

SOUTH BAYLO UNIVERSITY

**The Treatment of Straight Neck Pain
with Local and Distal Acupuncture Points
A Literature Review**

by

Tetsuro Takumi

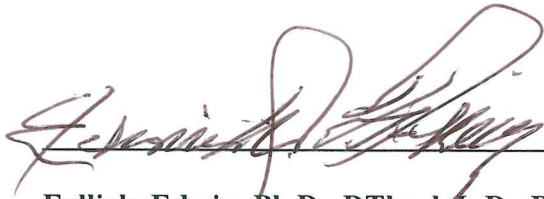
**A RESEARCH PROJECT SUBMITTED
IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE**

Doctor of Acupuncture and Oriental Medicine

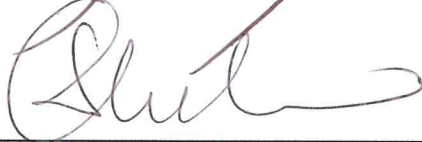
ANAHEIM, CALIFORNIA

MAY 2017

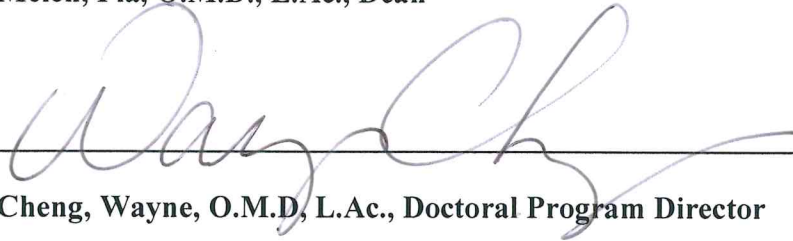
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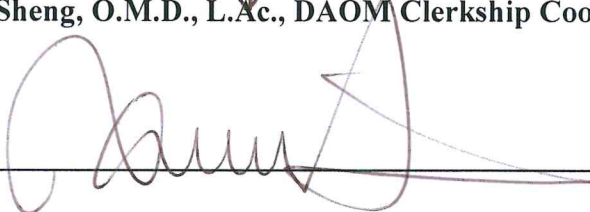
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ACKNOWLEDGEMENTS

I wish to thank Dr. Sandjaya Trikadibusana in his capacity as research advisor for directing me towards some interesting research in the field of local and distal acupuncture and for providing guidance and focus to my dissertation. Throughout this process I have deepened my knowledge about the different approaches to treating neck pain in Traditional Chinese Medicine and believe that in this area, particularly in the case of using local acupoints, there is much scope for future research.

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A Literature Review

Tetsuro Takumi

SOUTH BAYLO UNIVERSITY AT ANAHEIM, 2017

Research Advisor: Sandjaya Trikadibusana, M.D. (Indonesia), DAOM, L.Ac.

ABSTRACT

Background

In recent times, there are a lot of people who live with neck pain for various reasons such as: whip lash by auto motor vehicle accident, straight neck, cervical hernia, cervical fracture etc. The National Institute of Health estimated that 40 million U.S. adults (17.6% of the population) have severe neck pain according to results from National Health Interview Survey in 2012. [1,2]

A common treatment is visible surgical reconstruction of the cervical region in western medicine. However, this treatment can have a serious risk for some patients, especially patients who have had a previous surgical site infection or those who are obese will have a greater chance of infection and complications with this treatment option. [3]

The literature suggests that acupuncture is an effective treatment for patients who suffer from chronic, undiagnosed neck pain and can provide relief without the side effects mentioned above.

Objective

Acupuncture could provide a less invasive and lower risk treatment option for patients with these problems. This narrative review will focus on establishing the efficacy of acupuncture as a treatment for neck pain and straight neck pain in particular. The method of treatment may include the use of trigger points or distal acupuncture points. Acupuncture can be an important and effective alternative to Western Medicine.

Materials & Method

In order to understand how acupuncture can be used to treat neck pain, this dissertation is arranged through reviewing the available research for the topic including academic articles from journals and clinical medical studies. Firstly, two electronic data bases are searched on EBSCO and PUBMED with the keywords “acupuncture” AND “straight neck pain” AND “distal point”. The most relevant articles are selected based on the inclusion and exclusion criteria. The focus of this investigation is on the distal and local acupuncture points and comparison of their efficacy in treating neck pain. The selected clinical studies are critically reviewed, analyzed and synthesized in terms of the treatment outcome.

Result

In the literature review, 5 clinical studies were selected, analyzed and interpreted the application of many different techniques on using local and distal acupoints such as trigger point needling, minimal acupuncture and acupressure. The outcomes showed that using distal acupoints was at least as effective as local points in treating neck pain, and a reduction of pain was often seen after only one treatment. The research data in the clinical studies selected contained a range of subjective (qualitative measurements such as the Roland Morris Questionnaire in which patients rated their quality of life before and after acupuncture treatment) and objective (quantitative measurements in which clinicians measured physical changes in the body such as HRV and MH before and after treatment) methods for measuring the effectiveness of acupuncture. All of the studies reviewed demonstrated that both local and distal acupoint treatments were effective in treating chronic neck and low back pain. As such, acupuncture can be a valid, desirable and low risk alternative treatment comparing to the often invasive and higher risk treatments used in western medicine.

In the future, larger studies with more participants, qualified practitioners in acupuncture, and scientifically designed clinical studies should be used to evaluate the short term and long term effectiveness of acupuncture on neck pain in accordance with evidence based methods.

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I. INTRODUCTION

Background

Chronic neck pain is a wide-spread complaint in the United States. Especially in the younger generation, many have harmed their neck by using a smart phone for playing games, texting, and watching videos. These habits can lead to spinal misalignment through bad posture which manifests in conditions such as kyphosis or lordosis. These conditions occur as the results of the progressive tightening or weakening of the core muscles such as m.Psoas Major, m.Iliacus and m.Sternocleidomastoid (SCM) etc. This modern social phenomenon is called smart phone syndrome or iPhone syndrome. The National Institute of Health estimated 40 million U.S. adults (17.6% of the population) have severe neck pain according to results from the National Health Interview Survey in 2012. Patients who live with chronic pain will tend to get progressively worse as they are aging, and this results in them using more health care and medical resources. Chronic pain is becoming increasingly common and is recognized as any pain which is longer than 3 months and persists longer than normal healing (defined as 3 to 6 months) [1,2]. Some patients with chronic neck pain will develop kyphosis or straight neck arch deformities.

Risk factors of medical surgery for CK (Cervical Kyphosis)

Surgical treatment is one of the leading choices for patients with neck problems. In research involving adult patients who underwent surgery for kyphosis or scoliosis from June 1996 to December 2005, an academic institution identified the incidences or the risk factors for Surgical Site Infection (SSI) in adult spine division. 830 patients were

surveyed. The number of infected patients were 46 (5.5%) out of 830 with 29 (3.5%) patients going on to develop deep infections. An independent risk factor for all SSI and superficial SSI ($p=0.014$ and 0.013) is obesity. A history of previous SSI is also a risk factor for future SSI ($p=0.041$). As a result, patients who have experience of SSI previously or are obese are at greater risk of infection.[16] There is also a risk that “the laminectomy of C2 and/or C7, the multilevel removal of laminae and any significant removal of facet joints may increase the risk of postoperative deformities”[17], although this is yet to be proven.

Etiology of straight neck pain (Cervical Kyphosis)

The University of Maryland Medical Center determined that in those with cervical kyphosis the cervical spine naturally has a lordotic curve. Having a kyphotic spinal deformity means that there is an abnormal anterior curvature to that part of the spine. The loss of the normal cervical lordosis might be localized, occurring in just one or a few segments of the vertebrae, or it can involve the majority of the cervical spine segments. When the thoracic spine curves outside or at the posterior of the normal range, it creates a “hunchback” look and the shoulders slump forward. [18]

If the cervical or lumbar spines lose their lordotic shape and start to curve forward instead, it is an abnormal condition referred to as “kyphosis”. An abnormal anterior curvature can lead to problems within the spine in addition to an unusual appearance. Kyphosis can have varying symptoms and degrees of severity, from minor changes to the shape of the back and neck to severe deformity, neurological deficits, and chronic pain. The most

common origin of kyphosis is in the thoracic part of the spine, but it can also affect the cervical or lumbar spine. [18]

Pathogenesis of straight neck pain (Cervical Kyphosis)

There are 4 main reasons for the pathogenesis of CK, as follows

The first reason is degenerative disk disease at the Thoracic spines which can cause the intervertebral discs to collapse and become progressively thinner. As a result, the vertical line of gravity of the head shifts to the anterior side and the neck begins to lose the curvature of the cervical region. The weight of the head and the power and quantity of the muscles at the neck may also be a factor.

