# Effectiveness of electroacupuncture combined with cervical spine traction in patients with cervical brachial syndrome due to cervical disc herniation

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**ABSTRACT**

***Objectives:*** This study aimed to describe the clinical and paraclinical characteristics of patients diagnosed with cervicobrachial syndrome due to cervical disc herniation and treated at Hai Phong Traditional Medicine Hospital between 2024 and 2025, as well as to evaluate the therapeutic efficacy of electroacupuncture combined with cervical spinal traction.Subjectsand ***Methods:*** This case series study involved 60 patients diagnosed with cervicobrachial syndrome due to cervical disc herniation, treated at Hai Phong Traditional Medicine Hospital from November 2024 to May 2025. ***Main Findings:*** After 15 days of treatment: VAS pain score decreased from 5.83 ± 0.79 to 2.93 ± 0.66. Range of motion limitation score decreased from 11.15 ± 3.58 to 4.87 ± 1.70. NDI score decreased from 19.58 ± 5.08 to 8.12 ± 3.76. Conclusion: EA combined with cervical traction is effective in treating cervicobrachial syndrome due to disc herniation.

***Keywords:*** Electroacupuncture, cervical spinal traction, cervicobrachial syndrome, disc herniation.

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## INTRODUCTION

Cervicobrachial syndrome encompasses a group of symptoms caused by cervical spine pathologies, primarily involving dysfunction of the nerve roots or spinal cord without inflammatory origins [1]. Clinically, it presents with pain in the neck, shoulder, and arm, accompanied by sensory and motor disturbances. The incidence is increasing due to aging populations, sedentary lifestyles, and prolonged poor posture.

Cervical disc herniation accounts for 20–25% of cases, second only to cervical spondylosis [1]. According to the Rochester study (1976–1990), the annual incidence was 107.3 per 100,000 men and 63.5 per 100,000 women, with the highest prevalence in the 50–54 age group [2]. In Vietnam, the annual incidence is approximately 1.79 per 1,000 individuals [3].

In traditional medicine, the condition is classified under the “Bi syndrome” or "painful obstruction" and attributed to pathogenic wind, cold, and dampness invading the body and causing stagnation of Qi and blood. EA is known to relieve pain, enhance nerve conduction, and regulate the flow of Qi and blood. Mechanical cervical spinal traction reduces intervertebral disc pressure and alleviates nerve root compression. At Hai Phong Traditional Medicine Hospital, the combination of EA and mechanical traction has been practically implemented with promising preliminary results. However, there is a lack of systematic evaluation.

Therefore, this study aims to describe the clinical and paraclinical features and assess

the therapeutic outcomes of combining EA and mechanical cervical traction in patients with cervicobrachial syndrome due to cervical disc herniation at Hai Phong Traditional Medicine Hospital during the 2024–2025 period.

The study is expected to provide clinical evidence of treatment efficacy, contribute to the standardization of treatment protocols, and support the expansion of integrated traditional and modern medical treatment models.

## SUBJECT AND METHOD

**Study Subjects:**

The study included 60 patients diagnosed with cervicobrachial syndrome due to cervical disc herniation, treated at Hai Phong Traditional Medicine Hospital.

*Inclusion criteria:* Patients over 18 years of age, regardless of gender or occupation, diagnosed with cervicobrachial syndrome due to cervical disc herniation, confirmed by clinical symptoms and paraclinical findings through MRI, based on the "Guidelines for Diagnosis and Treatment in Traditional Medicine, Integrated with Modern Medicine" (2020) issued by the Ministry of Health [4]. Patients voluntarily participated in the study and adhered to the treatment regimen. Patients were prescribed treatment with electroacupuncture combined with mechanical cervical spinal traction.

*Exclusion criteria:* Patients with cervicobrachial pain associated with chronic conditions such as tuberculosis, heart failure, liver failure, renal failure, HIV/AIDS; acute infections such as sepsis, pneumonia, or skin infections in the cervical-shoulder-arm region; patients with psychiatric disorders, intellectual disabilities, or speech disorders; those who refused to participate in the study or did not complete the 15-day treatment course; patients with severe osteoporosis, cervical or cerebral atherosclerosis; or those indicated for surgical intervention.

**Study Setting and Duration**

The study was conducted at Hai Phong Traditional Medicine Hospital from November 2024 to May 2025.

