Review Article

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Analysis on the Acupuncture Contents of the Domestic Neck Pain and HIVD–Cervical Spine Clinical Studies : a literature review

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[Abstract]

Objectives : Cervical herniated intervertebral disc (HIVD) are common diseases. They can be managed with acupuncture, but the evidence for effectiveness is uncertain. This review analyzed the acupuncture studies of domestic neck pain and cervical HIVD; the purpose of this study was to provide basic data useful for future research.

Methods : We investigated acupuncture treatments for neck pain and cervical HIVD by searching 5 Korean Internet databases. The keywords used were "neck pain", "HIVD–cervical spine", and "nuchal pain". A total of 53 research papers (17 case reports, 16 clinical data analyses, 11 randomized controlled trials, and 9 non–randomized controlled trials) were found and analyzed according to the publication year, type of study, treatment, use of filiform needles, and type of pharmacopuncture used acupoint. The effectiveness of acupuncture treatment was determined.

Results : 1. Filiform needles have been primarily used in domestic research and were used in at least half of published pharmacopuncture studies.
2. In 51 papers using filiform needles, many studies used only local acupoints; few studies used only distant acupoints.
3. All studies using pharmacopuncture were performed using local acupoints. In particular, the studies based on *A–shi* point, trigger point, and radiologic lesion sites were useful for multiple purposes.

Conclusion : In this study, we analyzed the acupuncture contents of the domestic neck pain and HIVD–cervical spine clinical studies. This study considers the assessment of the quality and efficacy of each study, which is likely to require research that reflects the future.

Key words :
Neck pain;
Cervical HIVD;
Acupuncture;
Filiform needle;
Pharmacopuncture

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Ⅰ. Introduction

Neck pain is characterized by pain, limited range of motion, and localized tenderness radiating to the shoulder and upper extremities[1]. Approximately 67% of the population has experienced neck pain at least once, and it can seriously decrease quality of life[2].

In Western medicine, neck pain may be due to such conditions as cervical disc herniation, cervical osteoarthritis, cervical spondylosis, spinal cord tumor, torticollis, neck muscle and tendon injuries, cervical sprain, and cervical spinal cord dystonia. The most frequent cause of neck pain is cervical disc herniation and degenerative lesions[3].

Cervical herniated intervertebral disc (HIVD) is a disease that squeezes or stimulates the nerve roots of the cervical vertebrae due to herniated discs, and causes continuous pain and neurological symptoms in the upper and lower parts of the cervical vertebrae. A common cause of the disease is degenerative changes of the cervical disc. However, symptoms may also be due to trauma[4].

Treatment is largely divided into conservative and operative treatments, and there is no consensus on the most effective treatment method[5]. Korean Medicine treatment is conservative. The effect of this is also confirmed by several domestic studies. Lee et al, reported that patients had above 92% satisfaction with Oriental medicine treatments[7]. Park et al, reported improvement in quality of life using Oriental medicine. Moon[7] et al. reported a decreased degree of disc herniation, not only from simple symptoms, but also on radiological images.

The purpose of this review was to analyze clinical studies of acupuncture for domestic neck pain and cervical HIVD, and report basic data that may help future research.

Ⅱ. Research methods

1. Paper search

Studies of acupuncture treatments for neck pain and cervical HIVD were located by searching 5 Korean Internet databases (www.ndsl.kr, www.riss.kr, kiss.kstudy.com, oasis.kiom.re.kr, and www.koreantk.com). The search terms were "neck pain", "HIVD-cervical spine", and "nuchal pain". The search was conducted on February 7, 2017 and reviewed on May 3; literature published since 2000 was included. A total of 90 studies were found. We excluded 12 papers that restricted the original text. After reviewing the titles and abstracts, 9 of the remaining 78 studies were excluded due to their non-clinical nature. Finally, 53 papers were selected, except for 11 studies that In 5 studies did not have related symptoms and 11 studies were not mentioned types of acupuncture treatment and treatment area (Fig. 1).