The second reason is congenital kyphosis in which a patient is born with some sort of defect such as incomplete formation of the spine.

Thirdly, CK can be caused by traumatic injury. An injury may result in a hard compression fracture of the vertebrae after which the body may heal in a wedge shape. However, the shape of vertebrae will be triangle-shaped which is also seen in the case of congenital kyphosis.

Lastly, the most common cause of CK is by the formation of iatrogenic issue. This is quite common after laminectomy and is more common with children than with adults.[18]

In Western Medicine, undiagnosed neck pain is a condition that doctors and technology have failed to find the cause of. It is often treated with painkillers or anti-inflammatory drugs which could have negative side effects to the patients with neck pain. People who

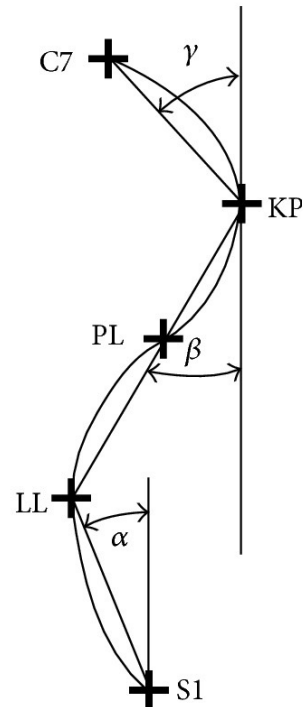
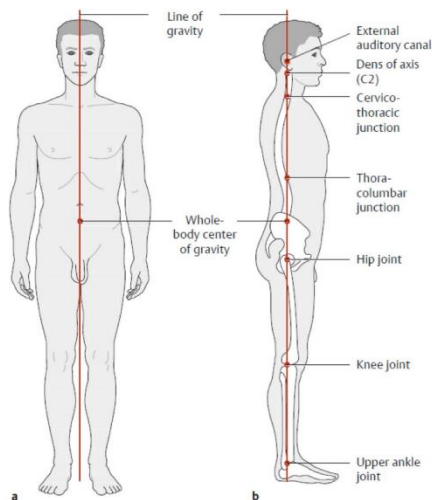
suffer from chronic neck pain always have limited Range of motion (ROM). This can reduce their quality of life by limiting the kinds of activities they can do.

Neck pain is caused by a variety of reasons from internally by the endocrine system or externally by physical conditions such as spondylitis, degenerative disk disease, fibromyalgia, whiplash, cervical kyphosis (straight neck pain) and/or bad posture etc.

The aim of this narrative review is to focus on acupuncture treatment as an effective choice of alternative therapy which works by releasing muscle contraction for straight neck pain, reducing pain and improving the patient's ROM.

In western medicine, straight neck pain is called cervical kyphosis which is characterized as a decreased or reversed lords is in the neck or increased flexion (i.e. Forward bending) at the joint between the skull and cervical 1st (C1). The pathology of straight neck (cervical kyphosis) is degenerative disc disease, birth defects, spinal surgery (iatrogenic injury), neck injury or Trauma, tumors, infection or systematic disease, and bad postural habits [3]. The treatment options for straight neck pain are alternative and surgical treatments including physical therapy, chiropractic treatment, cervical traction, brace therapy, non steroidal anti-inflammatory agents and steroid injections.[4]

In the human body, the cervical and lumbar parts of the spinal joint have multiple motions such as flexion, extension, lateral flexion, and horizontal rotation. They also have wide ROM. In addition, these 2 joints are structured mainly by muscles and ligaments. That means these parts of muscle can easily get harmed and lead to misalignment of spine by muscle contraction. On the contrary, even though the thoracic joint is one part of the spine, it doesn't have that much ROM compared with the cervical and lumbar joints. Due to thoracic joint's location from Th1 to Th10, it consists of ribbed that makes narrow ROM. The other etiology of straight neck pain is caused by the wider Lumbosacral angle or insufficient lumbar curvature. This problem can transfer into chronic neck pain as well. (Fig.1) [13]



F The whole-body center of gravity and the line of gravity

a Anterior view. The line of gravity is directed vertically along the midsagittal plane, passing through the whole-body center of gravity below the sacral promontory at the level of the second sacral vertebra.

Fig.1 Anterior and Lateral Mid Line connects to gravity line Schu□nke, M. (2014)

The Lumbosacral angle is structured by the axes of the L5 and S1 vertebrae, averaging 143 degrees. This result from the fact that the sacrum is a fixed component of the pelvic ring that is configured by 3 bones: the left and right Iliac and the Sacrum and two joints: the SI joint and the pubic symphysis. This contributes little to straightening the vertebral column. The result is the characteristic sharp angle at the junction of the pre-sacral part of the spinal column with the sacrum. [14] Both the anterior and posterior iliac spines are in the same horizontal level as proper pelvic position during an upright stance. From a lateral perspective, the vertical gravity line passes through landmarks that include the external auditory canal, the dens of the axis (C2), the functional anatomical transition points in the spinal column between Th12 and L1. Hence, the whole-body center of gravity's point is located from the anterior to the sacral promontory.[14]

In terms of etiology, excessive posterior rotation of the pelvis often leads to postural imbalance to compensate for an anterior tilt of the entire trunk position. This postural compensation verticalizes the line of gravity forward, placing the hips in a hyperextended position when standing. This hip extension can lead to posterior impingement. A typical example is posterior impingement of the hip prosthesis (post surgical hip joint replacement) in the standing position, even though the cup of the joint receiver is placed perfectly in accordance with the pelvic bone landmarks. This situation can be encountered in original or non-surgical hip joint in the case of excessive posterior tilt of the pelvis abnormal posture, trunk aging, and induced posterior coxarthrosis [12]. To compensate for the gravity line shift, the face position would already be moved forward.

The reason for an insufficient lumbosacral sagittal angle can be caused by weakness of adduction and internal rotation muscle of the hip joint from the Muscle of Adduction of hip joint in the m.Adductor Breves, m.Adductor Longus, m.Adductor Minimus, m.Adductor Magnus, m.Pectineus, and m.Gracilis.

The Muscles which control the internal rotation of hip joint are the m.Gluteus Medius, m.Gluteus Minimus, m.Tensor Fasciae Latae (Fig.2 and 3.c) compared with those that control the external rotation muscle of hip joint which are m. Piriformis, m. Gemellus Superior, m. Obturator Internus, m. Gemellus Inferior, m. Obturator Externus, m. Quadratus Femoris (Fig2 and 3.b)

Muscle	Origin	Insertion	Innervation	Action
④ Gluteus maximus	Sacrum (dorsal surface, lateral part), ilium (gluteal surface, posterior part), thoracolumbar fascia, sacrotuberous lig.	<ul style="list-style-type: none"> • Upper fibers: iliotibial tract • Lower fibers: gluteal tuberosity 	Inferior gluteal n. (L5–S2)	<ul style="list-style-type: none"> • Entire muscle: extends and externally rotates the hip in sagittal and coronal planes • Upper fibers: abduction • Lower fibers: adduction
⑤ Gluteus medius	Ilium (gluteal surface below the iliac crest between the anterior and posterior gluteal line)	Greater trochanter of the femur (lateral surface)	Superior gluteal n. (L4–S1)	<ul style="list-style-type: none"> • Entire muscle: abducts the hip, stabilizes the pelvis in the coronal plane • Anterior part: flexion and internal rotation • Posterior part: extension and external rotation
⑥ Gluteus minimus	Ilium (gluteal surface below the origin of gluteus medius)	Greater trochanter of the femur (anterolateral surface)		<ul style="list-style-type: none"> • Tenses the fascia lata • Hip joint: abduction, flexion, and internal rotation
⑦ Tensor fasciae latae	Anterior superior iliac spine	Iliotibial tract	Sacral plexus (S1, S2)	<ul style="list-style-type: none"> • External rotation, abduction, and extension of the hip joint • Stabilizes the hip joint
⑧ Piriformis	Pelvic surface of the sacrum	Apex of the greater trochanter of the femur		External rotation, adduction, and extension of the hip joint (also active in abduction, depending on the joint's position)
⑨ Obturator internus	Inner surface of the obturator membrane and its bony boundaries	Medial surface of the greater trochanter	Sacral plexus (L5, S1)	External rotation and adduction of the hip joint
⑩ Gemelli	<ul style="list-style-type: none"> • Gemellus superior: ischial spine • Gemellus inferior: ischial tuberosity 	jointly with obturator internus tendon (medial surface, greater trochanter)		
⑪ Quadratus femoris	Lateral border of the ischial tuberosity	Intertrochanteric crest of the femur		

