Clinical Research

A randomized controlled clinical trial to assess the efficacy of Nasya in reducing the signs and symptoms of cervical spondylosis

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Abstract

This work was designed to assess the efficacy of Nasya in reducing the signs and symptoms of cervical spondylosis. The patients attending the O. P. D of Department of Kaya Chikitsa and Panchakarma, Government Ayurveda College Hospital, Thiruvananthapuram were enrolled and subjected to the treatment schedule. Total duration of treatment was 21 days. The schedule for the first 14 days was similar in both the groups. It included Rooksha Sveda for 7 days followed by Patra Pottali Sveda for 7 days. During this period, 90 ml Gandharvahastadi Kashaya twice and Guggulu Tiktaka Kashaya once were given internally. After this, in the Nasya group Nasya was done for 7 days with Dhanwantaram Tailam (21 times Aavartita), Mridu Paka in Madhyama Matra (8 Bindu). Along with this Guggulu Tiktaka Kashaya was given thrice. In the control group, Guggulu Tiktaka kashaya alone was given thrice daily. Assessments were done with regard to pain, tenderness, radiation of pain, numbness, range of movements and hand grip strength. These were done before treatment, before nasya, after treatment and after 1 month follow-up. The statistical hypothesis was tested using paired ‘t’ test and ‘Z’ test for proportion. The trial proved that conventional management along with Nasya was more efficacious than conventional management alone in reducing the signs and symptoms of cervical spondylosis.

Key words: Cervical spondylosis, Gandharvahastadi Kashaya, Guggulu Tiktaka Kashaya, Nasya

Introduction

The effects of aging become visible in all types of tissues in the body. Vertebral column which facilitates erect posture in man is no exception. Cervical spondylosis is a common health problem encountered in practice. People in the 4th and 5th decades of life suffer more from this degenerative condition.

Treatment is categorized under two main headings as Brimhana and Langhana. This division is broad and is purely based on the two-fold nature of diseases as Santarpanajanya and Apatarpanajanya.[1]

Degeneration is an implication of Apatarpana. Hence conditions like spondylosis occurring as a sign of degenerative changes in intervertebral joints and vertebrae need obviously nourishing or Brimhana therapies.

Nasya (Nasal medication) has been explored from time immemorial and is widely employed in Ayurveda. It is the only one therapeutic measure among Panchakarma which is instilled in to nostrils, which has a direct access to head.

Although Nasya has been generally categorized under Shodhana, by altering the medicine used, Brimhana effect can be obtained.[2] Here the attempt was to assess the efficacy of 21 times Aavartita Dhanwantaram Tailam when given as Brimhana Nasya along with conservative management compared to conservative management (Rooksha Sveda, Patra Pottali Sveda and internal use of Gandharvahastadi Kashaya and Guggulu Tiktaka Kashaya) alone in reducing the signs and symptoms of cervical spondylosis.

Materials and Methods

The study is randomized controlled clinical trial. Total 36 patients registered in the study. There was one dropout in study group and two dropouts in control group.

Population: The population comprises of patients diagnosed as Cervical Spondylosis coming under the inclusion criteria.
Patients: The Patients were selected from the OPD of Department of Kaya Chikitsa and Panchakarma, Govt. Ayurveda College Hospital, Thiruvananthapuram. Those diagnosed, based on clinical and radiological findings were selected for the study and admitted in the IP section. Patients in the study group were randomly distributed in Nasya group and control group by lottery method.

**Inclusion criteria**

Age: Between 20 and 60 yrs  
Sex: Both sexes  
Signs and Symptoms: Patients with signs and symptoms of cervical spondylosis with radiological changes suggestive of the disease.

**Exclusion criteria**

Age: Below 20 and above 60 yrs  
Sex: No discrimination  
The below conditions were also excluded from the study.  
1. IVDP of cervical spine  
2. Ankylosing spondylitis  
3. Vascular lesions and Neoplasms  
4. Nasal polyps  
5. Urdhvagata Raktapitta (bleeding through upper orifices of body)  
6. Navapeenasa (initial stage of rhinitis)  
7. Unwilling patients

**Duration of the study**

Course of treatment: 21 days and 1-month follow-up.

**Treatment schedule**

Patients both in the study and control group were subjected to conservative management mentioned above.

The conservative treatment schedule was applied in the following way.