2. Research methods

The 53 research papers were classified according to the publication year, type of study, and type of treatment. The location of the acupoint used by filiform needles or pharmacopuncture, the selection criteria, and the type of pharmacopuncture were summarized. When classifying the studies according to type of acupuncture, multiple treatments were duplicated when combined within a single study. Our study was a systematic study of domestic nuchal pain, and it was important to analyze the trend of domestic acupuncture treatment methods through available data. Therefore, the description of various treatment methods and the treatment period were not considered meaningful, and were excluded.

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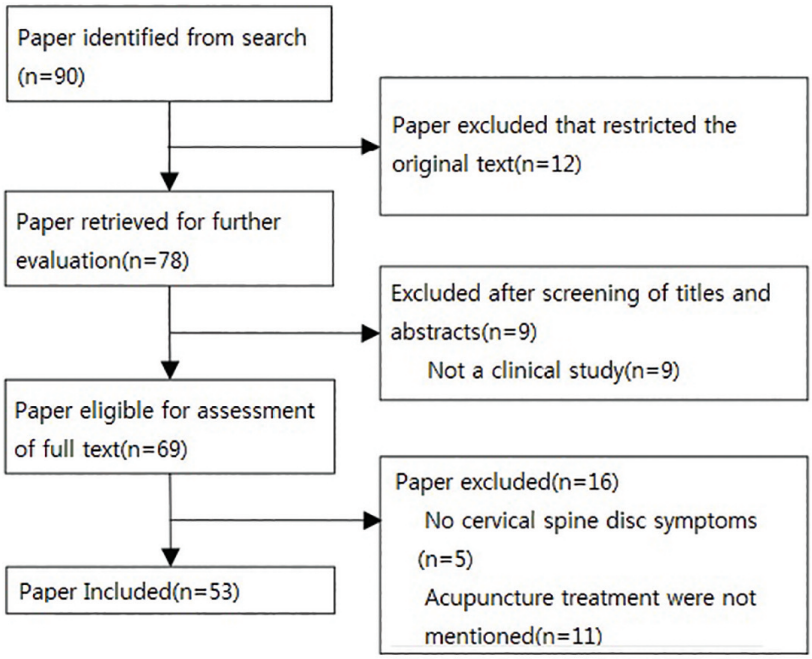

Fig. 1. Flow chart of the trial selection process

A total of 90 studies were found, with twelve beling excluded that restricted the original text. After scanning 78 papers, a total of 53 studies were selected and analyzed.

Ⅲ. Results

1. Classification by year

There have been some changes since the publication of 3 papers in 2002, but between 2 and 10 papers have been published every year. Among them, 17 were case reports, 16 were clinical data analysis, 11 were randomized controlled trials (RCTs), and 9 were non- RCTs (Table 1).

2. Classification according to the type of needle used for treatment

Among the 53 papers, 51 used filiform needles, 35 used pharmacopuncture, 2 used acupotomy, and 1 used warm needling (Table 2).

3. Analysis according to needle type

1) Filiform Needle

(1) Classification according to acupoint

Based on the lesion, the areas that deviated from the trunk were classified as distant points and the areas near the trunk were classified as local points. Among the 51 papers using filiform needles, 29 studies using local points were included in this study; 20 used both local and distant points. Use of distant points alone was rare; only 8 studies used distant points.

① Acupoint

Acupoints used in treatment and standard acupoints were arranged as in (Tables 3 and Tables 4), respectively.