Fig.2 List of muscles that affect nutational motion of S.I. joint Schu□nke, M. (2014)

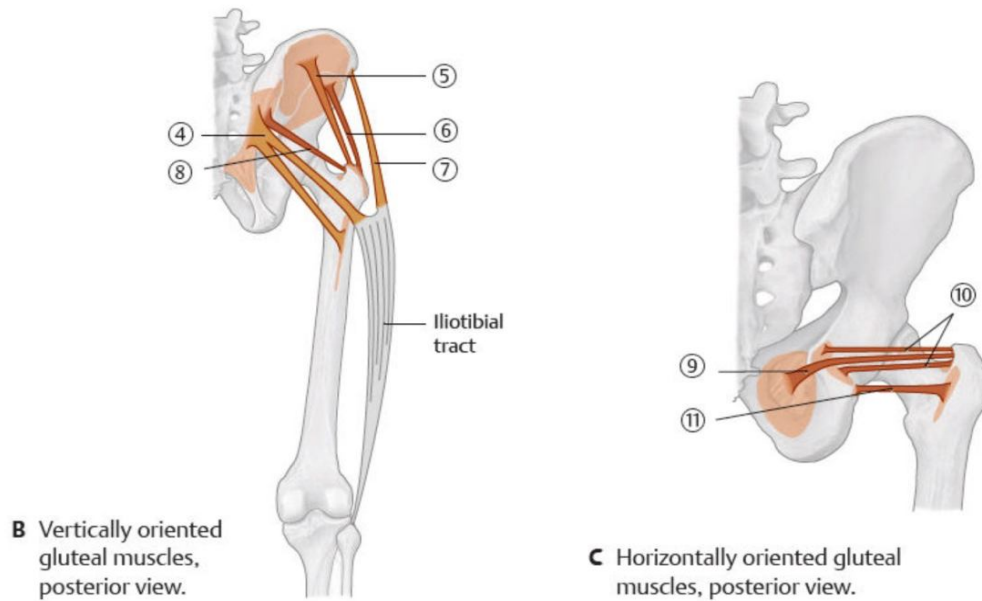


Fig.3 Gluteal muscles origin and insertion which affect nutational motion Schunke, M. (2014)

Due to the SI joint's location between the lumbar and hip joints, the SI joint's ROM is limited. This is because it is surrounded by ligaments and the Gluteus Maximus muscle.

As a result, this means that the SI joint can easily become misaligned if the Gluteus muscle family is stiff. The Gluteus Maximus muscle originates from the sacrum and inserts into Tibia via the Iliotibial Tract.[13]

In terms of anatomical function, the nutation in the sacroiliac joint slightly affects the sagittal plane movement of the sacroiliac joints and changes the width of the pelvic ring

and thus has a practical importance in gynecology & obstetrics. The range of the movements is absolutely limited by tight ligaments and varies remarkably in different individuals and between male and female where 'very slight rotational and translational movements can be distinguished in the joints'. [13] As shown in (Fig.4), nutation of the S.I joint is a sagittal rotational or tilting motion of the sacrum about the axis AML which is located at the attachments of the interosseous sacroiliac ligaments. During anterior rotation of the sacrum, the promontory of the Sacrum moves forward and downward, while the coccyx moves upward and backward using kinesiology which is an anatomical phenomenon increasing the AP diameter of the pelvic outlet. With posterior rotation of the sacrum, the AP diameter of the pelvic inlet plane increases while the AP diameter of the pelvic duct space is decreased. [13]

When people are walking the Sacrum always has nutational movement which vertically absorbs the shock which the force of gravity causes from the top of the head down to the feet [13]. The misalignment of the SI joint can cause lower back pain and whole spinal misalignment up to the neck. The cervical curvature and lumbar curvature flows in the same direction and the sacrum is the base or root of spine. This means that the degree of lumbosacral angle will be changed automatically. Additionally, the location of the whole body center of gravity is at the same level as the S2nd which is located under the promontory. [13]

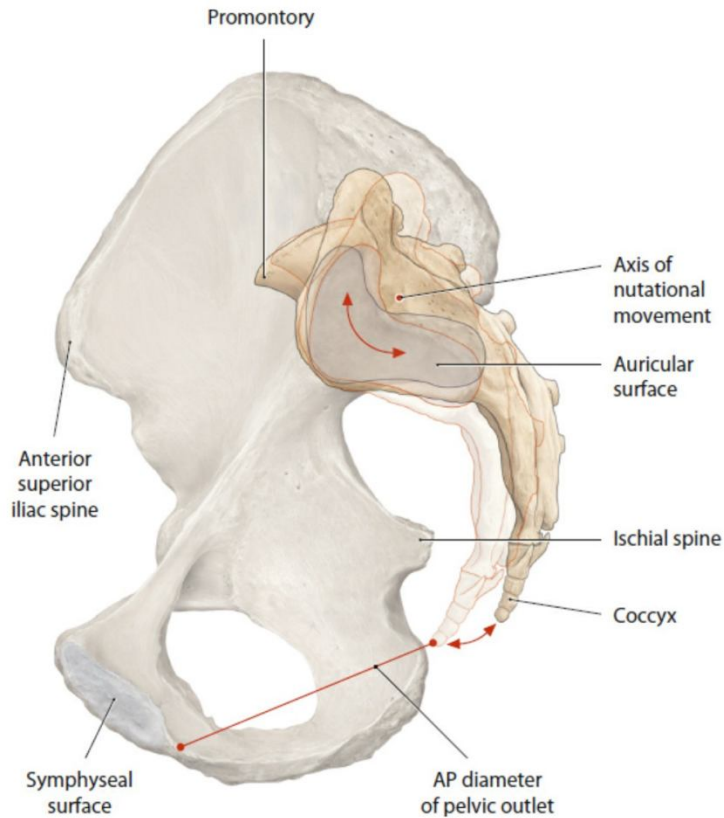


Fig.4 Lateral view of nutational movement of S.I joint's surface Schunke, M. (2014)

Pelvic motions are affected by the abdominal wall. An imbalance situation between the intrinsic back muscles and abdominal muscles is particularly evident in the lower spine curvature and in degree of pelvic tilt. The pelvis is tilted forward by approximately 12 degrees in a normal activity posture. (Fig.5.a) When a rigid posture is assumed the stomach moves backward and the trunk forward, the pelvis is held in a more upright position so that the anterior superior iliac spine and the posterior superior iliac spine are located at the same horizontal level. The most active muscles are the abdominal wall muscles, the gluteus muscles and the hamstrings during an upright standing posture. (Fig.5.b) When the abdominal muscles are slack and are not perfectly conditioned, this

would lead to a passive slumped posture where the anterior superior iliac spine is located lower than posterior superior iliac spine with an excessive degree of anterior pelvic tilt. Also, the lordotic curvature of lumbar spine is accentuated due to the progressive shortening of the intrinsic back muscles. This posture is reinforced by the tendency of the iliopsoas muscles to become shortened.[13]