Initially all the patients were subjected to Rooksha sveda for 7 days. After Rookshana, Patra Pottali Sveda was done for 7 days. During this period, internally Gandhuravahastadi Kashaya was given twice daily and Guggulu Tiktaka Kashaya (90 ml) once daily in empty stomach without any Anupana. After this, in the study group, Nasya was performed with Dhanvantaram Tailam for 7 days in Madhyama Matra. The Madhyama Matra of Taila is 8 Bindu, which becomes approximately 4 ml. The dose was scheduled as Madhyama Matra - 8 Bindu = 4 ml.

**Post-operative measures**

Dhoomapana and Kavala were performed.

**Assessment criteria**

Both subjective and objective parameters were considered for assessing the response.

**Pain**

The method used for pain assessment was Visual Analogous Scale (VAS).

**VAS**

A scale of 10 cm was drawn on a paper and the patient was instructed to mark against the reading relating to his or her pain severity before treatment, which was considered to be the initial pain scale reading.

Pain reading was graded as follows:

- 0: Nil  
- 1-3: Mild  
- 4-6: Moderate  
- 7 and above: Severe

**Tenderness**

Tenderness was graded as follows:

- Grade 0: No tenderness  
- Grade 1: The patient says the joint is tender  
- Grade 2: The patient winces with pain  
- Grade 3: The patient winces and withdraws the affected part  
- Grade 4: The patient does not allow the joint to be touched

Vertigo and radiation of pain were subjectively graded as yes, partial and nil. Presence and absence of numbness was also noted. Range of movements was assessed with the help of goniometer.

**Hand grip strength**

Grip strength was recorded with the help of an apparatus. The gripper apparatus helps in measuring the compressive stiffness and tensile strength of the hand.

The difference in the readings before and after treatment will show the improvement in the patient’s condition.

**Collection of data**

The patients were examined thoroughly and both subjective and objective parameters were recorded. Routine blood and urine examinations were done. The collected data were segregated under the following headings:

1. Data related to cervical spondylosis and its clinical findings.  
2. Data related to response to treatment.

Assessments were done before treatment, after treatment and after 1 month follow-up.
Data analysis
Data collected was rendered to Master sheet and tables were constructed. Statistical constants like Arithmetic mean, Standard deviation and percentage were computed. Necessary diagrams and charts were prepared, paired ‘t’ and ‘z’ test for proportion were done to assess the effectiveness of treatment.

Results

Pain
In Control group, the mean decrease of pain was found to be 1.3 (P<0.01). In Nasya group, mean decrease was 3.5. The difference was significant with P value <0.001. Before and after Nasya, a mean decrease of 2.8 was obtained. This was significant (P<0.001).

Tenderness
In Control group, the mean difference was 0.5, which was statistically significant (P<0.01). Nasya group, mean difference was 1.7, significant with P<0.001. Before and after Nasya, mean decrease was 1.5 which was significant (P<0.001).
In total the effectiveness of treatment in reducing tenderness was more significant in Nasya group.

Radiation of pain
In Control group, the mean difference of was 0.2, which is insignificant. Nasya group, the mean values of pain radiation showed a difference of 0.9 which was significant (P<0.001). Separate analysis of values before and after Nasya, also showed a mean difference of 0.8 with significance (P<0.001).

Numbness
In Nasya group, 15 patients had numbness before treatment. After treatment only 9 of them (60%) had vertigo vividly and three patients (75%) had partial vertigo before treatment. After treatment also the same status was maintained, with no difference in mean value.

Left lateral flexion
In Nasya group, a mean increase of 5 was observed by taking the values before and after treatment, the same difference was seen before and after Nasya, thus rendering the whole difference as the effect of Nasya. The result was significant. In control group, mean difference was 2 and P<0.01

Rotation to right
In Nasya group, there was a mean increase of 6.2 and statistical significance was noted. In the control group the difference was insignificant (P>0.05). In separate analysis before and after Nasya the result was significant (P<0.001).

Rotation to left
Mean increase in Nasya group was 5 and separate analysis before and after Nasya had a mean difference of 4.7. Both were significant (P<0.01). In the control group there was a mean difference of 1.3, P<0.05.

Hand grip strength
In study group, mean increase of right hand grip was found to be 15.7 before treatment to after treatment. This was significant (P<0.01). The mean values before and after Nasya showed mean increase of 10.6 this was significant at P<0.05.
In the control group also there was a mean difference of 4.3 and was significant at P<0.05. In left hand grip strength, control group showed a mean increase of 6.9 which was found to be significant with paired t (P<0.05). In Nasya group the results were insignificant (P>0.05).

