia. The studies also showed that administering endorphin antagonists (or blockers) such as naloxone reduce the effects of acupuncture analgesia (Pomeranz, 2001).

*Electromagnetic Effects:*
Research on acupoints has suggested that they strongly conduct electromagnetic signals. When a needle is placed in one of these points, electromagnetic signals to the brain are transmitted more quickly. This may cause the release of endorphins and immune system modulators (NIH, 2004). Acupuncture points have been shown to be areas of lower electrical resistance, which may play a role in the effect these points have on the body. Further research needs to be done in this area (Pomeranz, 2001).

Advances in technology have led to interesting discoveries in the field of acupuncture research. Functional MRI has allowed researchers to watch the effects of needling on brain activity. Particular areas of the brain become more active when certain points are needled, and scientists have found correlations between the TCM theoretical function of the point and the area of the brain stimulated. For example, a point on the leg used for eye disorders (GB 37) was needled during a study. When the point was stimulated, the visual cortex of the brain became active. The researchers went on to needle a point thought to affect hearing (GB 43), and the functional MRI scans showed that the auditory cortex became active. This intriguing controlled research began a new era of biomedical examination of acupuncture theory and practice (Cho, 2001).

*Neurotransmitters/ Immune Reactions:*
Acupuncture affects the brain’s communication or ‘neurotransmitter’ system. Serotonin and norepinephrine are two neurotransmitters shown to be directly affected by acupuncture. Acupuncture has also been shown to affect immune reactions and central nervous system processes that influence blood pressure and body temperature (NIH, 2004).
Clinical Research:

In 1997, the National Institutes of Health organized the “NIH Consensus Development Conference on Acupuncture,” bringing together experts on pain, research methodology and health care in general. The group discussed acupuncture as a therapy and assessed its safety. As a group, it was decided that acupuncture showed promise as a treatment modality and much research needed to be conducted on the subject to assess its efficacy (NIH, 1997).

The NIH created the National Center for Complementary and Alternative Medicine in October 1998, with the goal of funding large, high quality studies focused on complementary medical therapies. Since that time, research on acupuncture and Oriental medicine has grown tremendously. Many practitioners and scientists have been interested in acupuncture’s potential, including dentists, anesthesiologists, physicians, veterinarians, physical therapists and neuroscientists (NIH, 2004).

More recent high quality research supports the use of acupuncture as an effective treatment for chronic low back pain. A randomized, placebo-controlled study by Carlsson C, et. al. from 2001 showed that the use of acupuncture led to a significant improvement in activity, decreased use of analgesic medications, and decrease in pain compared with placebo (Carlsson, 2001).

A blinded prospective randomized controlled study by Yeung, et.al, showed that the use of electro-acupuncture in combination with back stretching exercises, led to a significant decrease in pain and disability in patients with chronic low back pain. The study also showed that there were no adverse reactions to electro-acupuncture treatment, supporting the notion that acupuncture is a safe treatment with few side effects (Yeung, 2003).

A prospective, randomized, double-blind controlled study by Sator-Katzenschlager, et.al., found that electro-stimulation of points in the ear resulted in a significant decrease in pain.
and a significant improvement in psychological well-being, activity and sleep in patients with chronic low back pain. This study also reported no adverse side effects from the electro-acupuncture treatment (Sator-Katzenschlager, 2004).

A randomized controlled trial by Meng, et.al, studied the use of acupuncture for treatment of chronic low back pain in older patients. According to this research, acupuncture, when combined with standard therapy (NSAID therapy), produced a significant decrease in pain and disability in older patients. This effect lasted for over four weeks. Also, patients on NSAID therapy had fewer side effects from those medications if they were also simultaneously receiving acupuncture. In evaluating adverse reactions to acupuncture, only minor aching and bruising were noted (Meng, 2003).

