# Clinical efficacy of glucosamine hydrochloride tablets in the treatment of cervical spondylosis

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**Abstract**: The aim of the stuy was to observe and analyze the effect of glucosamine hydrochloride tablets on patients with cervical spondylosis. This study was conducted on 130 patients diagnosed with cervical spondylosis who were treated in our hospital. The time period was from June 2015 to December 2017. The subjects were randomly divided into a reference group treated with cervical vertebra exercises and cervical occipital belt traction therapy and the study group was further treated with glucosamine hydrochloride tablets. The treatment efficacy of both groups was observed. Comparison of the overall treatment efficiency of patients showed that compared with the reference group, the study group has more significant advantages, $P<0.05$; comparison of the overall patient satisfaction rate showed that the study group was also superior to the reference group, $P<0.05$; In addition, statistical analysis of adverse reactions showed no statistically significant difference, $P<0.05$. The treatment of glucosamine hydrochloride tablets in patients with cervical spondylosis can achieve ideal results, improve the overall treatment efficiency, and thus, has important application significance.

**Keywords**: Glucosamine hydrochloride tablets, cervical spondylosis, efficacy.

## INTRODUCTION

The progress of science and technology has led to the emergence of a variety of electronic products. Many people have become “smart phone addicts” (Yang *et al*., 2017. Not only young people are in this group, even older people have joined the ranks. As a result, the incidence of cervical spondylosis is constantly increasing, causing a serious impact on people's health (Chen and Ou, 2017; Liu 2017; Ma 2017). If the degree of illness is relatively serious, it may even lead to inability to live and work normally and limited activities, which require targeted treatment.

Cervical spondylosis, also known as cervical spine syndrome (fig. 1), is a general term for cervical osteoarthritis, hyperplastic cervical spondylitis, cervical nerve root syndrome and cervical disc extrusion, which is a disorder based on degenerative pathological changes (Muheremu *et al*., 2016; Elsayed 2017). The main reason is that long-term cervical strain, osteoproliferation, or protruded intervertebral disc, ligament thickening lead to cervical spinal cord, nerve root or vertebral artery compression, resulting in a series of dysfunctional clinical syndrome.

It is manifested as vertebral node instability, looseness; herniation or prolapse of nucleus pulposus; spur formation (fig. 2); ligament hypertrophy and secondary spinal stenosis, etc., which stimulate or suppress adjacent nerve root, spinal cord, vertebral artery, cervical sympathetic nerves and other tissues, causing a series of symptoms and signs (Shi *et al*., 2016; Mustafa *et al*., 2017). This study is to observe and analyze the clinical efficacy of glucosamine hydrochloride tablets in the treatment of cervical spondylosis.

## MATERIALS AND METHODS

This study was conducted on 130 patients diagnosed with cervical spondylosis who were treated in our hospital from June 2015 to December 2017. This paper has a rigorous structure, and the conclusion has been approved by relevant ethics and relevant departments. Definitive diagnosis was made on the patients by strictly following the relevant contents in “Diagnosis and Non-surgical Treatment of Cervical Spondylopathy” and combining the patients’ clinical manifestations, signs and medical history image findings. The inclusion criteria for patients were: neck activity-induced sudden dizziness or visual disturbances or cataplexy; imaging reports of degenerative changes such as disappearance of physiological curvature or hyperosteogeny. Exclusion criteria were: vertigo symptoms not caused by otogenic, ocular, exogenous and neurological functions; persons with mental disorders; those unwilling to join this study.

Among all the patients, there were 36 cases, 40 cases, 25 cases, 19 cases and 10 cases of nerve root type, spinal cord type, vertebral artery type, sympathetic nerve type and others, respectively. The patient's clinical symptoms included: upper limb numbness, dizziness and nausea.

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The patients and family members have signed the informed consent. The patients were randomly divided into the study group and the reference group, each with 65 patients. Where study group had 35 males and 30 females, ranging in age from 20 to 70 years, with an average of (55.8±3.2) years. The disease duration ranged from 1 to 12 years, with an average of (4.6±0.9) years. The reference group had 38 males and 27 females, ranging in age from 22 to 70 years, with an average of (56.4±3.5) years. The disease duration ranged from 1 year to 14 years, with an average of (5.0±1.1) years. Comparison of relevant data of the two groups showed comparability, P>0.05.

