National University of Medical Sciences

Doctor of Philosophy in Osteopathic Clinical Rehabilitation (OCR)

Title: A Systematic Review – Discuss the effective and useful acupuncture points in De Quervain treatment

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Abstract

Introduction:

Radial styloid tenosynovitis / De Quervain's Disease is one of the common clinical tenosynovitis. It typically manifests in the tendon sheath located on the radial styloid process. It is commonly triggered by excessive use or repetitive movements, which induce micro-trauma due to the repeated sliding of tendons within the first dorsal compartment, such as Abductor Pollicis Longus (APL) and Extensor Pollicis Brevis (EPB), beneath the sheath. This leads to thickening of the extensor retinaculum of the wrist, situated over the radius styloid. (Howell E R, 2012). The hallmark symptoms of De Quervains tenosynovitis are pain and tenderness on the radial side of the wrist, which can extend to the forearm. Swelling may also occur in the affected area, and certain movements of the wrist and thumb, such as grasping or twisting, can be painful and limited (Cherin N, Jafri A and Moser K, 2020). In traditional Chinese medicine, it can be classified as "muscle injury" and "arthritis". The treatment methods in Western countries are mainly rest, early immobilization, heat, cold, application of drugs, strapping, physical therapy and corticosteroid injection (da Silva JBG & Batigalia F, 2014). In Eastern countries, such as China, Japan and Taiwan, acupuncture plays a great role in the treatment of De Quervain's Disease. Although there are many studies on acupuncture treatment of this disease, there are few literatures about what exact acupoints are effective and useful in the treatment.

Method : This systematic review searched different research literature, synthesized and sorted out the useful acupoints and meridians in the treatment of De Quervain's Disease. The researcher hopes to provide useful information of acupuncture for the therapists in the treatment of this disease in the future.

Results : In total, 8 research articles with 416 subjects which publishing year between 1998 to 2019 were identified for this systematic review.

Conclusion : Acupuncture is one of the effective methods for treating De Quervain's Disease/stenosing tenosynovitis of the radial styloid process. The acupoints LI-4 (He Gu), LI-5 (Yang Xi), LI-6 (Pian Li), LI-10 (Shou San Li) & LI-11(Qu Chi) of the Large Intestine Meridian, the acupoints LU-7 (Lie Que) and LU-9 (Tai Yuan) of the Lung Meridian and the acupoint GB-34 (Yang Ling Quan) of the Gallbladder Meridian as well as the Ah-Chi points (Trigger points) are all useful for effective treatment of this disease. The effect of pain relief and improvement of joint range of motion is obvious, and it is worthy of adoption and application by physicians and therapists who are concerned about this disease.

Introduction

Pathological features of De Quervain's Disease:

Radial styloid tenosynovitis/De Quervain's Disease occurs in the tendon sheath on the radial styloid process. It was discovered and reported by Fritz de Quervain, a Swiss surgeon in 1895 and 1912. It is called De Quervain's disease, and in 1930 Finkelstien also reported large number of cases, which made this disease begin to be taken seriously and widely known (Howell E R, 2012). The condition typically manifests in the tendon sheath located on the radial styloid process. It is commonly triggered by excessive use or repetitive movements, such as gripping, pinching, or wringing motions of the hand and wrist, which induce micro-trauma due to the repeated sliding of tendons (APL and EPB) within the first dorsal compartment beneath the sheath. This leads to thickening of the extensor retinaculum of the wrist, situated over the radius styloid. (Howell E R, 2012). It is characterized by pain and/or tenderness along the radial aspect of the wrist, resulting to swelling and in painful and restricted movement (Cherin N, Jafri A and Moser K, 2020).

Clinically, De Quervain's Disease is a cumulative trauma disorder, with a higher prevalence in women than men. The prevalence has been reported in the general population in the UK as 0.5% in men and 1.3% in women (Howell E R, 2012). It can occur at any age, but it is more commonly seen in individuals between the ages of 40 and 60 years old. Pregnant and lactating women may be more susceptible to the condition due to hormonal changes that can lead to soft tissue swelling and inflammation (Howell E R, 2012).

It is also true that certain occupations and activities can increase the risk of developing De Quervain's tenosynovitis. Manual workers who perform repetitive hand and wrist movements, such as cleaners, construction workers, and factory workers, may be at a higher risk for the condition (Howell E R, 2012). Women, particularly those who are caregivers or perform tasks that require repetitive thumb and wrist motions, such as babysitters, can also be more prone to developing the condition. The main clinical manifestations of this disease are swelling, pain, and weakness at the radial styloid process on the radial side of the wrist, thickened and hard feeling of the tendon sheath, and obstruction of thumb movement. When the wrist is flexed, there will be severe pain at the radial styloid process (fist ulnar deviation test, Finkelstien test positive) (Howell E R, 2012). Although there is no direct fatal risk, it brings a lot of inconvenience and pain to patients life and work, and it is still a serious disease that cannot be ignored.

The Method of Western Medicine to treat De Quervain's Disease :
In Western countries, the medical treatment of this disease is mainly divided into surgery and non-surgical treatment. Patients with early or mild symptoms are suitable for non-surgical treatment, such as immobilization, application of drugs, corticosteroid injection and physical therapy (da Silva JBG & Batigalia F, 2014). If the condition is sustained, or non-surgical treatment is ineffective, surgical treatment can be used, or it can be combined with non-surgical treatment. Physiotherapy mainly uses ultrasound and electrotherapy to reduce pain, and it also includes stretching and muscle strengthening exercises. If pain is persistent and intractable, shockwave therapy would also be conducted.

The Treatment Concept and Theory of Traditional Chinese Medicine (TCM) :
In traditional Chinese medicine (TCM), the meridian system is a network of channels or pathways that run throughout the body and connect the internal organs with the superficial tissues and organs. The meridians are believed to be a way in which the body coordinates and regulates its various functions, including the flow of qi, or vital energy, throughout the body (http://www.shen-nong.com).