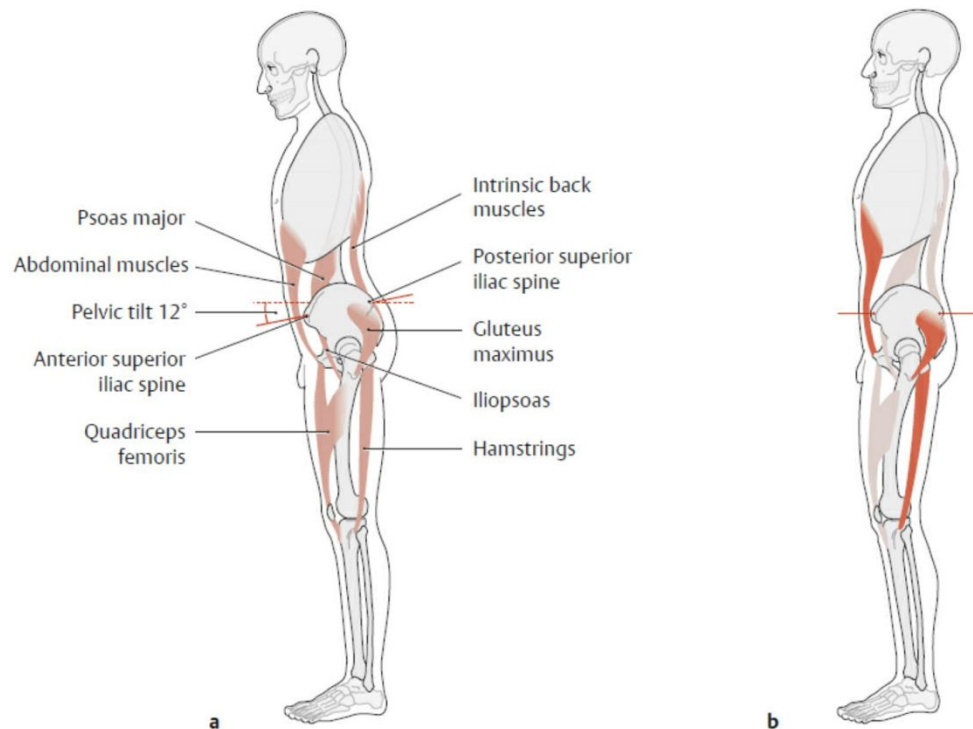


Fig.5 Tension of spinal muscles is affected by posture Schu□nke, M. (2014)

The Theory of Neck Pain in Traditional Chinese Medicine (TCM)

In TCM, all existence in the world is divided into either Yin or Yang. The human body is divided into the upper body and posterior side which are recognized as Yang while the lower body and anterior side which are recognized as Yin. Typically, the Urinary Bladder (UB) meridian dominates the posterior of the whole body. Additionally, the Du meridian is located between each spinous process especially from Yaoshu (Du2) to Fengfu (Du16). The Huatojiaji(HTJJ) extra points are also located right next to the spinous process on the bilateral side. In original TCM theory, the HTJJ extra points are mainly used for regulating the internal organs and could also be used as the local or ashi point treatment for pain in the lumbar region. However, the use of HTJJ points for treating neck pain is controversial. The location of the distal points for neck treatment are at the outside part of the wrist and Achilles' tendon and the head of posterior, Achilles' tendon and wrist curvature are visibly recognized as cervical curvature.[6] On the contrary, the Ashi point is known as a painful point in which to insert the needle. Trigger point Dry Needling and Ashi point needling are similar in that they both elicit the sensation of pain from the site of the medical issue when a practitioner stimulates them.[19]

Anatomical Mechanism of Acupuncture treatment and the reactions

Acupuncture treatment is recognized as an effective alternative treatment because it works by suppressing the dorsal horn by activating the descending inhibitory pathways and stimulating the release of opioids and serotonin. [25] The physician can use the acupuncture point at the local point where the pain is occurring and/or the distal point where the pain is not occurring at the acupuncture points. For example, the needle may be

used on the hands for the treatment of lower back pain, where the needle stimulates and activates De Qi in which the patient is feeling warmth and heaviness where possible. Acupuncture treatment can be effective in balancing homeostasis systems by somatic autonomic reflexion. Yin and Yang balance in TCM theory is also frequently related to sympathetic and parasympathetic branches of autonomic nerve systems. This acupuncture neural reaction has been investigated in animal studies.

In an instance of acupuncture insertion, the needle stimulates connective tissue in fascia. The needle can cause Grasp Qi phenomenon (deQi sensation). The sensation causes "perturbation of mechanical force in the muscle, which propagates to neighboring muscles." [21] This "mechanical signal evolves from a response in connective tissue downstream resulting in some adaptive changes in fascia or anti-inflammatory response." [21] Paracrine-signaling molecules may also be observed.

In terms of neurobiology, this theory can explain how neurotransmitters within the network can illustrate the effect of acupuncture. An anatomical reasoning in terms of the fascia network can thus improve future understanding of acupuncture channels and functions further to what can be observed through nerve signals. [21]

Differences between Ashi points and Trigger points

When comparing trigger points and ashi points, it is important to note that an ashi point can be located in the center of a trigger point. The pathology is degeneration and contracture of sarcomere that is not always recognized as the pain area. However, the reaction from the pain may help for stereotaxic positioning. In recent medical thought, the trigger point can be considered as a special point of the ashi point. Further

investigation has been carried out on the theory and practice of Trigger points to the pathological special reaction. The investigation methods and the location of Trigger points and Ashi points can be learned from each other. This is a new view on Ashi points which contributes to the exploitation and improvement of the theory and practice.[19]

Balancing Local and Distal points

Maciocia (2008) states that local points are located in close proximity of the area where the clinical manifestations appear. Distal points are mainly located below the knee and elbow and affect a certain region even though they are located away from the area where the clinical manifestations appear. Generally, both local and distal points are located on the same channel. However, when treating with distal points it is not necessary to choose the same channel involved. They are much more commonly used for balancing the local points with distal points together. The combination of local and distal points is the most popularly used method of balancing the points. The effectiveness of distal points is more pronounced in acute cases; their function is to remove obstructions from the channel, expel pathogenic factors and open the meridian to make it prepared for using local points. The maneuver of needling is usually reducing method due to it being an acute case. On the contrary, the local points have the function of supporting the eliminating action of distal points and focusing it on the issue area. The maneuver of needling is best with an even method. Sometimes the needle insertion will start from distal points and then insert into local points secondary. In chronic cases, both local and distal points will simply work by reinforcing each other's function. One of the most important functions of distal

points is cleaning up obstructions in the meridian from distal points to hit the issue area. Additionally, the power of distal points in feet is stronger than those hands. [6]

In an acute case, the first usage of the distal point is as a reducing method in order to clear the obstruction of the pathogenesis and open the meridian to prepare for approaching the local points. Therefore, in an acute case of the neck with rigidity, Xuanzhong GB 39 would be used on the healthy side. If the pain is located on the right side which is divided by the posterior and/or anterior mid line (AML), usually a needle would be inserted on the left side of GB39 for reducing and clearing the obstruction while the patient can be tested for gentle horizontal motion. After withdrawing the needle from GB 39, the other needle is inserted on the local point in the neck. [6]

Etiology in TCM

According to the practice of Chinese Medicine, acute neck ache is caused by four main factors. One cause is by invasion of wind cold especially east wind, whilst a sprain as an external risk factor due to external wind is usually occurring from the top part of the body. Liver blood deficiency is commonly seen in women, while liver yang rising is commonly seen in elderly patients. Liver Qi stagnation is commonly seen in men and corresponds to an internal risk factor. The symptoms of acute neck pain in TCM are sudden onset, rigidity or stiffness and limited ROM in neck joint which especially shows in the motion of horizontal rotation. [5]

Representative acupuncture points of neck pain in acute case

Houxi SI 3 is the captain of acute case of the neck treatment point in distal acupuncture points whose main function is to expel wind. It works for the upper part of the greater yang channels where it dominates in the occipital and posterior side of the neck along to the UB channel.

Waiguan TB 5 is useful for when the patient has pain on the side of the neck. This point can be used unilaterally only on the affected side.

Xuanzhong GB 39 can be used when the neck pain shows on both sides, and the ROM is restricted. The point should be reduced while a patient moves the neck side to side slowly.

Tianzhu UB 10 is local point for neck treatment that works for bilateral occipital pain.

Fengchi GB 20 is used when the pain is located at the bottom of the neck and is expanding to the top of the shoulders due to wind.

Fengfu Du 16 is also used if the pain is caused by wind, especially when the pain by wind leads to headache.

Jianjing GB 21 is often used when neck pain is associated with muscle tension on top of the shoulder especially in m. Trapezius.