Discussion
The prevalence of cervical spondylosis is increasing day by day because of sedentary work, keeping neck stiff, degeneration due to aging, injuries to the cervical spine, weight bearing, various professions involving more neck movements and excess usage of artificial food which contain chemicals that are harmful to the body.

Interpretation of changes in signs and symptoms
The exact mechanism of action of Nasya in reducing the signs and symptoms is obscure. Still a humble attempt to analyse the possible modes of action is made. Considering pain relief, patients in the study group had considerable relief of pain compared to that of control group. Analysis of the values on pain scale before and after Nasya proved specific efficacy of Nasya in reducing pain. Brimhana Nasya is Vatahara so as to reduce pain. On the other hand, Nasya gives stimulation to the brain through the olfactory pathway thus inducing the production of Neuro peptides which act as pain relievers. The Paka of the Taila used for Nasya is Mridu, which retains the water-soluble principles along with lipid soluble particles at an optimum level. Moreover Avaratana increases the concentration of fat soluble phytoconstituents. The peripheral processes of the olfactory cells respond to volatile, water soluble and lipid soluble odorless chemical substances. The drug used for Nasya is of Mridu Paka which maintains the water solubility for diffusing through the olfactory epithelium and lipid solubility for interacting with the lipids of the membranes of olfactory receptors. All these factors contribute well for the specific ability of Sneha Nasya in stimulating the brain through olfactory pathway.
pathway. In fact, structures of the Limbic system including Thalamus, Hypothalamus, Hippocampus, Amygdala and parts of the Basal ganglia are concentration areas for neuropeptides called nodal points. Nasya can stimulate areas like Amygdala in Limbic system, thus activating neuropeptide pathway.

In case of neck stiffness, Nasya relieved it considerably. The cause for neck stiffness is dehydration of intervertebral discs. Nasya with a nourishing drug can induce some nourishment to tissues by impregnating Kapha Bhavas and may reduce degeneration.

Most of the drugs in Dhanvantaram Tailam have Vatahara property and it contains groups of drugs like Dashamoola which have specific effect in Shopha and Shoola. This may be the reason for reduction in tenderness.

In cervical spondylosis, degenerative changes and osteophytosis occur which compress the nerve roots. This leads to radiculopathy and resultant radiation of pain. It is difficult to reverse these structural changes. So, complete relief cannot be expected in radiation of pain. Still, better results were obtained by Nasya. The exact mechanism is obscure but it is assumed that Nasya improves circulation and prevents degeneration up to some extent.

Brimhana Nasya alleviates vitiated Vata which is responsible for stiffness and movement restriction. This may be the reason for improvement of range of movements.

As far as vertigo is concerned, there was a mean decrease of 0.6, which was statistically insignificant but patients got satisfactory relief. In Ayurvedic terms Brimhana effect of the Nasya done may be responsible for reducing vertigo. Brimhana is Vata-Pitta Shaimaka. Vibration of Vata-Pitta with Rajas cause Bhrama. The nourishing and strengthening effect of Nasya is evident from the improvement of hand grip strength.

When the Snigdha Bhavas exhaust from the body as a part of natural wear and tear, the most vulnerable regions start showing symptoms, the cervical spine is one such.

Based on the theory of Svadhabhavaparana, there is an inherent tendency for natural self cure. The body heals by itself and a natural cure is endowed after every injury and insult. The role of medicine is only to assist the nature.

Here the major processes in pathology are disc dehydration and bone degeneration – vividly showing a reduction in Kapha Bhavas and increase of Vata. At the level of Mahabhootas the Prithvi and Jala Mahabhootas exhaust gradually with a subsequent increase of Vayu and Aakaasha Bhootas. Hence body needs to acquire more Snigdha Bhavas to resist the process of degeneration.

Here the facts to be considered are

1. Nostrils are the easiest routes to approach diseases above the clavicle.\(^{10}\)
2. Drugs with a certain quality increases similar principle in the body (Samanya theory).\(^{11}\)
3. The duty of medicine is to help the natural healing process.\(^{12}\)

By giving Brimhana Nasya with Avartita Taila which has increased amount of fat-soluble principles, we are giving a stimulus to the body with those Gunas which are necessary to induce natural Kapha Bhavas.