According to TCM theory, there are 12 main meridians in the body, each corresponding to a specific organ system, as well as 8 extra meridians that have more generalized functions. The meridians are said to be interconnected, forming a complex web that reflects the holistic nature of TCM. The concept of meridians and collaterals is fundamental to the practice of acupuncture, which involves the insertion of fine needles into specific points along the meridians to stimulate or balance the flow of qi and restore health and wellbeing. Currently, 361 acupoints have been identified along these 20 meridians (http://www.shen-nong.com).

Acupuncture is a key component of traditional Chinese medicine (TCM) and involves the insertion of thin, sterile needles into specific points along the body's meridians. The aim of acupuncture is to stimulate or balance the flow of qi (vital energy) in the body, which is believed to be responsible for maintaining health and wellbeing. When the flow of qi in the body is disrupted or blocked, it can lead to pain, illness, and other health problems. By inserting needles into specific points along the meridians, acupuncturists aim to restore the flow of qi and promote the body's natural healing processes (http://www.shen-nong.com). Indeed, various published studies have extensively explored the effectiveness of acupuncture in treating De Quervain's Disease (C Wang, 1998; BS Liao, 2015; HP Yu, 2016; Q Sun, 1996; CH Tian, et al., 2011; ZD Wang, 2019 & JQ Fu, 2010).

Objectives

Research purposes and objectives

Research Background:

I am a physiotherapist in a private clinic. Pain management is my main concern. Many patients of mine complain of stenosing tenosynovitis of the radial styloid process, especially among female flight attendants. Although the disease has no serious harm to the human body, it affects patients daily work, life and social interaction. Acupuncture treatment for stenosing tenosynovitis of radial styloid process has several advantages: (1) Through physical stimulation of meridians and acupoints, the patients pai n can be relieved immediately. (2) Acupuncture can be a cost-effective treatment option compared to certain conventional medical interventions. It generally requires fewer resources and equipment, which may make it more affordable for most patients. (3) Acupuncture is generally considered safe when performed by a trained and licensed practitioner using sterile needles. Compared to certain medications or surgical interventions, there may be fewer side effects associated with acupuncture.

In recent decades, increasing evidences were being published showing that acupuncture is an effective and safe way to treat De Quervain's Disease and it may become the new way out for this problematic disease. In view of this circumstances, this study would like to explore on this topic and hoped to provide some information, such as effective acupoint selection, and the meridian to which the acupoint belongs, for medical professionals to determine whether acupuncture should be used for the patients with De Quervain's Disease.

Research Objective :

To examine the effectiveness of using acupuncture as part of the treatment method for patients with De Quervain's Disease in reducing pain, swelling and improving upper limbs movement and functions. The study will involve conducting a comprehensive literature review, synthesizing the findings, and identifying the most effective acupoints and meridians for treating this condition. Ultimately, the research aims to provide valuable insights for the clinical application of acupuncture in the treatment of De Quervains Disease, offering guidance and useful information for future treatment approaches.

Methods

Research method:

Mainly collect documents from various databases, synthesize and sort out the commonly used acupoints and meridians in the treatment of De Quervain's Disease, and summarize the commonly used acupuncture points and the meridians they belong to.

Search method and keywords:

Documents were collected from various databases, relevant articles were screened according to the inclusion criteria and the total number of cases was counted. The Chinese keywords for literature search are as follows: "radial styloid process stenosing tenosynovitis 橈骨莖突狹窄性腱鞘炎", "radial styloid process 橈骨莖突", "tenosynovitis 腱鞘炎", "mothers hand 媽媽手", "acupuncture 針刺"; English keywords: "De Quervain Tenosynovitis", "Acupuncture" & "Moxibustion". Extract documents that can be downloaded in full text from the search results, and collect data by manual reading and screening.

Database selection:

Chinese database --- 萬方數據(Wanfang Data);
中國期刊全文數據庫(Chinese Journal Full-text Database);
中國生物醫學文獻數據庫(Chinese Biomedical Literature Database);
中國中醫藥數據庫(Chinese Traditional Chinese Medicine Database);
實證中醫診療數據庫(Empirical Chinese Medicine Diagnosis and Treatment Database)

English database --- PubMed ; MEDLINE via EBSCOhost ; AMED and Embase Web of Science.

Literature inclusion criteria:

1. Clinical research (RCT, Non-RCT) and case reports in 2023 or before;
2. The content must be for the purpose of treating De Quervain's Disease/stenosing tenosynovitis of the radial styloid process;
3. The literature must use acupuncture, including electroacupuncture as the main treatment methods;
4. The treatment method, acupoints, number of cases, etc. must be listed;

5. The effective rate of the included literature must be 80% or above. [i. The effective rate is calculated as the percentage of cases where symptoms improved, excluding invalid cases (n-invalid number/n x 100%). ii. The curative effect standard for assessing effectiveness is the disappearance of radial side swelling, pain, and tenderness, along with the recovery of function and a negative result on the fist ulnar deviation test. iii. Cases that show improvement are characterized by reduced wrist swelling and pain, with mild pain during activities and a +/- result on the fist ulnar deviation test. iv. Unhealed cases refer to those that show no improvement in symptoms despite the treatment].

Literature exclusion criteria:
1. Repeatedly published literature; 2. Review literature; 3. Contains interventional methods other than acupuncture, such as acupoint injection; 4. Dry needle, Fu's Subcutaneous Needling, and small needle knife: relatively surgical, anatomical, lack of regularity of acupoints; 5. Literature and literature based on acupuncture combined with other non-invasive treatments (such as traditional Chinese medicine fumigation, moxibustion, massage, shock wave, ultrasound and laser, etc.); 6. Documents that the treatment is ineffective.