Representative acupuncture points of neck pain in chronic cases

Kunlun UB 60 is one of the distal acupuncture points for a chronic condition. The point works not only on the neck but also on the upper back and the location at the GB 21 region. It is absolutely useful when the pain is along the Greater yang meridians.

Waiguan TB 5 is good to use for the unilateral side of side neck pain

Neiguan PC 6 effectively works for female patients. The point is also known as Lou connect point of PC meridian. Therefore it can be affected on TB meridian too. As is widely known, mostly the symptoms of PC meridian are mental issues. So the point is used for the tense neck which is caused by general nervousness.

Dazhong KD 4 is also Luo connect point of KD meridian. The main function of Luo connect point is to connect with Yang channel to Yin channel. Therefore the point reacts to UB meridian when the neck pain is caused by KD deficiency.

Fenglong ST 40 is Luo connect point and works as a branch of the ST meridian. It can be used for the neck pain which is located on anterior side of the neck. That means it separates in the neck and flows to the throat.

The local acupuncture points for chronic neck pain are obviously selected the same as acute cases. Warming needles or cupping effectively works for removing pain and relaxing the muscles.[5]

Comparison of treatment procedures and results

Brinkhaus et al has described the technique of needle insertion as normal depth (20mm - 40mm) and minimal acupuncture (10mm - 20mm) at a shallower depth which is called sham acupuncture needling. The age of the patients in the group ranges from 40 to 75years old and all have non specific lower back pain which has lasted for 6 months or more. The acupuncturists used both local acupuncture point and distal acupuncture point. The group who received sham acupuncture had the needle inserted at predefined distal points which were non acupuncture points without any stimulation for 12 to 30 minutes over 8weeks. Outcomes were measured using the Visual Analogue Scale (VAS), Pain Disability Index and SF-36. 298 participants were randomized in a 2:1:1 ratio in favor of the acupuncture group. All completed questionnaires were sent directly to the study

valign = "top" center. [14]

Visual Analogue Scales (VAS)

Visual Analogue Scales (VAS) are used as a psychometric response which is able to measure the scale of subjective characteristics or attitudes. It has not only been used in the past for multiple disorders, but also been used in market research and investigation of social science etc. In 1921, VAS was first described as a "graphic rating method" [22]

The Result by VAS and SF-36

The VAS decreased by 28.7mm (SD : Standard Deviation +/- 30.3mm) in the acupuncture group at 8weeks and by 23.6mm(SD +/- 31.0mm) in the minimal acupuncture group. The difference of minimal acupuncture treatment compared with normal acupuncture treatment was 5.1mm (p=NS) and 21.77mm between normal

acupuncture group and the waiting list group ($p < 0.01$). The difference in outcome measures were reduced at 26 and 52 week follow ups. Comparison was difficult beyond 12 weeks as by then the control group had had acupuncture treatment. It showed clear differences between the group who received acupuncture treatment and the group on the waiting list who were patients without any acupuncture treatment at the 8th week. [14]

On the contrary, one of the local point treatments used is called Trigger point Dry Needling (TrDN) and is the most deeply penetrating procedure which involves penetration of the involved muscle belly. After the insertion, the needle is gradually manipulated within the tissue in order to elicit a localized twitch response and is removed once the myofascial trigger point has disappeared or been suppressed.[19]

Mac Donald et al researched superficial insertion needling to TrPs and found it was more effective than placebo Transcutaneous Electrical Nerve Stimulation (TENS) in the treatment of chronic LBP. Subjective pain assessments included patient reports by VAS scores at rest and patients admitted pain relief when they were engaging in daily activity by VAS too. Clinical observers reported the presence or absence of the following physical signs at the beginning and end of each course of treatment such as gait impairment, spinal mobility impairment, loss of lordosis, scoliosis, impaired straight leg raising, pain on hip movement, crossed leg pain, femoral nerve stretch test, pelvic tilt, sensory deficits, motor deficits, and reflex changes. The observer determined the effective treatment through physical signs such as pain suppression and positive pre-treatment physical signs. They also scored the severity of pain scale numerically and mapped the region of pain on the body dermatome chart. At the end of the treatment, the

percentage of change in the severity of pain and at the region occupied by the dermatome chart were noted. Significant differences were observed in the following outcomes : pain relief after each treatment ($p<0.01$), the score of activity pain reduction ($p<0.05$), physical signs reduction ($p<0.01$), and severity & reduction of pain region ($p<0.01$). [24]

Itoh et al (n=35) conducted a study to determine whether acupuncture for TrPs is an effective treatment for LBP in elderly patients compared to standard acupuncture treatment at traditional acupuncture points. The subjects were classified into 3 groups: (1st) superficial needle insertion at trigger points, (2nd) deep needle insertion at trigger points, (3rd) standard acupuncture at traditional acupuncture points. Both (1st) and (2nd) groups were treated at trigger points, while the (3rd) group was treated at traditional acupuncture points for LBP. The measurement of pain intensity level was listed before 1st treatment and after 1st, 2nd, 3rd, 6th, 7th, 8th, 9th, 12th treatment by VAS for 12 weeks. [23]

The result by VAS

The results showed significant improvement ($p < 0.01$) at the 4th week in the 2nd group compared to their original pain intensity level. However, this improvement was reversed by the end of this study. There were no clear differences between previous pain intensity levels and follow up pain intensity levels in the 1st and 3rd groups. [23]

The therapy of dry needling on trigger points is able to palpate on the skeletal muscle of the pain region on the surface of the skin and can reduce the level of pain to greater effect than stretching or electric nerve stimulation by the needles. It has at least the same level of effectiveness as manual myofascial trigger point release and other needling treatments.

Trigger point needling can also elicit the release of acetylcholine (ACTH), increase

activation of nicotinic receptors and inhibit acetylcholine esterase at the motor end plates. Additionally, the research indicates that active myofascial trigger points can produce enormous concentrations of inflammatory and nociceptive agents and also lower potential Hydrogen compared with fibers of non-pathological skeletal muscle. This physiological imbalance can easily make myofascial trigger points and as a result, establish normal ROM and painful weak muscle contraction. The method of trigger points dry needling is useful in treating the aforementioned impairments by pointing and eliminating local myofascial painful region. A couple of hypotheses exist to explain physiological reactions under the signs and symptoms reduction by trigger point dry needling (TrDN) such as its ability to normalize the local sensory inputs by hyper stimulation at the region of the pain generation. Another hypothesis would suggest that TrDN causes natural opioid mediated pain suppression by stimulating local alpha-delta nerve fibers. [25]

Approaching the cervical and shoulder regions with the TrDN technique has shown to be an effective response in reducing pain or tenderness and improving ROM over time. According to this research, it showed a significantly better response than sham (shallow insertion) needling. The improvement is of a similar quality to other treatments such as pharmaceutical injections or oral anti inflammatories. However, according to a study by Sheng et al. TDN doesn't appear to be as effective as mini scalpel needle release to cervical para-spirals. [25]

Treatment of the Distal acupoint insertion

Distal acupoints can be used to treat chronic neck pain. A pilot study in 2014 by Sun, Yue, and Zhang focused on using distal point acupuncture to alleviate neck pain. It

consisted of a randomized controlled trial of 2 groups. The control group were treated with 5 minutes of massage only and the treatment group received both massage and acupuncture treatment. The Houxi (SI3) acupoint was used in 30 minute sessions which lasted for 3 days. Sun, Yue & Zhang describe the Houxi (SI3) as ‘the *Shu* point of five *Shu* points (special points of the 12 meridians, located distal to the elbows and knees, namely *well, brook, stream, river and sea* points’ (2014, pg. 9). This acupoint relates to neck pain in Chinese medicine and is located in the ‘small intestine channel’. The study found that applying both acupuncture and massage to the treatment group to the Houxi point was successful in treating neck pain. However, one downside to this study is that it is of short duration and small in nature, lasting for only 3 days and assessing 36 subjects. Sun et al suggest that there is a lack of quality long-term research into the effect of acupuncture on stiff neck pain. (2014, pg. 2) [7]