② Comparison of Local Acupoint and Distant

Table 1. The Result of searching Nucal pain, Cervical Disc Herniation And Acupuncture Treatment

	CR*	CDA*	RCT*	NRCT*	TOTAL
2002		1	1	1	3
2003	1			1	2
2004	1	1		1	3
2005			1	2	3
2006		1		1	2
2007	3		1	1	5
2008	2	1		1	3
2009	1	2			3
2010	1	2			3
2011	3	2	5		10
2012	1	1	2		4
2013	1	2			3
2014	1	1	1		3
2015	2				2
2016		2		1	3
TOTAL	17	16	11	9	53

*CR : Case report *CDA : Clinical data analysis *RCT : Randomized controled trial *NRCT : Non-randomized controlled trials

Table 2. The Result of Type of acupuncture used to Treatment

Treatment	Number (%)
Filiform Needle	51 (96.2%)
Pharmacopuncture	35 (66.0%)
Acupotomy	2 (3.8%)
Warm needling	1 (1.9%)

Acupoint

Four comparative studies of the therapeutic effect of local and distant points were included. The study of Kim[9] (2011) et al, Park[10] et al, Lee[11] et al, and Kim[12] (2003) et al. proved the effects of local and distant points.

2) Pharmacopuncture

(1) Utilization of local and distant points in Pharmacopuncture

We analyzed the acupoint for the pharmacopuncture as below (Table 3).

① Types of used Pharmacopuncture

We analyzed the used types of pharmacopuncture in the study as below (Table 5).

② Comparative Study of Pharmacopuncture

Five comparative studies were published. Lee[13] et al. and Park[14] et al. conducted studies on the therapeutic effects of Hwangryunhaedoktang pharmacopuncture and bee venom (BV) pharmacopuncture. Kim[15] (2014) et al, published a comparative study between ShinBaro and BV pharmacopuncture. Two studies compared the effects of injection of normal

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Table 3. The Result of Well-used Acupoints for Treatment with Filiform Needle and Pharmacopuncture

	Filiform needle	Pharmacopuncture
Distant point and local points	20	3
Local points only	29	32
Distant point only	8	0
* Local points		
14 Meridian Acupoints	40	13
- Governor Vessel (GV)	21	7
- Small intestine meridian (SI)	28	11
- Gallbladder meridian (GB)	22	10
- Bladder meridian (BL)	19	3
- Large intestine meridian (LI)	2	2
- Triple energizer meridian (TE)	7	2
Hwatahyeopcheock	4	7
A-shi point	13	8
Trigger point		8
HIVD-Cervical Spine lesion		3
Muscles around the cervical spine	3	
* Distant point		
Commonly used Acupoints	8	1
Shunjing-quxue Needling (順經取穴)	6	
Jiejing-quxue Needling (接經取穴)	5	1
Dong-si Acupuncture Therapy	2	
Saamchimbeop	2	
8 Constitutional Acupuncture Therapy	1	
Not mentioned	4	

Table 4. The Result of Distant acupoints for Treatment

Distant point	Number	Distant point	Number
Houxi (後谿 SI3)	19	Shaofu (少府 HT08)	1
Hoku (合谷 LO4)	13	Nogung (勞宮 PC8)	1
Quchi (曲池 LI11)	10	Ximen (郄門 PC4)	1
Zhongzhu (中渚 TE3)	8	Daereung (大陵 PC7)	1
Shenmai (申脈 BL62)	7	Taiyuan (太淵 LU9)	1
Waiguan (外關 TE5)	3	Shousanli (手三里 LI10)	1
Taichung (太衝 LR3)	3	shen men (神門 HT7)	1
Yanglingquan (陽陵泉 GB34)	3	Sanyinjiao (三陰交 SP6)	1
Zusanli (足三里 ST36)	3	Nei guan (內關 PC6)	1
Shugu (束骨 BL65)	3	Zhaohai (照海 KI6)	1
Xuanzhong (懸鍾 GB39)	1	Chengjiang (承漿 CV24)	1

Table 5. The Result of Type of Pharmacopuncture used to Treatment

Type of Pharmacopuncture	Number (%)
Bee Venom (BV) Pharmacopuncture	16 (44.4%)
Hwangryunhaedoktang Pharmacopuncture	7 (19.4%)
ShinBaro Pharmacopuncture	4 (11.1%)
Carthmi-Flos Pharmacopuncture	4 (11.1%)
Jungsongouhyul Pharmacopuncture	2 (5.6%)
Bovis calculus.Fel Ursi Pharmacopuncture	1 (2.8%)
Scolopendrid aquacupuncture	1 (2.8%)
Muscle Relaxation Pharmacopuncture	1 (2.8%)

saline and pharmacopuncture at the same acupoint. Kim[16] (2005) et al. compared BV pharmacopuncture and normal saline, and Yoon[17] et al. compared Jungsongouhyul pharmacopuncture and normal saline.