Total 6 articles were retrieved from all English databases and 52 articles were retrieved from all Chinese databases. After applying the exclusion criteria, 1 English article and 7 Chinese articles were selected. As a result, a total of 416 subjects in treatment and/or control group respectively were included in this systematic review.

Results

Table 1 provides general information of 8 research articles in categories including research title, types, focus/hypothesis and outcome measures. Among 8 articles, article 1,4, 5 and 7 are case studies while article 2,3,6 and 8 are experimental designs. All these articles are in Chinese except article 8. Three of the selected articles only provided relatively smaller sample size (C Wang 1998; Q Sun 1996 & Hadianfard M, Ashraf A, Fakheri M & Nasiri A., 2014).

The subject-related results table is shown in Table 2, which describes the experimental findings of the articles by providing information on types of subjects, treatment protocols, results, selected measurements, and p values.

Studies Characteristics

7 out of 8 included studies were conducted in hospitals in China while one study was conducted in a clinic of Iran. One study used electro acupuncture while 7 adopted routine acupuncture method. 4 studies have involved outcomes in VAS (0-10), one study has involved outcomes in D-QASH (0-100) and 2 studies have involved outcomes in Mayo wrist score & angle measurement and Quinnell grade (0-4). All studies have recorded the effective rate. Among the studies, only one study recorded the outcomes in 2 weeks and 6 weeks (Hadianfard M, Ashraf A, Fakheri M & Nasiri A., 2014). All other studies have not mentioned the time of assessment.

All 7 studies in China used the following diagnostic criteria : (1) Pain, swelling and tenderness in radial styloid process; (2) Thickening of tendon sheath in the radial aspect of the wrist; (3) Increase pain in the wrist after exertion; (4) Weakness in gripping and limited movement in the wrist; and (5) Positive result in ulnar deviation test (Finkelstein Test) [Positive (+): Instruct the patient to straighten the arm first, hold the thumb tightly with four fingers for adduction and flex the wrist toward the ulnar side, if the pain at the radial styloid process increases, it is positive], according to the "Criteria for diagnosis and curative effect of TCM clinical syndrome" in 1993 (JJ Wang & JJ Long, 1993).

All 7 Chinese studies included at least one of the following outcome measures: Visual Analog Scale(VAS) for pain, negative result in ulnar deviation test (Finkelstein Test), Quinell grade, Mayo wrist score and angle measurement, wrist active range of movement or clinical effective rate (The definition for effective rate is as follow: According to the "Criteria for diagnosis and curative effect of TCM clinical syndrome" in 1993 (JJ Wang & JJ Long, 1993) : (1) Marked effect (顯效) - Elimination of pain, no marked limitation of joints active range of movement , (2) Effective(有效) -Marked reduced in severity of pain, improvement of joints active range of movement, (3) Invalid(無效) -Pain persist, significant limitation of joints passive range of movement, muscle atrophy of affected limbs. The effective rate was calculated as the percentage of the sum the number of Marked effect and Effective.)

Adverse effects

Among the 8 studies included in this systematic review, no adverse effect caused by acupuncture treatment had been recorded.

Discussion

Based on the research results, all findings with acupuncture as the treatment method, demonstrated significant decrease in pain, increase in ROM and strength. Ah-chi points and specified acupoints are considered as the effective and useful locations for application of acupuncture. According to the data analysis, patient with De Quervain's Disease who have received acupuncture treatment have greater increase in their Mayo wrist score and angle measurement, significant decrease in Q-DASH score, decrease in Quinnell grade, greater reduction in their VAS pain score and greater chance of treatment being effective to them than those who only received conventional rehabilitation.

The success rates in the treatment of all 7 Chinese studies are more than 80% (C Wang, 1998; BS Liao, 2015; HP Yu, 2016; Q Sun, 1996; CH Tian, et al., 2011; ZD Wang, 2019 & JQ Fu, 2010); and the results of 4 studies are statistically and clinically significant (BS Liao, 2015; HP Yu, 2016; ZD Wang, 2019 & Hadianfard M, et al., 2014).

On the other hand, among the 416 subjects involved, no adverse effect caused by acupuncture treatment had been recorded and the use of acupuncture for patients with De Quervain's Disease should be considered as a safe measure. Hence, this study can provide a preliminary information for clinicians/therapists to consider implementing acupuncture treatment as a standard treatment component for patient who suffering from De Quervain's Disease. It is worth noting that several systematic reviews investigating the relationship between acupuncture and De Quervains Disease have been published in the past decade. Nevertheless, this study differs in its objective and provides substantial additional information compared to these previous studies.

Article 1 (C Wang., 1998) investigate the effect of acupuncture in relieving pain of De Quervain's Disease. 34 patients received acupuncture in acupoints LU-7 of the Lung Meridian, and LI-4 and LI-7 of the Large Intestine Meridian. The effective rate was 93.30%. As a result, acupuncture is suggested has benefit to help patients with De Quervain's Disease to reduce pain and improve ROM of the painful wrist.

Article 2 (BS Liao., 2015) focused on the patient with De Quervain's Disease treated with acupuncture and massage therapy. VAS score, Mayo wrist score & angle measurement, and Quinnell grade show statistical difference between 2 groups of patients. The treatment group obtained lower VAS score, lower Quinnell grade, higher Mayo wrist score and increase angle measurement. These results indicated that the treatment group has better improvement than the control group. The acupoints for the treatment group included LI-5 and LI-10 of the Large Intestine Meridian, and LU-7 of the Lung Meridian.

Article 3 (HP Yu., 2016) investigated the treatment effect difference about De Quervain's Disease which was treated by Dong-Qi acupuncture and routine acupuncture. VAS score shows significant decrease in both treatment group (Dong-Qi) and control group (routine acupuncture). The effective rate is a bit higher in treatment group (100%) while control group is 90%. As a result, acupuncture is considered has benefit to help patients with De Quervain's Disease to reduce pain and improve ROM of the painful wrist. The acupoints for both group patients are mainly Ah-chi points and GB-34 of the Gallbladder Meridian.