Treatment results with distal acupuncture points

In a 2011 study, Matsubara, Arai and Ushida compared the effects of local and distal acupressure on neck pain. The authors described local acupoints for neck pain as being those located across the trapezius muscle such as jianwashu (SI14), jianjing (GB21) and jianzhongshu (SI15). (Matsubara et al, 2011, pg. 2) Distal acupoints are considered to be in the Large Intestine channel (Hand-Yangming Meridian) in the points Hegu(LI4), Shousanli(LI10) and Quchi(LI11). In Chinese medicine these can be used in the treatment of neck, shoulder and arm conditions. (Matsubara et al, pg. 2) Matsubara et al (2011) also connect chronic neck pain to further health complications in the autonomic nervous system. Changes to this system can affect the patient’s heart rate. Heart rate

variability (HRV) can be an indicator of parasympathetic and sympathetic nerve sensitivity. It can be monitored through power spectral analysis. The authors believe that acupressure on the local and distal points mentioned above could 'induce sedation, thereby reducing pain, muscle tone, and disability and changing autonomic nervous activity in subjects with chronic neck pain.(Matsubara et al, 2011, pg. 3) [8]

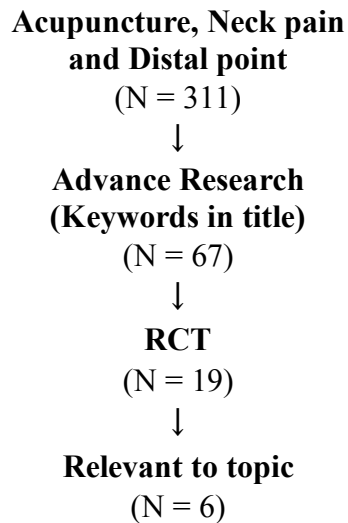
In a follow-up study in 2014, Shiro, Young-Chang, Arai and Ushida used a Randomized Controlled Trial (RCT) to compare the effects of distal point acupuncture in the Stomach Meridian to the Large Intestine Meridian. They focused on the effects on the trapezius muscle in the point between the 7th cervical vertebrae and acromion. They measured Heart rate variability as an indicator of change in the autonomic system and levels of oxygenation in the trapezius muscle after acupuncture. Distal acupoints in these meridians would 'stimulate autonomic nervous activity, muscle blood flow and oxygenation' (Shiro et al, 2014, pg. 2) and 'reduce musculoskeletal pain, promote relaxation of the muscle and increase regional blood circulation and parasympathetic nervous activity' (2014, pg. 2) At the end of the study they found that acupuncture at the large intestine meridian points LI4, LI10 and LI11 increased blood flow and oxygenation to the trapezium. (2014, pg. 8) This suggests that acupoints in the LI meridian are more effective in treating neck pain. These results are important as there were a moderately large amount of subjects surveyed (41) although once again the study was a short term one. [9]

In a 2013 pilot study, Chen, Hsiao and Hsieh investigated the effect of distal acupuncture on neck pain along the trapezius muscle. They described distal acupoints as the 'remote

effect' of acupuncture on a point far away from where the needle is inserted yet still along the same channel. In this case the Weizhong (UB40) and Yanglingquan (GB34) acupoints were used on the ipsilateral lower limbs. (2013, pg. 1) The study found that using distal acupoints worked in relieving 'proximal muscle tightness' which lead to improved cervical ROM. (2013, 16) However, the study was short term over 2 treatments and only 5 subjects were observed. The authors of this study also state that there is a lack of long term research in this area which should be researched in future. (2013, pg. 16) [10]

II. MATERIALS & METHODS

In order to understand how acupuncture can be used to treat neck pain, this dissertation is arranged through searching the literature available related to the topic including academic articles from journals and clinical medical studies. Firstly, two electronic databases are searched from EBSCO and PUBMED, with the keywords “acupuncture” AND “neck pain” AND “distal point”. The results searched by keywords “acupuncture”, “release muscle contraction” and “myofascial” are also reviewed. The most relevant articles are selected based on the inclusion and exclusion criteria.



The inclusion criteria encompass different types of acupuncture techniques such as “acupressure”, “trigger point acupuncture”, “sham needling”, “trigger point dry needling acupuncture”.

The exclusion criteria include “electric acupuncture” and laser acupuncture as well as the other alternative therapies such as “Tai-chi”, “Meditation” and “Yoga.” Study proposals or preliminary studies will be excluded as they are speculative in nature and the results are not available to measure the effectiveness of acupuncture on neck pain.

The language will be restricted to English but the year of publication and time-frame will not be restricted.

The focus of this investigation will be distal and local acupuncture points and the comparison of their efficacy in treating neck pain. The relevant clinical studies will then be reviewed, analyzed and synthesized in terms of the treatment outcome. The aim of this dissertation is to review the current available evidence for the effectiveness of acupuncture in the treatment of neck pain.

2 clinical studies have been reviewed for analysis. Matsubara et al.'s study on the comparison between local and distal acupoints took place in 2011 at Nihon Fukushi University and surveyed 33 female patients who suffered from chronic neck pain. The randomized control trial spanned 3 days in which 1 acupressure treatment was given, with pain levels being measured the day before and the day after the treatment.

A 2016 study was published in the Medical Acupuncture journal by Kotylar et al called the Study of Dr. Tan's Chinese Balance Acupuncture (DTCBA) and it was researched at Outpatient Pain Clinic, Kaplan Medical Center, Rehovot, Israel. A total of 7 patients who were carrying chronic neck-shoulder pain were treated for 1.5 weeks (approximately 10 to 11 days}. There were 6 Caucasian males and 1 Caucasian female between 41 to 71 years old. These patients had 3 sessions in 1.5 weeks and a 3 month following up after

the 3rd treatment. Each session was 45 minutes long and 0.25×50 -mm needles were used (Best Needles, HaMillenium Chinese Medicine, Israel). It resulted in a practical improvement for their quality of life during the session and 3 month follow up.

In 2006, Brinkhaus et al completed a randomized controlled trial on 298 patients in University Medical Center in Berlin. They researched Minimal Acupuncture in a total of 12 sessions. The sessions were 20 - 40min long for 8 weeks. The evaluation sources were VAS, PDI, and SF-36.

Itoh et al conducted a blinded RCT in 2004 at Meiji University of Oriental Medicine in Japan. This study surveyed 35 patients over a 12 week period using trigger points to treat LBP in elderly people. MacDonald et al undertook a single blind RCT with placebo control in 1983. This trial from the Royal College of surgeons in London treated 17 patient's LBP using trigger point acupuncture in 10 treatments over the course of a year.

III. RESULTS

Table 1a. Three Clinical Studies with Methods of Treatment and Outcome

Author	Matsubara et al Matsubara,T. (2011)	A Kotlyar et al Kotlyar,A. (2016)	Brinkhaus et al Brinkhaus,B. (2006)
The clinical study center	Nihon Fukushi University, Nagoya, Japan	Kaplan Medical Center, Rehovot, Israel	University Medical Center, Berlin, Germany
Number & gender	33 female patients	6 male and 1 female in Caucasian	298 patients Randomized
Duration / Frequency	3 days/ 1 treatment 1 hour	1.5 week/ 3 treatments 45 min	8weeks. 12 session 20-40min
Methods	Acupressure	Balance Acupuncture	Minimal Acupuncture
Subject of evaluation	Pain before and after treatment measured through VRS, MH, NDI and HRV VRS, STAI-I and MH values significantly decreased immediately after treatment, and NDI were lower at 1 day post treatment compared with before treatment in LAP and DAP groups. HR significantly decreased and HF component of HRV significantly increased post treatment in the LAP group only. There were no differences on sAA and LF components and LF/HF ratio of HRV among these 3 groups.	Include pain intensity, duration and QOL. Numeric Scale from 0-10 The pain intensity went from 10 to 5.5 ±0.5 (mean±standard error SE ; p=0.00002). After the 2nd session a pain score of 3.07± 0.3 (mean ±SE ; p=3.04E-10) was reported. In the 3rd session (1.5 weeks after beginning of treatment) the intensity was decreased by a further 0.88±0.09 (mean ± SE;p=8.5E-15).	VAS, PDI, SF-36 The VAS decreased by 28.7mm (SD: Standard Deviation +/- 30.3mm) in the acupuncture group at 8 weeks and by 23.6mm(SD +/- 31.0mm) in the minimal acupuncture group. The difference of minimal acupuncture treatment compared with normal acupuncture treatment was 5.1mm (p=NS) and 21.77mm between normal acupuncture group and the waiting list group (p<0.01).