③ Comparison of Pharmacopuncture and Filiform Needle

Four comparative studies were published. Kang[18] (2002) et al, Park[19] et al. and Kang[20] (2012) et al. reported the effectiveness of pharmacopuncture therapy by comparing a filiform needle and BV Pharmacopuncture. Kim[21] et al. compared *Carthmi-Flos* pharmacopuncture and filiform needles.

Ⅳ. Discussion

Various treatments such as acupuncture, medication, and Chuna treatment have been used for neck pain and cervical HIVD. Among them, acupuncture has the longest history of use and is a proven therapy. Treatments using filiform needles and pharmacopuncture have been reported to be effective for neck pain and cervical HIVD.

In 51 of 53 papers using filiform needles, the studies used both local and distant points; use of distant points alone was rare. Forty of 51 studies used 14 meridian acupoints as well as local points. The most commonly used meridians were the governor vessel (GV), small intestine meridian (SI), gallbladder meridian (GB), and bladder meridian (BL). The large intestine meridian (LI) and triple energizer meridian (TE) were also used. The named meridians pass through the nape of the neck, shoulders, and back; acupoint selection for treatment of neck pain is thought to be influenced by meridian flow.

To summarize the distribution of meridian acupuncture points within neck muscles, Dazhui (大椎 GV14), Dodo (陶道 GV13), and Sinsu (腎俞 BL23) are located on the superficial ligament and the interspinous ligament. Fengchi (風池 GB20) is located in the splenius capitis in the depression between the sternocleidomastoid and trapezius muscles. Jianjing (肩井 GB21) and Jianwaishu (肩外俞 SI14) are located in the trapezius muscle. Trigger points of the occipital and neck muscles are present in the sternocleidomastoid and upper trapezius muscles; the BL and SI meridians also pass through that area.[22] The Dazhu (大杼 BL11) is located in the middle and low trapezius, rhomboid muscles, and serratus posterior superior. In addition, the Tianzhu (天柱 BL10) is located in the semispinalis capitis, which is deeply rooted in the trapezius[11]. Acupuncture treatment is performed on the local point to relieve tension of the trapezius and sternocleidomastoid muscles where trigger points are frequently generated.

Hua-Tuo-Jia-Ji-Xue (華佗夾脊穴) was used in 5

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studies. It belongs to *Gyeongoe gihyeol* (經外奇穴), and is between the GV and BL meridians[23]. The post median branch of the spinal nerve passes through the intervertebral foramen and into the multifidus muscle. It stimulates the nerve root and the multifidus muscle through the Hua-Tuo-Jia-Ji-Xue needle. The multifidus muscle plays an important role in maintaining the stability of the vertebrae. Unlike other muscles, it is controlled by a single nerve. As stimulation of the acupoint can relieve tension and atrophy of the multifidus muscle and nerve roots, this acupoint is thought to have been used to treat cervical pain and dysfunction.

In 13 studies, the patient was referred for treatment of the complaint. Four studies focused on muscle stimulation to relieve muscle tension. The *A-shi* point (阿是穴) was selected as the site for treatment as the patient complained of pain; it is based on the treatment site is decided by the pain complaint area (以痛爲俞). You[26] et al. reported that the treatment point of the meridian sinew (經筋) is the *A-shi* point; the treatment point of fascia syndrome is the trigger point, and the *A-shi* point and trigger point are related to the tender point. Therefore, it is thought that acupuncture stimulation of the *A-shi* point and trigger point relieves muscle tension and is effective for pain relief.

The local point directly contributes to the relaxation of the muscles, ligaments, and soft tissues in the pain area as well as the meridian and collateral (經絡) meaning.