**Study Design**

Study type: Descriptive case series.

**Sample size:** 60 patients.

**Research Instruments**

Cervical traction device and electroacupuncture machine.

**Variables/Indicators**

Clinical characteristics: Age, gender, occupation, disease duration, syndrome differentiation according to Traditional Medicine.

Treatment outcomes after 15 days: Visual Analogue Scale (VAS) for pain, range of motion, and Neck Disability Index (NDI).

**Data Collection Tools and Procedures**

*Tools:* A research case record form designed based on conventional and Traditional Medicine medical records.

*Procedures:* Patient interview, clinical examination, four-diagnostic method assessment (inspection, auscultation/olfaction, inquiry, palpation), and recording of paraclinical indices. All data were collected without interfering with the treatment process.

**Data Management and Analysis**

Data were cleaned and entered using Microsoft Excel.

Statistical analysis was performed using SPSS version 26.0.

**Research Ethics**

This study was approved by the Scientific Committee of the Faculty of Traditional Medicine, Hai Phong University of Medicine and Pharmacy.

Participants voluntarily consented to take part in the study.

The research activities did not interfere with or delay the patients' treatment process.
The study was conducted solely for scientific purposes and had no other objectives.
All collected data were accurate, objective, and patient information was kept confidential.

## RESULTS

### Clinical Characteristics

*Age and Gender*

***Table 3.1.*** *Age distribution of study participants*

| Characteristics | Frequency(n = 60) | Percentage (%) |
|---|---|---|
| < 40 years | 3 | 5 |
| 40 – 49 years | 15 | 25 |
| 50 – 59 years | 15 | 25 |
| ≥ 60 years | 27 | 45 |
| **Total** | **60** | **100** |
| **Mean age ($\overline{X}$ ± SD)** | **57.47 ± 11,1** | |

The average age of the study population was 57.47 ± 11.1 years. The group aged 60 years and older accounted for the highest proportion, at 45% (27 patients).

***Table 3.2.*** *Gender distribution*

| Gender | Frequency | Percentage (%) |
|---|---|---|
| **Male** | 20 | 33 |
| **Female** | 40 | 67 |

The participation rate of female patients was higher than that of males. The female-to-male ratio was 40 to 20 patients, corresponding to 67% female and 33% male.

*Occupational Distribution*

***Table 3.3.*** *Occupational categories*

| Occupational | Frequency | Percentage (%) |
|---|---|---|
| Manual labor | 22 | 36.67 |
| Light labor | 38 | 63.33 |

Patients with cervicobrachial syndrome were distributed across occupational groups, with 38 patients (63.33%) engaged in light labor and 22 patients (36.67%) in heavy labor.

*Disease Duration*

***Table 3.4.*** *Distribution by disease duration*

| Duration | Frequency | Percentage (%) |
|---|---|---|
| < 1 month | 14 | 23 |
| 1 – 6 months | 16 | 27 |
| > 6 months | 30 | 50 |

The group of patients with disease duration longer than 6 months accounted for the highest proportion, at 50%.

*Traditional Medicine Pattern Differentiation*

***Table 3.5.*** *Pattern classification (Traditional Medicine)*

| Pattern | Frequency | Percentage (%) |
|---|---|---|
| Blood stasis | 8 | 13 |
| Liver-Kidney deficiency with Blood stasis | 52 | 87 |

The proportion of patients diagnosed with the syndrome pattern of Liver–Kidney deficiency combined with Blood stasis was higher (87%) compared to the Blood stasis pattern alone (13%).

**Treatment Outcomes after 15 Days**

*Change in Pain Level (VAS)*

The mean VAS score decreased from 5.83 ± 0.79 before treatment to 2.93 ± 0.66 after 15 days. This change was statistically significant ($p < 0.05$).

***Table 3.6.*** *VAS pain score distribution*

| VAS Score | Before treatment | | After treatment | | p |
|---|---|---|---|---|---|
| | Frequency (n = 60) | Percentage (%) | Frequency (n = 60) | Percentage (%) | |
| No pain | 0 | 0 | 0 | 0 | |
| Mild pain | 0 | 0 | **51** | **85** | |
| Moderate | **46** | **76.67** | 9 | 15 | < 0,05 |
| Severe | 14 | 13,33 | 0 | 0 | |
| Total | 60 | 100 | 60 | 100 | |
| $\overline{X}$ ± SD | 5.83 ± 0.79 | | 2.93 ± 0.66 | | |

Before treatment, most patients (76.67%) reported moderate pain. After treatment, the highest proportion of patients (85%, n = 51) reported mild pain. This difference was statistically significant ($p < 0.05$).