Table 1b. The Outcomes of Three Clinical Studies

Author	Matsubara et al Matsubara,T. (2011)	A Kotlyar et al Kotlyar,A. (2016)	Brinkhaus et al Brinkhaus,B. (2006)
The outcome	Local and distal point acupressure effective in treating neck pain. Local points also stimulated the autonomic nervous system.	DTCBA(Dr. Tan’s Balance Acupuncture) is totally effective, safe and logical. The aim of this treatment is balancing or compensate rather than tonifying or sedating.	Acupuncture treatment did work better than no acupuncture treatment, however no significant changes occurred between normal acupuncture and minimal acupuncture.

Table 2a. Two Clinical Studies with Trigger point Treatment

Author	Itoh et al Itoh,K. (2004)	MacDonald et al MacDonald,J. (1983)
The clinical study center	Department of Orthopedic Surgery, Meiji University of Oriental Medicine in Japan	Royal College of Surgeons, London in England
Number & gender	25 female and 10 male patients Between the ages of 65 and 81	5 male and 12 female
Duration / Frequency	2 phases of treatment over 12 weeks	10 treatments / 1 year
Methods	Acupuncture	Acupuncture
Subject of evaluation	VAS and Roland Morris Questionnaire (RMQ): The results showed significant improvement ($p < 0.01$) at the 4th week in the 2nd group compared to their original pain intensity level. However, this improvement was reversed by the end of this study. There were no clear differences between previous pain intensity levels and follow up pain intensity levels in the 1st (Shallow Trigger point)and 3rd groups. (Sham Acupuncture) The Deep Trigger point group reported a decrease in pain intensity in RMQ at the end of the study.	They noted the severity of pain scale numerically and mapped the region of pain on the body dermatome chart. Clinicians also observed physical changes before and after treatment. Significant differences were observed in the following outcomes : pain relief after each treatment ($p < 0.01$), the score of activity pain reduction ($p < 0.05$), physical signs reduction ($p < 0.01$), and severity & reduction of pain region ($p < 0.01$)

Table 2b. The Outcomes of two Clinical Studies with Trigger point Treatment

Author	Itoh et al Itoh,K. (2004)	MacDonald et al MacDonald,J. (1983)
The outcome	Itoh et al found that deep trigger point acupuncture was effective in treating LBP in elderly patients. However, there were negligible effects in the sham acupuncture and shallow trigger point groups, suggesting that only deep trigger point treatment was effective.	MacDonald et al found that trigger point acupuncture significantly reduced the severity of pain in LBP experienced by patients.

The criteria for concluding that acupuncture treatment had been effective in the studies alluded to in Table 1 differed slightly, yet all measured the patient's pain level before and after treatment through VRS, VAS and QOL. This method of measurement could be limited in that it relies upon the patient's subjective experience of pain. This experience cannot be fully and scientifically quantified as every individual's response to pain will be different: for example one person's 7 on the visual rating scale (VRS) or quality of life (QOL) scales could mean something different to another person. Two of the studies in Table 1 attempted to measure the patient's pain levels through more objective physical reactions such as heart rate variability (HRV) and muscle hardness (MH). In all 3 studies the patients reported that pain had decreased significantly after acupuncture treatment through the visual analogue scale (VAS), VRS and QOL measurements. However, Matsubara et al found negligible differences in HRV between the 3 control groups, except a slight increase in the local acupuncture group. This could suggest that local acupuncture points were slightly more effective in this particular study.

There are a lot of results for acupuncture therapy with trigger points needling method in the clinical studies obtained from PMC and EBSCO. Those trigger points are recognized as Local or Ashi points in TCM theory. There are far fewer results for distal point acupuncture treatment for neck pain than for trigger point needling. Generally, there seems to be a lack of long term and large scale studies regarding distal point acupuncture and neck pain. However, the results from the existing clinical studies suggest that distal point acupuncture treatment seems to be effective for CK because it reacted along with lumbar lordosis in an anatomical situation, even if those acupuncture points are being used to treat LBP. That issue of misalignment in the spine by muscle contraction is not only happening in the lumbar region but also in the cervical region. In other words, when LBP including SI joint displacement occurred, the whole spinal alignment would be changed in the future. In this case, it would be effective to treat with distal points such as UB40 or insertion at the thoracic or lumbar region. However, where neck pain originates in the cervical area, it would be better to treat with local points along with kinematic or anatomic theory. Therefore, it follows that any kind of positive result for pain management with distal point acupuncture therapy could be used as evidence of improvement.

In 2011, Matsubara, Chang, Arai, Shiro, Shimo, Nishihara and Ushida carried out a study which aimed to investigate and compare the effectiveness of local acupuncture points (LAP) which are located on Traditional Acupuncture meridian and make patients feel tender on m.Trapezius and distal acupuncture points (DAL) which belong to Large Intestine channel of hand Yangming and are located on the forearm in females who live

with neck pain. Acupuncture therapy could influence the autonomic nerve system which consists of sympathetic and para-sympathetic nerves. These two parts of the nervous system affect Heart Rate Variability (HRV) too. HRV is a useful non-invasive tool. In low frequency fluctuation of HRV (0.04 – 0.15 Hz) is considered as a marker of both sympathetic and parasympathetic nerve activities. However, in high frequency fluctuation of HRV (0.15 – 0.4 Hz) is considered as a maker of parasympathetic nerve activity. The LF/HF ratio is considered to be a sympathetic nerve activity's index.

Measurement

In this research project, Matsubara et al gathered 33 female subjects and divided them into 3 groups. The control group didn't receive any stimulation, The LAP group received acupressure on local acupuncture points on GB21, SI14, and SI15, and the DAP group received acupressure on distal acupuncture points LI4, LI10, and LI11.

The subjects were evaluated regarding pain intensity using Verbal Rating Scale (VRS), pain-related Neck Disability Index (NDI), pain related anxiety using State-Trait Anxiety Inventory I (STAI-I), Muscle Hardness (MH) on bilateral m.Trapezius, pain associated stress using salivary Alpha-Amylase (sAA), HRV and stratification using VRS because of acupressure. For the VRS, neck pain intensity or stiffness was assumed on numerical scale from 0 to 3 (0 : no pain, 1 : mild pain, 2 : moderate pain, 3 : severe pain) NDI is the most common use and validated scale designed to evaluate self-rated disability by the neck pain disorder patients, it was published by Vernon in 1991.

3 sets of acupressure by the right thumb in a rotary fashion at 20-25 cycles per minute for 30 seconds on each points were administered on the right side GB21, SI14 and SI15

constantly. After that the same maneuver was used on the same 3 points on the left side. In the other group, the same maneuver was used as in LAP group at DAP constantly after that and done the same way on the left forearm. These procedures were applied by the same practitioner.

Result

From the 3 tested groups, there were no significant differences in weight, age, and pre-treatment values regarding pain conditions. There were no significant differences in all parameters in the control group. VRS, STAI-I and MH values significantly decreased immediately after treatment, and NDI were lower at 1 day post treatment compared with before treatment in LAP and DAP groups. HR significantly decreased and HF component of HRV significantly increased post treatment in the LAP group only. There were no differences on sAA and LF components and LF/HF ratio of HRV among these 3 groups. Stratification occurred because acupressure continued to 1 day after the treatment in both LAP and DAP groups. Overall, acupuncture seemed to be effective when used on a treatment group.[8]

Chinese Balance Acupuncture

In a 2016 study, Kotlyar, Brener and Lis used Dr. Tan's Balance Acupuncture method to treat 7 patients whose chief complaint was chronic neck and shoulder pain. The outcome was measured through pain level, duration, and quality of life (QOL). The pain intensity was classified from 0 to 10 with 0 defined as “no pain at all”, 1 to 3 was mild pain, 4 to 6 was moderate pain, 7 to 9 was severe pain, and 10 was the worst possible pain. The

patient's pain scale was measured before the acupuncture treatment, throughout treatment and after the treatment at a follow up examination after 3 months.