Houxi (後谿 SI3), Quchi (曲池 LI11), Hoku (合谷 LI4), Zhongzhu (中渚 TE3) were used in studies of distant points. The SI, LI, and TE meridians descend along the neck and shoulders to the arms. In the SI meridian, Houxi is referred to '通于督脈' and it belongs to a stream point (輸穴) in five transport points (五輸穴). Zhongzhu also belongs to the stream point and facilitates qi-blood (氣血) operation through Joki (調氣) to control pain in body, according to the theory of '不通則痛, 通則不痛'[27]. The acupoint Siguan (四關), from the combination of Hoku and Taichong (太衝 LR3), is an acupoint used in various clinical settings for the treatment of neck pain. In ≪Zhenjiudacheng≫, it is said '手連眉肩尺痛難忍, 合谷針時要太種', and it is also used to treat neck pain (項强證)[28]. Quchi stated that ≪Sipsagyeongbalhwi≫ had a therapeutic effect on throat pain (咽喉腫痛), shoulder, upper arm, anterior arm pain (肩上腕前腕痛), wind stroke (中風), and hemiplegia (半身不隨)[29]. The ≪Chimgugapeulgyeong≫, is where the SI meridian vessel enters, and it has a primary effect on upper extremity diseases such as headache, hypertension, facial nerve paralysis, and elbow and wrist pain[30]. All of the acupoints commonly used for neck and upper extremity pain are on the meridian passing through the nape of the neck. Among the studies using distant points, 8 studies were selected that included the most commonly used acupoints, and they were found to be used in clinical practice.

Shunjing-quxue Needling (順經取穴) is a method used to identify the meridian and meridian muscle in the painful areas of the disease[31]. It was done in 6 studies. Recently, the 12-meridian muscle was anatomically recognized as more than a system of motor function; it has clinical applications as a qia (氣) passage in 3 yin and 3 yang (三陰三陽) of the body due to its distribution through the limbs (四肢) and trunk (體幹). In particular, as the importance of the fascia for smooth mobility of each tissue and organ system of the body emerged, the correlation between the fascia and the twelve-meridian muscle was studied[32]. The similarity between the muscles and fascia was found by Jung[33] et al, and Song[34] et al. Song[34] et al. reported the relationship between the meridian muscle and the myofascial meridian. The BL meridian muscle is the superficial back Line (SBL), the GB meridian muscle is the lateral line (LL), the stomach meridian (ST) muscle is the superficial front line(SFL); the spleen meridian (SP) muscle, kidney meridian (KI) muscle and liver meridian (LR) muscle are the deep front line (DFL),; the SI meridian muscle is the deep back line (DBAL),; the TE meridian muscle and LI meridian muscle are the superficial back arm line (SBAL); the lung

meridian (LU) is the deep front arm line (DFAL); the pericardium meridian (PC) muscle and heart meridian (HT) muscle are similar to the superficial front arm line (SFAL).

Thus, Shunjing-quxue needling, which identifies the meridian based on the site of pain is not merely for meridian identification, but actually anatomically relieves the tension of the upper myofascial meridians and is thought to reduce neck pain. Distant points such as Houxi (後谿 SI3), Quchi (曲池 LI11), and Zhongzhu (中渚 TE3) can also be used in Shunjing-quxue needling.

Jiejing-quxue needling (接經取穴) was applied in 5 studies. Kim[35] et al, reported that it was based on the Jiejing-quxue (接經) theory that meridians of the hand and of the foot form a mutual relationship (相互傳注關係), Houxi (後谿 SI3) of the SI meridian and connected with Governor Vessel (GV)(通手督) is first selected, and then Shenmai (申脈 BL62) of the BL meridian is selected because it is connected with Jiejing-quxue (接經). In addition, Yanglingquan (陽陵泉 GB34) of the GB meridian connecting with the TE meridian can be taken first and Zhongzhu (中渚 TE3) of the TE meridian. All 5 studies selected acupoint according to Jiejing-quxue Needling (接經取穴) theory of Kim[35], and select the acupuncture the unaffected (健側取穴) reported that there was a valid effect. Both Shunjing-quxue and Jiejing-quxue Needling were effective, but it was difficult to distinguish between and compare the 2 methods.