Article 4 (Q Sun., 1996) studied the treatment effect about De Quervain's Disease by acupuncture. All 30 subjects received acupuncture in LU-7 of the Lung Meridian, and LI-4, LI-5, LI-6 and LI-10 of the Large Intestine Meridian as well as Ah-chi points in a pre-post design. The effective rate was 100%. The results showed the application of acupuncture significantly decrease pain and improve ROM of the painful wrist among the individuals with De Quervain's Disease.

Article 5 (C H Tian, L C Zhang, J Q Mi., 2011) investigated the effectiveness of acupuncture for the treatment of De Quervain's Disease. All 70 subjects received acupuncture in Ah-chi points. The effective rate was 100%. As a result, acupuncture is considered has significant benefit to help patients with De Quervain's Disease to reduce pain and improve ROM of the painful wrist.

Article 6 (ZD Wang, 2019) explored the efficacy of acupuncture in the treatment of stenotic tenosynovitis of the radial styloid process. VAS score, Mayo wrist score & angle measurement, and Quinnell grade show statistical difference between 2 groups of patients (Acupuncture group versus massage group). The treatment group obtained lower VAS score, lower Quinnell grade, lower Mayo wrist score and increase angle measurement. These results showed that the treatment group has better improvement than the non-treatment group. The acupoints for the treatment group included LI-5 and LI-10 of the Large Intestine Meridian and LU-7 of the Lung Meridian.

Article 7 (JQ Fu, 2010) investigated the treatment effect of acupuncture in stenosing tenosynovitis of the radial styloid process. All 76 subjects received acupuncture in Ah-chi points. The effective rate was 97.40%. As a result, acupuncture is suggested has benefit to help patients with De Quervain's Disease to reduce pain and improve ROM of the painful wrist.

Article 8 (Hadianfard M, Ashraf A, Fakheri M & Nasiri A., 2014) compared the efficacy of acupuncture versus corticosteroid injection for the treatment of De Quervain's Disease. Quick Disabilities of the Arm, Shoulder, and Hand (Q-DASH) scale and Visual Analogue Scale (VAS) show significant decrease in both group (Acupuncture and injection groups). All 15 subjects in treatment group received acupuncture in LI-5 of the Large Intestine Meridian, and LU-7 and LU-9 of the Lung Meridian, as well as the Ah-chi points.

While this study successfully addresses the question of whether incorporating acupuncture into the management plan for patients with De Quervain's Disease is both effective and safe, there are still several unanswered questions that warrant further investigation in future studies. Notably, the articles included in this study do not delve into the mechanisms by which acupuncture aids in alleviating the symptoms of De Quervain's Disease. As a result, while this study demonstrates the effectiveness of acupuncture, the specific physiological effects of acupuncture pertaining to De Quervain's Disease remain unexplored.

On a different note, in order to minimize heterogeneity for data analysis in this systematic review, only articles utilizing needle acupuncture were included, while other modalities were excluded. This approach may inadvertently underestimate the effectiveness of treatment approaches based on the principles of meridians and acupoints in addressing De Quervain's Disease.

Indeed, numerous published studies have investigated the use of alternative modalities or a combination of modalities for the treatment of De Quervain's Disease. Some of these modalities include bloodletting therapies, moxibustion, and acupoints injection. However, it is important to note that these particular studies were not included in the systematic review mentioned, primarily because in clinical settings in Hong Kong, such as public hospitals, modalities like moxibustion, bloodletting therapy, and acupoints injection are prohibited. This implies that even if there is existing evidence from studies utilizing these modalities, their inclusion in the review would not hold clinical significance within the context of healthcare practices in Hong Kong.

Furthermore, this systematic review will address the quality of the studies included, as well as highlight some limitations. In terms of the quality of evidence, not all of the studies included in this review achieved a Jadad score of 3, which is considered indicative of high-quality studies. Only a few studies demonstrated appropriate randomization methods and had no dropouts (BS Liao, 2015; HP Yu, 2016 & ZD Wang, 2019). However, none of the studies mentioned blinding procedures for both the participants and the investigators, and none of them utilized sham interventions in their control groups. As a result, there is a high risk of performance and detection bias across all of the studies. This has significantly impacted the level of evidence presented in this systematic review, making the data analysis less conclusive and persuasive.

Limitations

There are some limitations to this study. Firstly, the research quality is unsatisfactory. According to the level of evidence, only article 8 (Hadianfard M, Ashraf A, Fakheri M & Nasiri A., 2014) scored 1a in the level of evidence. Half of the research are not in randomized control trials which leads to a low power of clinical significance.

Secondly, compared to other studies, the number of samples among 3 selected articles was smaller (C Wang 1998; Q Sun 1996 & Hadianfard M, Ashraf A, Fakheri M & Nasiri A., 2014). In general, having a larger sample size can improve the statistical power and increase the confidence in the studys results. Studies with small sample sizes may have limited ability to detect significant effects or may be more prone to chance findings.

Lastly, the scarcity of English research articles on the treatment of stenosing tenosynovitis/De Quervain’s Disease with acupuncture suggests that the majority of the available literature is in Chinese. This language bias may limit the accessibility and dissemination of findings to a broader audience. It's important for researchers to conduct further investigations in different languages to provide a more comprehensive understanding of the topic.

The significance of the integration of acupuncture into Osteopathic Treatment

Osteopathy and acupuncture are both complementary and alternative medicine practices that aim to promote healing and alleviate pain. While osteopathy primarily focuses on the musculoskeletal system and the body's overall structure, acupuncture works by stimulating specific points on the body to balance the flow of energy, or "qi," throughout the body.