The 1st step used in Dr. Tan's method is to diagnose the patient based on Yi Jing or the 1 Ching Balance Acupuncture. The diagnosis was Liver Qi stagnation and Spleen Qi deficiency as was determined by the responded channels that pain is located along the meridian. The pain was fixed in both foot and hand of Shao Yang (GB and TE) and hand Yang Ming (LI). Dr. Tan's method followed TCM pulse diagnosis in which the sick meridian is considered.

At the 2nd stage, after selecting the sick channels GB, TE, and LI, the researchers selected 2 systems (Branching channel and Interior to Exterior Pairs) as the most appropriate treatment out of 5 systems (1st. Chinese meridian's name sharing, 2nd. Bie – Jing/Branching, 3rd. Biao Li/ Interior-Exterior pairs, 4th. The opposite of the meridian time line, 5th. The neighbors of the meridian time line) The researchers chose the 2nd. Branching/Bie-Jing to balance LI and TE. The strategy of Branching channel is one in which the foot (Yin) meridian can balance the hand (Yang) meridian and vice versa. The 3rd Interior and Exterior Pair were selected to balance the Interior (Yin) and the Exterior (Yang) which explains how the LV channel can balance GB channel and vice versa.

The even method used punctured either ipsi- or contra-lateral insertion, while those defined by uneven method would apply to contra-lateral acupuncture.

The 3rd stage was determining treatment points along the LV and KD meridians. The idea of mirroring reverse format in the neck region corresponds to the foot and shoulder

region which is considered as the ankle and contains Ashi points. The duration of needle insertion is at least 45 minutes.

The results showed that the pain level of the patients was significantly decreased after they were treated using Dr. Tan's method. The pain intensity went from 10 to 5.5 ± 0.5 (mean \pm standard error SE ; $p=0.00002$). After the 2nd session a pain score of 3.07 ± 0.3 (mean \pm SE ; $p=3.04E-10$) was reported. In the 3rd session (1.5 weeks after beginning of treatment) the intensity was decreased by a further 0.88 ± 0.09 (mean \pm SE; $p=8.5E-15$). Hence, the treatment result was sustained and long lasting. The patients reported that their pain scale was significantly reduced or had completely disappeared. Their QOL was greatly improved in the 3 months after the treatment.

The researchers concluded that the balancing method was effective in balancing the body rather than enforcing or suppressing symptoms. The method helped most of the patient's symptoms and had no contraindications, however it could have some limitations for cases in which there was 'rapid and constant aggravation, severely damaged anatomical integrity, and restricted treatment frequency'. [20]

Table 3. The Outcomes of the Treatment

Author	The outcome in the clinical study	Explanation
Matsubara et al Matsubara, T. (2011)	CURED	Both local and distal groups experienced a decrease in pain after acupuncture treatment on the neck. Muscle hardness was significantly reduced after 1 treatment, suggesting that acupuncture can improve range of motion which could lead to a cessation of neck pain.
A Kotlyar et al Kotlyar, A. (2016)	CURED	Dr. Tan's balance acupuncture treatment was effective in reducing neck pain. The patients reported that their pain was significantly reduced or had completely disappeared
Brinkhaus et al Brinkhaus, B. (2006)	EFFECTIVE	Both normal and minimal acupuncture was effective in treating neck pain.
Itoh et al Itoh, K. (2004)	EFFECTIVE	The group who were treated with deep trigger points reported a significant decrease in pain through their RMQ scores.
MacDonald et al MacDonald, J. (1983)	EFFECTIVE	Trigger point acupuncture was effective in treating LBP with pain reduction, relief and severity improving after the treatments.

The outcomes in Table 3 were rated according to how significant the effects of acupuncture were on neck and low back pain. Where treatment resulted in a pain reduction of 50 % or more (Matsubara et al) or patients reported a significantly improved quality of life in a longer term study (Kotlyar et al), the patients are deemed to be 'cured'. Signs of significant improvement but not meeting the criteria mentioned before placed studies in the 'effective' category. None of the studies were placed in the 'ineffective' category because all provided evidence of positive changes in the patient's condition after acupuncture treatment. However, as all of the clinical studies could be considered short

term (less than a year) it may be pre-emptive to call the patients 'cured' as no follow up checks were undertaken after a year.

IV. DISCUSSION

During this study, distal point acupuncture treatment seemed to be effective for cervical kyphosis (CK) because it reacted along with lumbar lordosis in an anatomical situation, even if those acupuncture points are helping with low back pain (LBP). The issue of misalignment of the spine by muscle contraction is not only happening in the lumbar but also the cervical region. In other words, when LBP including SI joint displacement occurred, the whole spinal alignment would be changed in the future. In this case, it would be effective to treat with distal points such as UB40 or insertion at the thoracic or lumbar region. However, where neck pain originates in the cervical area, it would be better to treat with local points along with kinematic or anatomic theory. There are many acupuncture treatment articles with local or trigger points technique and their treatment produces mostly good results. However, there were not many articles which showed distal point acupuncture as a treatment technique. There were few compared with trigger points therapy technique.

In Traditional Chinese Medicine (TCM) theory, chronic neck pain is diagnosed as chronic pain obstruction syndrome which consists of qi and blood deficiency, phlegm in the joints, blood stasis, and Kidneys KD and Liver LV deficiency. [3] Lower back pain can also be a main cause of neck pain. In western medicine, the lumbar and cervical parts of the spine can produce similar multiple motions such as flexion, extension, lateral flexion and horizontal rotation. This produces a wide range of motion (ROM) and these joints are structured by muscles and ligaments. As a result, the multiple ROM will turn

and be induced as the trigger of the injury at the same time. On the contrary, the thoracic joint does not have a large ROM compared with the cervical and lumbar joints. In particular, the thoracic joint is located from Th1 to Th10 and consists of rib bones. This means that it has a narrow ROM. While the hip joint can perform multiple motions and has wide ROM, it is not easy to get injured compared with the lumbar part of the spine. One of the reasons is that the joint cavity which is called acetabulum holds or covers most of the space of femur's joint head. This is called the articular surface of head and that explained the etiology of muscles or ligaments related to the anatomical bone structure and function of the ROM.

According to the literature reviews, it is an important strategy to connect the theory of the treatment for chronic straight neck pain and lower back pain by distal acupuncture points. Both shallow insertion at the TrDN treatment and deep insertion at the TrDN treatment showed either good results or not significant improvements. However, these TrDN techniques are at least not bad results. They still have the possibility of suppression of the pain intensity level. The balance of all muscle strength in the vertical gravity line from head to toe is possible to determine their good or bad posture under the normal anatomical and physiological circumstances. Acupuncture treatment for not only chronic neck pain but also LBP by muscle release or strengthening can reconstruct improper posture.

In the future, larger studies with more participants, qualified practitioners, and valid, clinically designed studies should be used to investigate the short term and long term effectiveness of acupuncture on neck pain in greater detail.

V. CONCLUSION

In conclusion, the therapy of dry needling on trigger points which is able to be palpated on the skeletal muscle of the pain region, can reduce the pain level and has greater effects compared with stretching and/or electric nerve stimulation by the needles. At the very least, it is of equal value or quality of effectiveness as manual myofascial trigger point release and other needling treatments. Trigger point needling can elicit the release of acetylcholine (ACTH), increase activation of nicotinic receptors and inhibit acetylcholinesterase at the motor endplates. Additionally, the research indicates that active myofascial trigger points have enormous concentrations of the inflammatory and nociceptive agents which also lower potential Hydrogen compared with fibers of non-pathological skeletal muscle. This physiological imbalance circumstance can easily make myofascial trigger points and as a result, the normal range of motion (ROM) would be lost and therefore induce painful and weak muscle contraction.

According to all of the results, both distal and local acupuncture treatment had a positive outcome result. All of the treatments were at least EFFECTIVE in treating neck pain, even though the Matsubara et al study researched acupressure at distal acupuncture points. Their result is a CURE of neck pain in which the muscle hardness and the pain intensity were significantly reduced immediately after the first treatment. Kotlyar et al also reported a positive result with neck pain significantly or completely reduced by Dr. Tan's Balance Acupuncture Method. Their research project showed that balance acupuncture is unique because it is organized on a foundation of the 5 elements in traditional Chinese medical philosophy. Their result was the most effective in all five studies due to some of

the patient's neck pain completely disappearing and their quality of life (QOL) was greatly improved in the 3 months after the treatment.

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