Dong-Si Acupuncture Treatment (董氏鍼法) and *Saamchimbeop* (舍岩鍼法) were used in 2 studies. *Dong-Si* Acupuncture Treatment consists of 740 acupoints. It is relatively simple to select acupoints and does not require manipulation and different of the 14 meridian acupoints. However, it contains the principle of Qi-Blood (氣血) operation and five phases (五行) treatment. During treatment, one should first take the acupoint located farthest from the lesion, then check the patient's De-qi (得氣) sensation using the twirling method (捻轉) and the method of moving in and out (提揷); finally, the lesion site should be massaged or moved freely as it helps qi communicate. Finally, the diseases are easily cured using the natural resistance and relative equilibrium of the body[36].

The acupoints of *Dong-Si* acupuncture treatment used in 2 studies were Zhongzi (重子), Zhongxian (重仙), Zhengjin (正筋), Zhengzong (正宗), Jianzhong (肩中), Linggu (靈骨), Dabai (大白), Shangbai (上白), Guci (骨刺), and Feixinsanxue (肺心); they are acupoints commonly used for stiff neck (落枕) and neck pain (頸項痛). In a study by Lee[37] et al, patients with chronic neck pain were the primary study group, and therapies in most patients diagnosed with cervical HIVD by radiographic findings were effective from 2 to 4 weeks after the treatment. Han[38] et al, reported that 1 to 2 treatments were effective in patients in the acute phase of stiff neck. Domestically, it was reported to be effective for various diseases such as shoulder pain[39], low back pain[40], knee pain[41], rehabilitation treatment of stroke patients[42] , facial spasm[43] and dizziness[44], so it can be an effective treatment. However, when *Dong-Si* Acupuncture Treatment was performed in conjunction with exercise therapy, incorrect acupoint selection and exercise therapy increased pain, which could have been caused by the curvature of the acupuncture[45]. Therefore, it is not widely used.

Two studies treated neck pain using *Saamchimbeop* (舍岩鍼法). Both studies used acupoint *Bangkwangjungkyuk* (膀胱正格), *Sojangjungkyuk* (小腸正格) and *Damjeonggyeok* (膽正格), and were classified according to the patient's symptoms. Neck pain when inclining the head was seen as a BL muscle abnormality. Neck pain on lateroflexion or rotation was seen as an SI meridian muscle abnormality. GB meridian muscle diagnosis was based on complaints of heavy shoulder crushing due to passing through the posterolateral aspect of the neck and upper trapeze. The treatment was performed on the *Bangkwangjungkyuk* in the BL meridian muscle, *Sojangjungkyuk* in the SI meridian muscle, and *Damjeonggyeok* in the GB meridian muscle. Other manipulations were not performed together. Of the 2 studies, Kim[46] et al, reported a significant effect on functional recovery

in the case of *Saamchimbeop*, but showed no effect on pain improvement or patient satisfaction.

In a comparison of local and distant points, Lee[11] et al, reported that distant point acupuncture treatment was more effective than local point. Park[10] et al, reported that treatment with distant and local points had a better therapeutic effect than treatment with local points alone. Kim[9] et al, showed that treatment of distant acupoints was effective for improvement of function, but local acupoint treatment was more effective than use of distant acupoints and the difference was statistically significant. In the study group, Lee[11] et al, and Park[10] et al, studied both acute neck pain and soft tissue injuries without imaging abnormalities and neurologic abnormalities. Kim[9] et al, studied patients with chronic neck pain lasting more than 4 weeks. These findings suggest that distant points are more effective in patients with neck pain caused by soft tissue damage without structural abnormality, but it is more effective to use local points than distant points for chronic neck pain. In chronic neck pain, the early stage of soft tissue damage is not recovered, and structural problems such as trigger point, adhesion, and scarring of the cervical muscle occur. It is thought that there was a limit to using only distant points. However, in the above 3 studies, distant points were not used equally and manipulations were not unified after acupuncture treatment. Thus, it was difficult to accurately compare the studies.