The mode of action of Nasya is explained in Ayurveda as follows. The instilled medicine moves up the channels to the Shringaataka, spreads all over the head, channels of eyes, ears, and throat there by removing Doshas. Thus cures the diseases affecting the Urdhva Jatriu.\(^{13}\)

The position specifically advised for performing Nasya is such that the head is kept a little down and the feet a little high from the plane.\(^{14}\) This can increase the pressure of CSF due to gravitational back flow from the pressure of CSF due to gravitational back flow from the spinal cord. When the CSF pressure rises and equals the arterial pressure, it compresses the whole brain as well as arteries in the brain and cuts off the blood supply to the brain. This initiates a CNS ischemic response that causes the arterial pressure to rise as a part of natural homeostatic mechanism. When the arterial pressure rises to a level higher than the CSF pressure, blood flows once again into the vessels of the brain to relieve ischemia. This mechanism is known as cushing reaction\(^{15}\) and potentially deserves mention in this context. Probably it plays a crucial role in spread of active principles of the medicine used for Nasya through circulatory channels at the earliest.

Conclusions

1. Conservative management including Rooksha Sveda, Patra Potthi Sveda and internal medicines like Gandharvahastadi Kashaya and Guggulu Tiktaka Kashaya along with Nasya relieves the clinical signs and symptoms of cervical spondylosis better than conservative management devoid of Nasya.
2. Conservative management along with Nasya reduces pain, neck stiffness, tenderness, radiation of pain and numbness and improves the range of movements of the cervical spine more effectively.
3. Brimhana Nasya can decrease the rate of degeneration. Analysis of various parameters before and after Nasya proved the specific efficacy of reducing the pain, stiffness, tenderness and radiation of pain. Also it could improve the range of movements.

References

1. Ashtanga Hridaya, Sarvanga sundara vyakhya, Sutra sthana, 14 chapter/1st verse, Varanasi: Krishnadas Academy; 1995.
2. Susruta Samhitha, Nibandha Sangraha vyakhya, reprint 2004, Chikitsa sthana, 49th chapter, 21, 22nd verses, Varanasi: Chowkhamba Krishnadas Academy; 2004.
3. Anekkalil Gopalapilla, Sahasrayoga, Vidyarambham publication, April 2000.
4. Ashtanga Hridaya, Sarvanga sundara vyakhya, chikitsa sthana, 21st chapter/57-60 verses, Varanasi: Krishnadas Academy; 1995.
5. Ashtanga Hridaya, Sarvanga sundara vyakhya, sreeera sthana, 2nd chapter/47-52 verses, Varanasi: Krishnadas Academy; 1995.
6. Ashtanga Hridaya, Sarvanga sundara vyakhya, sreeera sthana, 20th chapter/9-10th verses, Varanasi: Krishnadas Academy; 1995.
7. Charaka Samhitha, Ayurveda deepika vyakhya, 5th ed. siddhi sthana, 9th chapter, 106th verse, Varanasi: Chowkhamba Sanskrit Sansthan; 2001.
8. Available from: http://en.wikipedia.org/wiki/visual-analogue-scale[Last accessed on 2011 Apr 18].
9. Hutchison’s clinical methods, 21st ed, reprint 2004, international edition, reprint 2004, 10th chapter, Philadelphia: Saunders; 2004. p. 201.
10. Ashtanga Hridaya, Sarvanga sundara vyakhya, Sutra sthana, 20th chapter/1st verse, Varanasi: Krishnadas Academy; 1995.
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11. Charaka Samhitha, Ayurveda deepika vyakhya 5th ed, sutra sthana,1st chapter,44th verse,Varanasi: Chowkhamba Sanskrit Sanshan;2001.
12. Charaka Samhitha, Ayurveda deepika vyakhya 5th ed, sutra sathana,16th chapter,26th verse,Varanasi: Chowkhamba Sanskrit Sanshan;2001.
13. Ashtanga Sangraha, Sasilekha commentary, Sutra sathana, 29th chapter, Govt of Kerala, (Govt. Ayurveda college. Thiruvananthapuram),1982. p.399.
14. Ashtanga Sangraha, Sasilekha commentary, Sutra sathana, 29th chapter, Govt of Kerala, (Govt. Ayurveda college. Thiruvananthapuram),1982. p.403.
15. Available from: http://en.wikipedia.org/wiki/cushingreflex [Last accessed on 2011 Apr 18].

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