*Change in Cervical Spine Range of Motion (ROM)*

The mean ROM restriction score decreased from 11.15 ± 3.58 to 4.87 ± 1.70 after treatment ($p < 0.05$).

***Table 3.7.*** *ROM restriction scores*

| **Restriction level** | **Before treatment** | | **After treatment** | | **P** |
|---|---|---|---|---|---|
| | **Frequency (n = 60)** | **Percentage (n = 60)** | **Frequency (n = 60)** | **Percentage (%)** | |
| None | 0 | 0 | 0 | 0 | < 0,05 |
| Mild | 0 | 0 | **53** | **88.33** | |
| Moderate | **46** | **76.67** | 7 | 11.67 | |
| Severe | 10 | 16.67 | 0 | 0 | |
| Very severe | 4 | 6.67 | 0 | 0 | |
| Total | 60 | 100 | 60 | 100 | |
| $\overline{X}$ ± SD | 11.15 ± 3.58 | | 4.87 ± 1.70 | | |

Before treatment, most patients (76.67%) exhibited moderate limitation in cervical spine range of motion. After treatment, the majority of patients (88.33%, n = 53) exhibited either no limitation or only mild limitation. This difference was statistically significant ($p < 0.05$).

*Change in Daily Living Function (NDI)*

The mean Neck Disability Index (NDI) score decreased from 19.58 ± 5.08 to 8.12 ± 3.76 post-treatment ($p < 0.05$).

***Table 3.8.*** *NDI score distribution*

| **Level of impact** | **Before treatment** | | **Before treatment** | | **p** |
|---|---|---|---|---|---|
| | **Frequency (n = 60)** | **Percentage (n = 60)** | **Frequency (n = 60)** | **Percentage (%)** | |
| No disability | 0 | 0 | 7 | 11.67 | < 0,05 |
| Mild | 8 | 13,33 | **44** | **73.33** | |
| Moderare | **36** | **60** | 9 | 15 | |
| Severe | 16 | 26.67 | 0 | 0 | |
| Very severe | 0 | 0 | 0 | 0 | |
| Total | 60 | 100 | 60 | 100 | |
| $\overline{X}$ ± SD | 19.58 ± 5,08 | | 8.12 ± 3,76 | | |

Before treatment, the majority of patients (60%) experienced moderate interference with their daily activities. After treatment, the highest proportion of patients (73.33%, n = 44) reported only mild limitations. This difference was statistically significant ($p < 0.05$).

## DISCUSSION

### Clinical Characteristics of the Study Population

*Age Distribution*

The present study demonstrated that individuals aged 60 years and older constituted the largest proportion (45%) of

the study cohort, followed by the 50–59 and 40–49 age groups (each 25%). Only 5% of patients were under 40 years. The age range was 32–84 years, with a mean of 57.47 ± 11.1 years. This age-related distribution reflects the progressive degenerative changes in the cervical spine commonly associated with advancing age. Similar findings were reported by Trinh Thi Lua (2021), who observed a mean age of 59.3 ± 12.6 years, with 46.7% of participants aged 60 and above [5]. The predominance of older individuals may be attributed to cumulative biomechanical stress and repetitive microtrauma over time, increasing the risk for cervical disc pathology.

*Gender Distribution*

Female patients accounted for a significantly higher proportion (67%) compared to males (33%), consistent with previous research by Dang Truc Quynh (2016), which reported similar female predominance at 66.7% [6]. This gender disparity is further supported by data from the Global Burden of Disease (GBD) 2017, which highlighted a higher incidence of neck pain among women [7]. Contributing factors may include hormonal influences, anatomical differences, and occupational patterns such as sedentary desk jobs, which are more prevalent among women and predispose to musculoskeletal dysfunction.