When used together, acupuncture and osteopathy can provide a comprehensive approach to promoting healing and relieving pain. For example, an osteopath may use manual techniques to address any musculoskeletal imbalances or restrictions that are contributing to a patient's pain, while an acupuncturist may use needles to stimulate the release of endorphins and reduce inflammation in the affected area.

In addition to addressing specific conditions and symptoms, acupuncture and osteopathy can also help improve overall well-being and promote relaxation. Both practices aim to promote the body's natural healing processes and restore balance to the body's systems.

Conclusion

This study showed that using acupuncture is effective in dealing with De Quervain's Disease in general. The principal or patterns in selection of different acupoints for different patients have not been examined. The main reason for this is the inadequacy of available studies for sub-group analysis for using different acupoints. However, this study can still provide some qualitative information and clues for clinicians/therapists in choosing the correct acupoints. While all studies included in this review have used different combination of acupoints, there are some acupoints that were very commonly used in most studies including Ah-Chi points, LU-7 (Lie Que) and LU-9 (Tai Yuan) of the Lung Meridian, LI-4 (He Gu), LI-5 (Yang Xi), LI-6 (Pian Li), LI-10 (Shou San Li) & LI-11(Qu Chi) of the Large Intestine Meridian, and the acupoint GB-34 (Yang Ling Quan) of the Gallbladder Meridian.

Other than the selection of acupoints, the optimal duration and frequency of acupuncture treatment is not examined in this systematic review either as all studies included have various and different schedule for the acupuncture treatment. It is worthwhile for the researchers who have keen interest in this area to conduct further investigation.

Table 1: Types and outcome measures of 8 articles

Title of article	Types of article	Research focus / hypothesis	Outcome measures
1. Acupuncture treatment of 34 cases of stenosing tenosynovitis of radial styloid process (C Wang., 1998).	Case study	1. To investigate the effect of acupuncture in relieving pain of De Quervain's Disease.	Finkelstein's Test
2. The clinical study of De Quervain Disease with acupuncture (B S Liao., 2015).	Randomized Controlled Trial	1. This study focuses on the patient with De Quervain's Disease treated with acupuncture and massage therapy.	VAS score Mayo wrist score & angle measurement Quinnell grade
3. The clinical observation of Dong-Chi acupuncture for the patients of De Quervain's Disease (H P Yu., 2016).	Randomized Controlled Trial	1. To investigate the treatment effect difference about De Quervain which was treated by Dong-Qi acupuncture and routine acupuncture. Remarks : Dong-Qi acupuncture means dynamic, patient actively mobilizes or is passively mobilized his/her painful upper limb(s) before or after acupuncture.	VAS Score

Title of article	Types of article	Research focus / hypothesis	Outcome measures
4. Acupuncture treatment of 30 cases of stenosing tenosynovitis in the radial styloid process (Q Sun., 1996).	Case study	1. To study the treatment effect about De Quervain's Disease by acupuncture.	Finkelstein's Test
5. Treating 70 cases of stenosing tenosynovitis of radial styloid process with electroacupuncture using tenderness spot/trigger point as acupoint (C H Tian, L C Zhang, J Q Mi., 2011).	Case study	1. To investigate the effectiveness of acupuncture for the treatment of De Quervain's Disease.	Finkelstein's Test
6. Observation on the Therapeutic Effect of Acupuncture on Tenosynovitis of Stenotic Styloid Process (Z D Wang 2019).	Randomized Controlled Trial	1. To explore the efficacy of acupuncture in the treatment of stenotic tenosynovitis of the radial styloid process.	VAS score Mayo wrist score & angle measurement Quinnell grade

7. Acupuncture in the treatment of radial styloid tenosynovitis (J Q Fu 2010).	Case study	1. To investigate the treatment effect of acupuncture in stenosing tenosynovitis of the radial styloid process.	Finkelstein's Test
8. Efficacy of Acupuncture versus Local Methylprednisolone Acetate Injection in De Quervain's Tenosynovitis: A Randomized Controlled Trial (Hadianfard M, Ashraf A, Fakheri M & Nasiri A., 2014).	Randomized Controlled Trial	1. To compare the efficacy of acupuncture versus corticosteroid injection for the treatment of De Quervain's Disease.	Quick Disabilities of the Arm, Shoulder, and Hand (Q-DASH) scale Visual Analogue Scale (VAS)

Table 2: Subjects involved, selected Treatment protocol, result, and p-value

Number and authors of article	Subject types and number (N)	Treatment	Chosen Outcome Measure	Results	P-value
Article 1 (C Wang., 1998)	34 cases (4 male and 30 female).	All subjects received acupuncture in LU-7 of the Lung Meridian, LI-4 and LI-11 of the Large Intestine Meridian.	Finkelstein's Test	31 cases reported fully recovery. 3 cases reported improved. (success rate : 93.3%)	N/A
Article 2 (B S Liao., 2015)	60 cases (Male : 26 ; Female : 34)	Control group (30 cases, male 14 & female 16, received massaging therapy) vs treatment group (30 cases, male 12 & female 18, received acupuncure). The acupuncture points for treatment group : LI-5, LI-10 of the Large Intestine Meridian & LU-7 of the Lung Meridian	VAS score Mayo wrist score & angle measurement Quinnell grade	Treatment group : 13 cases reported fully recovery; 5 cases reported significantly improved; 8 cases reported improved and 4 cases reported no improvement. Success rate : 86.67% Control group : 0 case reported fully recovery; 4 cases reported significantly improved; 9 cases reported improved and 17 cases reported no improvement. Success rate : 43.33%	Treatment group significantly lower than Control group in : (1) VAS score : P< 0.01 (2) Mayo wrist score & angle measurement P<0.01 (3) Quinnell grade P<0.05 Treatment group vs Control group P<0.05