The study group and the reference group were treated with different treatments. The reference group was treated with routine cervical vertebra exercises and cervical occipital belt traction. The treatment was performed once a day, 1 hour per time. The study group was further treated with glucosamine hydrochloride tablets. They were administered twice a day after meals, 1 tablet of 0.75 mg per time. The duration of one treatment course was 4 weeks. Both groups were continuously treated for 8 weeks, and the effect was compared and observed (Zhang *et al*., 2017; Rashid *et al*., 2017).

***Observation indicators***

For the two groups of patients, the overall treatment efficiency was observed and counted. The evaluation of treatment efficiency is based on the relevant standards in the "Guiding Principles for the Clinical Study of New Chinese Medicines" (Wang Li and Li 2015), which is divided into three criteria, namely, markedly, effective and ineffective. Where, the markedly criteria is that after treatment, the patient's clinical symptoms and signs disappear completely, the neck position can be restored to a normal state, and the exercise is not subject to any restrictions; the effective criteria is that the clinical symptoms and signs have significant degree of improvement, the functional recovery of the neck activity is fine and the neck moves well; the criterion of invalidity is that there is no change after treatment and even the illness is aggravated. The patient's overall treatment satisfaction was counted, with 90-100 rated as very satisfied, 70-89 rated as satisfactory and 69 or less rated as unsatisfactory. The patients' adverse reactions were recorded.

## STATISTICAL ANALYSIS

The statistical analysis software used was SPSS 21.0. Where, the measurement data were expressed as means ± average (x±s), and t-test was used for comparison between groups; the count data was expressed using natural numbers (n) and percentages (%), and $X^2$ was used for comparison between groups. When P<0.05, there is statistical value.

## RESULTS

***Comparison of overall treatment efficacy between the two groups***

As shown in table 1 below, the overall treatment effect of the patients is compared. The results show that the study group treated with glucosamine hydrochloride tablets has obvious advantages than the reference group, P<0.05, with statistical significance.

**Fig. 1**: Cervical spondylosis (Picture source: Bai JB, Yu KL, Sun YN, Kong LD and Shen Y (2018). Prevalence of and risk factors for Modic change in patients with symptomatic cervical spondylosis: an observational study. (*Journal of Pain Research*, **12**(11): 780-786).

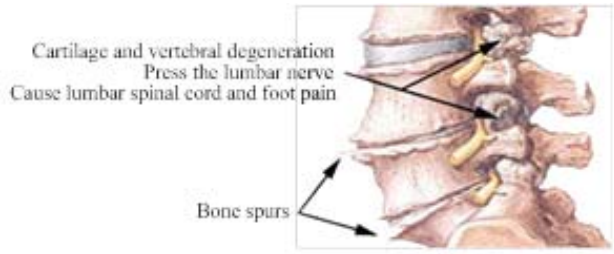


**Fig. 2**: Spur formation (Picture source: Wang ZZ, Li M and Li LL (2015). The efficacy and safety of Hulisan capsule combined with glucosamine hydrochloride tablets in the treatment of knee osteoarthritis (*China Medical Herald*, **12**(36): 129-132).

***Comparison of overall treatment satisfaction between the two groups***

As shown in table 2 below, the overall treatment satisfaction of the patients is compared. The results show that the study group has significantly higher satisfaction than the reference group, P<0.05.

***Comparison of incidence of adverse reactions in the two groups***

As shown in table 3 below, during the treatment period, there were 3 cases of adverse reactions in the study group and 4 cases in the reference group. There was no

**Table 1**: Comparison of overall treatment efficacy between the two groups [n(%)]

| Group | Case number | Markedly | Effective | Ineffective | Total effective rate |
|---|---|---|---|---|---|
| Study group | 65 | 35 | 28 | 3 | 62(95.38) |
| Reference group | 65 | 29 | 22 | 14 | 51(78.46) |
| $X^2$ | | | | | 10.32 |
| P | | | | | <0.05 |

**Table 2**: Comparison of overall treatment satisfaction between the two groups [n(%)]

| Group | Case number | Very satisfied | Satisfied | Not satisfied | Overall satisfaction |
|---|---|---|---|---|---|
| Study group | 65 | 40 | 23 | 2 | 63(96.92) |
| Reference group | 65 | 30 | 20 | 15 | 50(76.92) |
| $X^2$ | | | | | 7.48 |
| P | | | | | <0.05 |