A prospective, randomized trial by Kvorning, et.al, evaluated acupuncture as a treatment for pelvic and low-back pain in late pregnancy. This study focused on a group that would normally be quite difficult to treat, as most practitioners would tend to avoid giving pain medication to a pregnant patient. The study found that acupuncture significantly decreased pain intensity with no serious side-effects. Minor adverse effects included bruising, local pain and tiredness. Acupuncture should be considered a safe and effective treatment for late stage pregnant patients with low back pain (Kvorning, 2004).

**Future Research:**
Without doubt, further research needs to be conducted on the subject of acupuncture and low back pain. The NIH has recently funded a large phase III trial that is currently enrolling patients. This randomized, controlled trial will examine the effects of acupuncture on low back pain intensity and patient function. The study will enroll 640 participants, making it a definitive, large scale, well-designed study. According to the investigators, “results of this study will provide the clearest evidence to date about the value of acupuncture needling as a treatment for chronic low back pain” (ClinicalTrials.gov, 2004).
Conclusion:

Traditional Chinese Medicine is an ancient holistic system designed to treat almost any ailment. In the West, we have come to know acupuncture as a treatment primarily for painful conditions. Research has shown that one painful condition, chronic lumbar pain, may be effectively treated by acupuncture, especially when combined with standard care. Low back pain is a burdensome health problem for the American health care system, and it requires much attention by practitioners and researchers alike. An integrated system of treatment involving allopathic physicians and licensed acupuncturists has the potential to positively impact patients with chronic lumbar pain, while inducing relatively few side effects. This safe and effective treatment modality should be considered by practitioners who want to make referrals for their patients with chronic lumbar pain.
Appendix

Criteria for Judging Strengths and Weaknesses of a Clinical Trial of Acupuncture

Richard Hammerschlag, Ph.D.

1. Was the training of the acupuncturist(s) stated?
2. Were inclusion/exclusion criteria for patient selection presented?
3. Were patients assigned to the treatment group and the control group by a process described as randomized?
4. Were the demographics presented for the patients randomly assigned to the two groups?
5. Were rationales presented for the choice of acupoints and/or herbs and treatments parameters?
6. Were the acupuncture and control/comparison treatments described in sufficient detail that you could use them to repeat the study?
7. Were the clinical endpoints described in sufficient detail that you could use them to repeat the study?
8. Was the assessor of treatment effectiveness described as blinded?
9. Were patients asked to validate the sham control treatment?
10. Was follow-up data presented?

1. Yes. According to the article, “the physician giving all the stimulation treatments is a board certified anesthesiologist and had considerable experience with acupuncture (>10,000 treatments) before performing the study.

2. Yes, inclusion/exclusion criteria are clear.

3. Yes, subjects were randomized.

4. Yes, demographics were presented.

5. No, rational for treatment strategy not presented.

6. Yes, the protocol could be repeated by someone else.

7. Yes, but difficult to follow.

8. Ye, there was an ‘independent observer’ as an assessor.

9. No, the subjects were not asked to validate the treatment.

10. Yes, there was long term follow-up.

1. Yes, two anesthetists certified in acupuncture performed the acupuncture.

2. Yes, inclusion/exclusion criteria present.

3. Yes, they were randomized.

4. Yes, there is a chart of demographics of the different study groups.

5. Yes, texts were referenced and there is a discussion about choice of points used.

6. Yes, the protocol could be repeated by someone else.

7. Yes, clearly described.

8. No.

9. No.

10. Yes, follow-up data provided.

1. This is a western study. No acupuncturists were involved. The training/specialty of the M.D. leading the study was not stated.
2. Yes, inclusion/exclusion criteria were stated.
3. Yes, patients were randomized.
4. Yes, demographics in different groups are charted.
5. Yes, treatment rationale with tramadol/acetaminophen is stated.
6. Yes, treatment protocol could be repeated.
7. Yes, clinical endpoints were well-described.
8. Yes, double-blinded.
9. No, patients did not validate treatments (drug study).
10. No, there was no long term follow-up.
References