Article 3 (H P Yu 2016)	60 cases (Male 7 ; Female 53)	Treatment group (30 cases, male 3 & female 27, received Dong-Qi acupuncture) vs Control group (30 cases, male 4 & female 26, received routine acupuncture) The acupuncture points for both groups : GB-34 of the Gallbladder Meridian & Ah-chi points Remarks : Ah-chi points are tenderness points and trigger points	VAS score	VAS score decreases significantly in both groups. In treatment group, the clinical recovery was 12 cases, markedly effective 16 cases, effective 1 case, ineffective 0 case, the effective rate was 100%; while in control group, the clinical recovery was 3 cases, markedly effective 5 cases, effective 19 cases, ineffective 3 cases, the effective rate was 90.00%	(1) $P< 0.01$
Article 4 (Q Sun 1996)	30 cases (8 Male & 22 Female)	All subjects received acupuncture in LU-7 of the Lung Meridian, LI-4, LI-5, LI-6 & LI-10 of the Large Intestine Meridian and Ah-chi points.	Finkelstein's Test	24 cases reported fully recovery (80%); 5 cases reported significantly improved (17%); 1 case reported improved (3%). Success rate : 100%	N/A

Article 5 (C H Tian, L C Zhang, J Q Mi., 2011)	70 cases (26 Male & 44 Female)	All subjects received acupuncture in Ah-chi points.	Finkelstein's Test	47 cases reported fully recovery (67%); 23 cases reported significantly improved (33%). Success rate : 100%	N/A
Article 6 (Z D Wang 2019)	56 cases (Male 24 & Female 32)	Control group (28 cases, male 13 & female 15, received massaging therapy) vs treatment group (28 cases, male 11 & female 17, received acupuncure). The acupuncture points for treatment group : LI-5 & LI-10 of the Large Intestine Meridian, & LU-7 of the Lung Meridian.	VAS score Mayo wrist score & angle measurement Quinnell grade	Treatment group : 12 cases reported fully recovery; 5 cases reported significantly improved; 8 cases reported improved and 3 cases reported no improvement. Success rate : 89.29% Control group : 0 case reported fully recovery; 4 cases reported significantly improved; 8 cases reported improved and 16 cases reported no improvement. Success rate : 42.86%	Treatment group significantly lower than Control group in : (1) VAS score : $P< 0.05$ (2) Mayo wrist score & angle measurement $P<0.05$ (3) Quinnell grade $P<0.05$ Treatment group vs Control group $P<0.05$

Article 7 (JQ Fu 2010)	76 cases (Male 20 & Female 56)	All subjects received acupuncture in Ah-chi points.	Finkelstein's Test	45 cases reported fully recovery (59.2%); 29 cases reported significantly improved (38.2%); 2 cases reported no improvement (2.6%). Success rate : 97.4 %	N/A
Article 8 (Hadianfard M, Ashraf A, Fakheri M & Nasiri A., 2014).	30 cases (6 Male & 24 Female) Treatment group (15 cases, male 2 & female 13 received acupuncture) vs Control group (15 cases, male 4 & female 11 received injection)	Treatment group received 5 acupuncture sessions of 20 minutes duration on classic acupuncture points of LI-5 of the Large Intestine Meridian, and LU-7 and LU-9 of the Lung Meridian and on Ah-chi points Control group received one methylprednisolone acetate injection in the first dorsal compartment of the wrist	Quick Disabilities of the Arm, Shoulder, and Hand (Q-DASH) scale Visual Analogue Scale (VAS)	(1) Q-DASH: Injection group : decrease from 61.2 to 6.1 Acupuncture group : decrease from 64.4 to 9.8 (2) VAS : Injection group : decrease from 6.67 to 1.20 Acupuncture group : decrease from 7.13 to 2.07	(1) $P<0.001$ (2) $P<0.001$

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Acupoints for De Quervain's Disease