**Table 3**: Comparison of incidence of adverse reactions in the two groups [n(%)]

| Group | Case number | Gastrointestinal discomfort | Nausea and vomiting | Fever | Incidence of adverse reactions |
|---|---|---|---|---|---|
| Study group | 65 | 1 | 2 | 0 | 3(4.62) |
| Reference group | 65 | 2 | 1 | 1 | 4(6.15) |
| X2 | | | | | 6.50 |
| P | | | | | <0.05 |

significant difference in the incidence of adverse reactions between the two groups, P>0.05, not statistically significant (Peng, *et al*., 2017; Alvi *et al*., 2017).

**Fig. 3**: Cervical spondylosis causes physiological pain (Picture source: Liu HB, Jing CY, Han P (2015). Clinical analysis of 48 cases of knee osteoarthritis treated with BoguHuoxue Recipe combined with glucosamine hydrochloride tablets. *Chinese Journal of Experimental Traditional Medical Formulae*, **21**(15): 164-167.

## DISCUSSION

Cervical spondylosis can be divided into: neck type of cervical spondylosis, nerve-root type of cervical spondylosis, cervical spondylotic myelopathy, vertebral artery type of cervical spondylosis, sympathetic type of cervical spondylosis, esophageal compressed type of cervical spondylosis (Xian *et al*., 2016; Barkat and Mahmood 2018). One of the basic pathological changes in cervical spondylosis is the retrogression of the intervertebral disc. Cervical disc has large range of motion and is vulnerable to excessive minor trauma and strain. After its degeneration, pressure resistance and pull resistance of cervical intervertebral disc decrease. Limited or extensive carina can occur, resulting in narrowing of the intervertebral disc space, articular process overlap, dislocation and smaller vertical diameter of intervertebral foramen. Cervical spondylosis is relatively common in middle-aged and older populations, but the disease tends to occur in younger generations (Liu *et al.*, 2015). There are many factors leading to cervical spondylosis, mainly involving chronic strains, prolonged local muscles, joint capsules, ligament injuries and trauma. Once cervical spondylosis arises, the patient will experience varying degrees of dizziness, headache, neck and shoulder pain, upper limb paralysis (fig. 3), which affects their normal life and work. Moreover, if it is not timely treated, it can easily cause spam of the lower extremities, inability to walk or even paralysis, which seriously affects physical and mental health of the patients (Bai *et al*., 2018).

There are many ways to treat cervical spondylosis, cervical vertebra exercise combined with cervical occipital belt traction is a relatively common application program. A large number of clinical practices show effectiveness of this program in actively improving patients' condition. With the deepening of the study, glucosamine hydrochloride tablets have also been used in a large number of treatments of cervical spondylosis, and the effect is good, as it can also significantly improve the patient's treatment effect. Glucosamine hydrochloride belongs to a natural amino monosaccharide, which is an important composition of human articular cartilage matrix and synovial proteoglycan, so it can promote good recovery of joint function (Savitr *et al*., 2014). The drug can stimulate chondrocytes to form proteoglycans containing normalpolyspecific structures, effectively improving the repair function of chondrocytes, while inhibiting some enzymes that cause damage to chondrocytes, such as collagenase and phospholipase (Ibrahim *et al.*, 2016; Akin *et al*., 2017). In addition, it can avoid the generation of superoxide radicals that damage the cells, and achieve the effects of repairing and rebuilding the cartilage matrix as quickly as possible, thereby greatly alleviating the problem of joint pain (Banerjee *et al.*, 2017; Esim *et al*., 2018).

The results of this study showed that, comparison of the overall treatment effect of the patients showed that the study group treated with glucosamine hydrochloride tablets has obvious advantages than the reference group, $P<0.05$, with statistical significance. Comparison of the patient's overall treatment satisfaction showed that the study group has significantly higher satisfaction than the reference group, $P<0.05$, statistically significant. In addition, statistical analysis of adverse reactions showed no statistically significant difference, $P<0.05$. It shows that the use of glucosamine hydrochloride has certain effectiveness in the treatment of patients with cervical spondylosis.

## CONCLUSION

In summary, the treatment of glucosamine hydrochloride tablets in patients with cervical spondylosis can achieve ideal results, improve overall treatment efficiency, and have higher safety and reliability. Therefore, it is worth large-scale promotions and applications.

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