*Occupational Distribution*

Most patients were engaged in light labor (63.33%), with the remainder involved in heavy labor (36.67%). This distribution mirrors findings by Nguyen Hoai Linh (2016), where 76.7% of patients held sedentary occupations, such as office work or retirement [8]. Light occupational activity, characterized by prolonged static postures and reduced mobility, is known to increase the risk of cervical spine microtrauma and chronic strain [8].

*Disease Duration*

Half of the study participants (50%) had symptom durations exceeding 6 months, while 27% reported symptom durations of 1–6 months and 23% under 1 month. These findings align with Nguyen Thi Thanh Tu (2022), who also observed that 50% of patients experienced symptoms for more than 6 months [9]. The chronicity of symptoms in many cases may be attributed to delayed medical consultation, self-medication, or inadequate early intervention, which can prolong the disease course and negatively affect treatment outcomes.

*Traditional Medicine Pattern Differentiation*

According to Traditional Medicine classification, the Liver–Kidney deficiency pattern combined with blood stasis was predominant (87%), whereas the isolated blood stasis pattern accounted for only 13%. This distribution is comparable to the findings of Le Thi Hoai Anh (2014), who reported 66.7% and 33.3%, respectively [10]. These results underscore the systemic and degenerative nature of the disease in the elderly, where dysfunction of the liver and kidneys, critical organs in traditional medicine for musculoskeletal health, contributes to chronic pathological processes.

**Treatment Outcomes**

*Pain Reduction (VAS Score)*

Before treatment, most patients experienced moderate (76.67%) or severe pain (23.33%), with a mean VAS score of 5.83 ± 0.79. Following 15 days of combined EA and mechanical cervical traction, pain intensity significantly decreased, with 85% reporting mild pain and a mean VAS score of 2.93 ± 0.66 ($p < 0.05$). These findings are consistent

with those of Nguyen Thi Thanh Tu, who noted a reduction from 5.5 ± 1.38 to 2.7 ± 0.95 [9]. The significant reduction in pain levels suggests that the combination therapy offers effective and rapid analgesia.

*Improvement in Cervical Range of Motion*

The pre-treatment assessment showed that 76.67% of patients had moderate limitation in cervical range of motion, with a mean restriction score of 11.15 ± 3.58. After treatment, 88.33% demonstrated only mild restriction, and the mean score improved to 4.87 ± 1.70 ($p < 0.05$). These improvements were comparable to those in Tu's study, where range of motion scores improved from 11.7 ± 3.3 to 1.87 ± 1.83 [9]. This suggests that the intervention effectively alleviated nerve compression and restored cervical mobility.

*Improvement in Daily Living Activities (NDI Score)*

Neck Disability Index (NDI) scores improved markedly, decreasing from 19.58 ± 5.08 pre-treatment to 8.12 ± 3.76 post-treatment. After therapy, 73.33% of patients experienced only mild functional impairment. These results are in line with those of Vu Ngoc Vuong (2022), where NDI scores declined from 14.61 ± 4.85 to 8.43 ± 3.44 [11]. This demonstrates that beyond pain relief, the combined therapy significantly enhanced patients' functional status and quality of life in daily activities such as sleeping, working, reading, and recreation.

## CONCLUSION

A treatment protocol combining electroacupuncture and cervical spinal traction demonstrates significant therapeutic efficacy.

After 15 days of intervention, patients showed a marked improvement in pain levels (measured by the Visual Analog Scale, VAS), cervical range of motion, and functional capacity (measured by the Neck Disability Index). The findings suggest the potential of integrating traditional and modern treatment modalities to enhance outcomes in patients with cervical spine-related neurological conditions.

## RECOMMENDATIONS

Widespread Implementation of a Combined Electroacupuncture and Cervical Traction Protocol is Recommended.

The treatment results for cervicobrachial syndrome caused by cervical disc herniation using a combination of electroacupuncture and mechanical cervical traction have demonstrated clear clinical efficacy, significantly alleviating symptoms and improving patients' quality of life. Therefore, early and widespread adoption of this protocol at primary healthcare levels is recommended to enhance treatment effectiveness, reduce disease burden, and lower patient healthcare costs. Furthermore, long-term studies are essential to further assess the protocol's preventive capacity and its role in reducing recurrence, thereby enabling refinement, standardization, and optimization of the clinical regimen.

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**Conflicts of Interest**

There are no financial or other relationships that might lead to a conflict of interest for all authors.

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