In the above studies, local and distant acupoints showed significant therapeutic effects. In most studies, either local and distant acupoints were used together, or only local acupoints were used; studies using only distant acupoints were rare. This may reflect the psychological satisfaction that local acupoints directly treated patients' pain at the injured area. Chiang[47] et al, Bae[48] et al. reported that acupuncture and chuna therapy, which directly stimulate the lesion, were the most satisfactory among oriental medicine treatments. This is one of the reasons why few studies used distant points.

When examining pharmacopuncture, all 35 pharmacopuncture studies used local points; 3 studies used local and distant points together. Trigger point and *A-shi* points were selected as the pharmacopuncture injection sites in 16 studies, the *hyeopcheock* (夾脊) point was used in 7 studies, and acupoint in the neck was used in 13 studies, In 3 studies, pharmacopuncture was performed around the spinous processes and facet joints of imaging-confirmed lesions.

The position of the *hyeopcheock* point is widely recognized from 0.3 Cun (寸) to 1 Cun (寸) on both sides of the depression under the spinal spinous processes, but it is generally considered to be approximately 0.5 Cun[49]. The cervical facet joints meet with the head at an angle of 45 degrees in an area the width of 2 fingers at the base of the spinous processes[50]. The *hyeopcheock* point is anatomically close to the facet joint. In studies using *hyeopcheock* points, we found that the C5-6 and C6-7 levels of cervical HIVD were applied as a major site and were based on anatomic lesions. Therefore, the acupoint used for pharmacopuncture treatment was based on the tender site and radiologic lesion site.

Pharmacopuncture is applied using the local acupoints, and stimulates the acupuncture point and meridian of the medical herbs qi and flavor (氣味) directly at the lesion; it also applies biochemical pharmacological action to treat the lesion with anti-inflammatory and analgesic compounds. In the study by Yu[51] et al, Bovis Calculus and Fel Ursi pharmacopuncture were used at the distant points of Quchi (曲池 LI11) and Hoku (合谷 LI4) with the local point. In the case above, upper limb muscle weakness and upper extremity pain were due to cervical HIVD. Therefore, it seems to have been used as a local rather than a distant acupoint.

Among the pharmacopuncture methods used, BV pharmacopuncture was most commonly used in 16 studies, *Hwangryunhaedoktang* pharmacopuncture in 7, *ShinBaro* pharmacopuncture in 4, Carthmi-Flos pharmacopuncture in 4, *Jungsongouhyul* pharmacopuncture in 2, and Bovis Calculus and Fel Ursi pharmacopuncture (BU), Scolopendrid

aquacupuncture, and muscle relaxation pharmacopuncture in 1 each. Most used anti-inflammatory, antinociceptive, hemotostasis-based pharmacopuncture.

Among the 16 patients who underwent BV pharmacopuncture, 10 cases of structural abnormality in radiologic examination were included; there were 6 cases of acute neck pain patients who had only soft tissue damage without mentioning radiographic abnormalities. *Hwangryunhaedoktang* Pharmacopuncture was used in 4 of 7 studies for acute nuchal pain due to soft tissue injury, 2 for cervical HIVD, and 1 for chronic nuchal pain. *Carthmi-Flos* pharmacopuncture was used in 2 studies for acute nuchal pain due to soft tissue injury. One study consisted of 20 patients with nuchal pain; 17 patients had acute nuchal pain. One case was used for chronic nuchal pain in menopausal women. *ShinBaro* Pharmacopuncture, was used in 4 studies of patients diagnosed with cervical HIVD; 2 of those were for acute nuchal pain. *Jungsongouhyul* pharmacopuncture was used for acute nuchal pain. All studies using pharmacopuncture were found to be valid; *Jungsongouhyul*, *Hwangryunhaedoktang*, *ShinBaro*, and *Carthmi-Flos* pharmacopunctures tended to be used for acute nuchal pain, and BV pharmacopuncture tended to be used for chronic pain or advanced cervical HIVD.