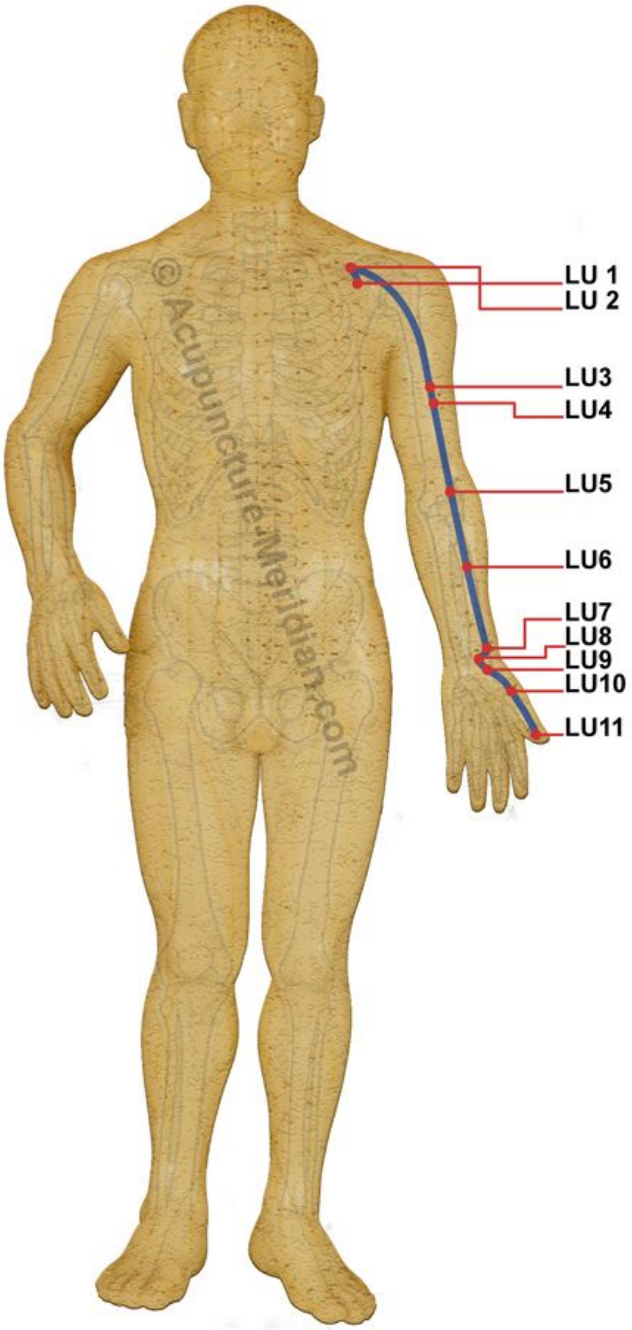
Acupoint	Location	Indication
LI-4 (He Gu)	On the dorsum of the hand, between the 1st & 2nd metacarpal bones, in the middle of the 2nd metacarpal bone on the radial side	# Disease of the head & face; # Dysmenorhea, amenorrhea, dystocia; # Hemiplegia, finger plasm, pain in the arm & wrist; # Every type of pain & psychogenis tense
LI-5 (Yang Xi)	On the radial side of the dorsal wrist crease. When the thumb is pointed upwards, it is in the depression between the tendons of m. extensor pollicis longus & brevis	# Frontal headache, congestion, swelling & pain of the eye, toothache; # Weakness & pain of the wrist
LI-10 (Shou San Li)	With the elbow flexed, the point is on the dorsal radial side of the forearm, on the line connecting the LI-5 & LI-11, 50 mm below the transverse cubital crease	# Abdominal pain, diarrhea; # Paralysis of the upper limb; # Pain in the elbow joint, forearm & hand
LI-11 (Qu Chi)	When the elbow is flexed, the point is on the lateral end of the transverse cubital crease, at midpoint between LU-5 & the lateral epicondyle of the humerus	# Hemiplegia, pain & motor impairment of shoulder, swelling & pain of the knee; # Pain in the elbow & forearm; # Headache, dizziness, swelling & pain of the eye; # Depressive psychosis & madness
LI-6 (Pian Li)	With the elbow flexed, the point is on the dorsal radial side of the forearm, on the line connecting Li-5, Li-11, 3 cun above the wrist creases.	# Dental cavities; # Facial paralysis; #deafness; # Edema, aching in the dorsum of the hand
LU-7 (Lie Que)	On the radial margin of the forearm, superior to the styloid process of the radius, 40 mm above the transverse crease of the wrist.	# Head & neck problem; # Weakness of the thumb & index finger; # Paralyses & pain in the lower arm; # Urogenital system problems # Abdominal distention

LU-9 (Tai Yuan)	At the radial end of the transverse crease of the wrist, in the depression on the lateral side of the radial artery.	# Cough, # asthma, # hemoptysis, # sore throat, # palpitation, # pain in chest, wrist and arm;
GB-34 (Yang Ling Quan)	On the lateral aspect of the lower leg, in the depression anterior and inferior to the head of the fibula.	# Hemiplegia, # pain of the shoulder, # weakness, numbness and pain of lower extremities, # swelling and pain of the knee, # beriberi, # pain in the hypochondrium; # bitter taste in the mouth; # vomiting; # Jaundice; # infantile convulsion

Pathways of Meridians

1. Arm Tai Yin Lung Meridian :

The Lung Meridian (LU) originates in the middle portion of the body, and runs downwards connecting with the large intestine. It then turns and passes through the diaphragm to connect with the lungs. This meridian branches out from the axilla (armpit) and runs down the medial aspect of the upper arm where it crosses the elbow crease. It continues until it passes above the major artery of the wrist, and emerges at the tip of the thumb. Another branch emerges from the back of the wrist and ends at the radial side of the tip of the index finger to connect with the Large Intestine Meridian.



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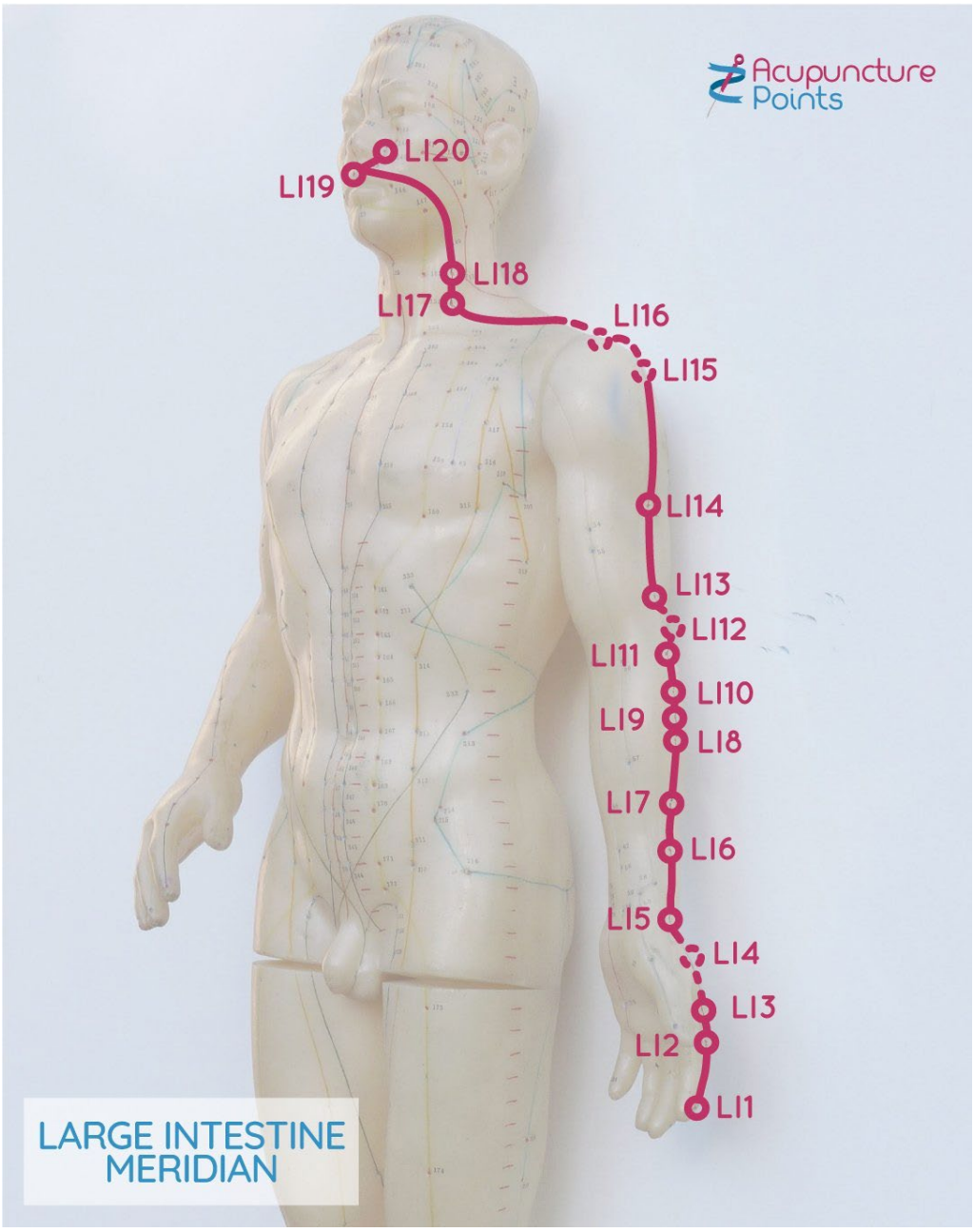
2. Arm Yang Ming Large Intestine Meridian :

The Large Intestine Meridian starts from the tip of the index finger and runs between the thumb and the index finger. It then proceeds along the lateral side of the forearm and the anterior side of the upper arm, until it reaches the highest point of the shoulder. From there, it has two branches : One goes internally towards the lungs, diaphragm and large intestine. The other travels externally upwards where it passes the neck and cheek, and enters the lower teeth and gums. It then curves around the upper lip and crosses to the opposite side of the nose.



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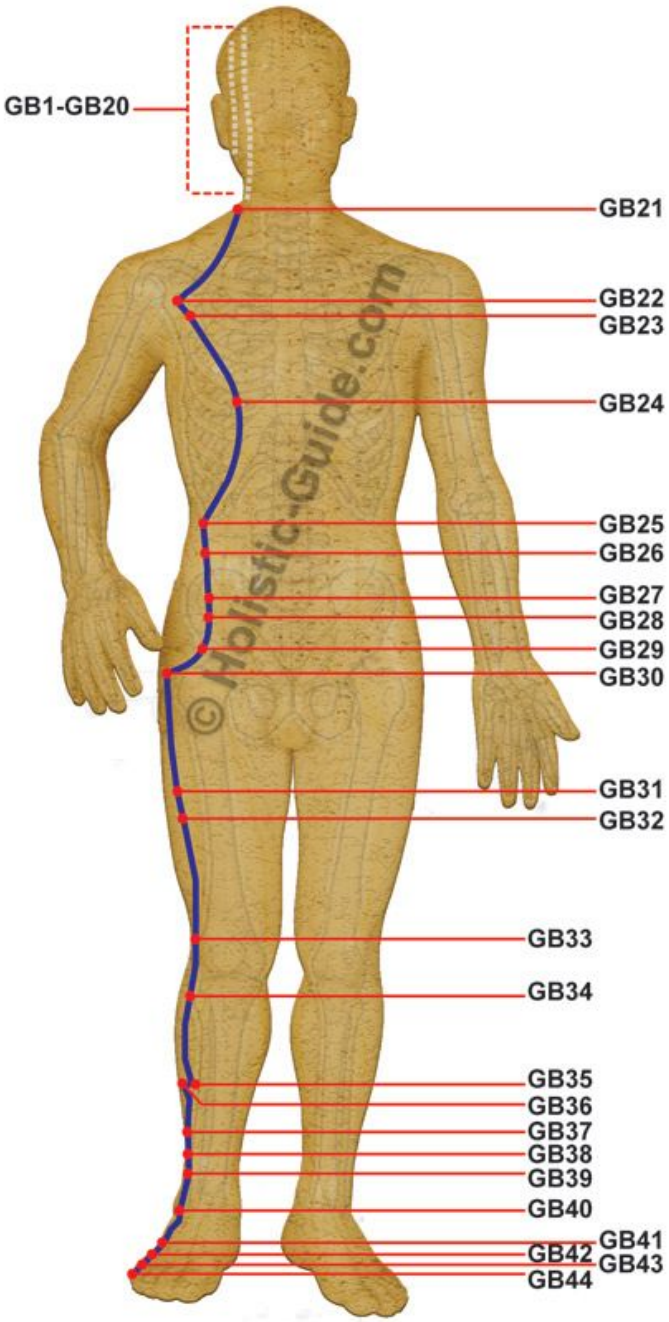
3. Leg Shao Yang Gall Bladder Meridian :

The Gall Bladder Meridian starts from the outer corner of the eye and divides into two branches. One branch runs externally and weaves back and forth at the lateral side of the head. After curving behind the ear, it reaches the top of the shoulder and crosses the lateral side of rib cage and abdomen, until it ends up at the side of the hip. The other branch enters the cheek and runs internally downward, through the neck and chest to connect with the gall bladder. It continues moving downwards and comes out in the lower abdomen, where it connects with the other branch at the hip. The hip branch then runs toward the lateral side of the thigh and lower leg. After crossing the ankle, it goes over the foot to reach to the tip of the fourth toe. Another small branch leaves the meridian and terminates at the big toe to connect with the Liver Meridian.



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