In a comparison of pharmacopuncture studies, In the study of Lee[13] et al, found *Hwangryunhaedoktang* and BV pharmacopuncture to be superior to *Hwangryunhaedoktang* pharmacopuncture alone for acute nuchal pain. Kim[15] et al, compared the treatment efficacy between *ShinBaro* pharmacopuncture and BV pharmacopuncture and reported that *ShinBaro* pharmacopuncture predominated in treatment of acute nuchal pain. It is due to the pattern/syndrome of qi stagnation and blood stasis (氣滯血瘀) caused by external contraction (外感), bruise (打撲), or blood stasis (瘀血) in the acute phase of nuchal pain. *Jungsongouhyul* and *ShinBaro* pharmacopuncture are considered more appropriate treatments to relieve pain and blood stasis by resolution of static blood (消散瘀血), relaxation of sinews and communication with the meridian (舒筋通絡), and improvement of joints (消利關節)[52]. *Hwangryunhaedoktang* Pharmacopuncture is a heat-clearing and detoxicating (清熱解毒) action primarily suitable for diseases of fire (火)[53]. Therefore, it seems that the treatment effect is obtained by resolving (消散) stagnant qi transforming into fire (氣鬱化火) caused by blood stasis and qi movement stagnation. In the case of BV pharmacopuncture, Park[14] et al, compared *Hwangryunhaedoktang* pharmacopuncture and BV pharmacopuncture; there was no significant difference between the 2 groups in the improvement of NRS (Neck Disability Index) and NDI (Numeric Rating Scale). However, in the spurling test, a physical examination, *Bee Venom* (BV) Pharmacopuncture was reported to be more prevalent. In addition, Kang[8] et al, reported no significant difference in the acute phase of pain improvement compared to the BV pharmacopuncture and acupuncture treatment groups in cervical HIVD. After 10 days or more, the rate of improvement was significantly higher in the BV pharmacopuncture, and the Spurling test was also improved in BV pharmacopuncture. Kim[15] et al, reported that BV pharmacopuncture was more effective than *ShinBaro* pharmacopuncture for relief of post-acute pain. The chronic period of nuchal pain is thought to be caused by kidney deficiency and detriment (腎虛損) and dual deficiency of qi and blood (氣血兩虛), so tonifying the liver-kidney (補肝腎) and nourishing the muscle vein (濡養筋脈) are the basic principles for treatment[46]. The effect of tonifying essential qi (補益精氣), tonifying and nourishing the kidney (補腎壯養), activating the blood and eliminating static blood (活血去瘀), and eliminating wind and dampness (去風濕) of BV pharmacopuncture seem to be more suitable for chronic nuchal pain. In addition, when BV pharmacopuncture is injected into the treatment site, it induces warmth and redness for 1-2 days in the treatment area. As a result, a physical stimulus is applied to the lesion with an effect similar to that

of moxibustion and cupping stimulation to remove blood stasis through activated blood (活血)[54]. Considering the improvement in pain after the acute phase, as well as the improvement in the Spurling test results, it seems that there is a significant effect on recovery of nerve compression due to structural abnormalities.

In this study, it was found that filiform needles and pharmacopuncture were widely used for treatment of nuchal pain and cervical HIVD in Korea, and the effect of acupuncture treatment and trends in treatment methods were identified. However, as only Internet-based databases were searched, our results did not include domestic studies that could not be found in Internet databases. In addition, this analysis described the contents of the acupuncture treatment only, not the qualitative evaluation of each study analyzed, and it is the limit that the effect claimed in each study can not be evaluated through this study. Finally this analysis only included domestic acupuncture treatment of nuchal pain and cervical HIVD. It did not include related studies in overseas journals. Related overseas academic research should be included in future studies.

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