



A COMPARATIVE CLINICAL STUDY ON AGNIKARMA, NIRGUNDYADI UPANAHA, AND SHEPHALIKA KWATHA IN MANAGING GREEVA SANDHIGATA VATA WITH RESPECT TO CERVICAL SPONDYLOSIS.

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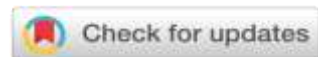
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ABSTRACT

Greevasandhigata Vata is a form of *Vata Vyadhi* caused by the interference or entrance of vitiated *Vata* in *Greeva Sandhi*, leading to symptoms like *Sandhishoola* (pain in joint), *Sandhishopa* (swelling in joint), *Prasaran Aakunchnayo Pravariticha Savedana* (restricted movement of joint) etc. Cervical Spondylosis is one of the leading disorders in older adults caused by degenerative changes in cervical spine vertebrae and causing symptoms like pain & restricted joint movement, etc., in the neck, which further leads to the struggle of the patients to fulfil their daily routine work. Patients of Cervical spondylosis, are bound to choose analgesics, anti-inflammatory drugs, steroid injections and physiotherapy as conservative treatments to improve their quality of life. In the advanced stage, surgical treatments like spinal fusion, spinal decompression, etc., are the only options. However, these procedures do not fulfil the goal of patients because of the very high cost and therapeutic limitations. Even after surgery, patients have to take analgesics for longer duration. These drugs are also not free from adverse effects like gastritis, hyperacidity, nephrotoxicity, etc. Treatment modalities like *Agnikarma*, *Nirgundyadi Upanaha* and *Shephalika Kwatha* are the non-pharmacological and result oriented therapies, recommended in *Ayurveda* for such type of disease condition. These are proven to be *Vatashamaka* & *Vedanashamaka* in various contexts.

Keywords: *Greevasandhigata Vata*, *Agnikarma*, *Nirgundyadi Upanaha*, *Shephalika Kwatha*.

INTRODUCTION

Greevasandhigata Vata (Cervical Spondylosis) is one of the ailments caused by vitiated *Vata*. Due to its distracting nature and complex management, *Vata Vyadhi* has been included in *Astamahagada*.^[1] When vitiated *Vata* enters into the cervical joint of the spine, it causes physiological and pathological changes in the joint, causing extreme pain and stiffness in the neck, which impairs the movement of the joint and further leads to struggle for daily routine work in the affected individuals.

Acharya Charaka has mentioned three cardinal features: *Sotha, Vata Purnadriti Sparsh, Prasaran Aakunchnayo Pravariticha Savedana* but remained silent about its management in the 28th chapter of *Chikitsa Sthan*.^[2] **Acharya Sushruta** has mentioned the disease *Sandhigata Vata* under the *Vata Vyadhi* context. He has given its symptoms and line of treatment with a new symptom, i.e. *Hanti Sandhin* in the symptom shown by *Acharya Charaka*.^[3] cervical spondylosis is a degenerative condition of the cervical spine, which is an age-related procedure, causing degeneration of cervical spine vertebrae and disc degeneration, resulting in a reduction in intervertebral disc space, disc prolapse and peripheral osteophytes formation. Pressure by osteophytes on the nerve root is responsible for the symptoms. In the pathogenesis of Cervical Spondylosis, the most often affected intervertebral disc spaces are C-5 or C-6. Symptoms like pain, stiffness of the neck joint, radiation of pain in the shoulder and arm, and headache, etc., are common.^[4] In an advanced lifestyle, everybody is living a hectic and stressful life. These advancements in busy life, improper posture during work, excess laptop work, jerky movement during physical activities and lack of exercise, etc., play a vital role in causing Cervical Spondylosis; besides these factors, faulty lifestyle and improper food habits are also responsible for such kind of degenerative changes in body. Hence, Cervical spondylosis is becoming a significant problem in the working population. After reviewing various ancient texts, *Agnikarma, Nirgundyadi Upanaha, and Shephalika Kwatha* were selected for the study.

Because of the *Vata Kapha Shamak* nature, *Agnikarma* is one of the best treatments for *Sandhigata Vata* according to *Acharya Sushruta*. In *Sutra Sthana*, he mentioned *Agnikarma* in the disorders of *Tvacha, Mamsa, Sira, Snayu, Sandhi* and *Asthi*, where there is sharp pain due to *Vata* vitiation.^[5] *Upanaha* is a form of bandaging. A paste of the *Vata Shamaka* drugs is prepared and then applied to the affected joints. The Paste should be hot and mixed with *Sneha* and *Lavan*. After applying the paste, the joint is covered with leaves, and then it is bandaged with cotton or leather. Applying heat causes relaxation of the muscles and tendons and improves the blood supply, reducing pain and stiffness. *Nirgundyadi Upanaha* is also *Vata Kaphagna* and *Shothanashak* because of the potency of the drugs used in it and the effect of heat from local application of *Ushna Upanaha*, which *Yoga Ratnakar* indicates in *Vaat Vyadhi Adhyay*. To cope up with age related degenerative changes in joints *Rasayan, Vatashamak* and *Balya* drugs are used. So *Shephalika Kwatha* was selected here to pacify vitiated *Vata Kapha Dosha* and relieve nerve compression, Which *Acharya Chakrapani* mentions in *Vaat Vyadhi Prakaran*.

MATERIAL & METHOD-

The heading of the study, along with the case study design, was submitted to the institutional ethical committee of the university (IEC /ACA/2021/5126–5274). The aims & objectives, significance of the study, material & method and probable outcome of the survey were elucidated to the ethical committee, and moral permission was obtained for the conduction of the study. The trial has been registered in CTRI with reference no. -CTRI/2022/11/047726.

SAMPLE SIZE –

Thirty patients suffering from *Greevasandhigata Vata* (Cervical Spondylosis) who fulfilled the inclusion criteria.

SOURCE- The patients were selected from OPD and IPD of –

- M.M.M. Govt. Ayurved College Campus Hospital, Ambamata, Udaipur

- Moti Chohatta Govt. Ayurved Hospital, Hathi Pole, Udaipur.
- Through special camps arranged from time to time.

SELECTION CRITERIA-

I. Inclusion Criteria:

- Patients suffering from *Greevasandhigata Vata* (Cervical Spondylosis), irrespective of demographic data.
- Patients between age group 30-70 years of both genders.
- *Agnikarma Yogya* and *Sweda Yogya* patients as per classics.

II. Exclusion Criteria:

- Patients of uncontrolled diabetes mellitus, R.A. (Rheumatoid arthritis) positive.
- T.B. of cervical spine & Malignancy
- Fracture related to cervical spine.
- Other diseases like paralysis, Parkinson's disease, severe anaemia, and malignancy.
- Patients under 30 years and above 70 years.
- Pregnancy
- Heart disease (IHD, CCF)
- *Agnikarma* and *Swedana Ayogya* patients as per classics.

ASSESSMENT CRITERIA:

A. Subjective Criteria:

- *Greeva Sandhi Shoola* (pain in the neck)
- *Greeva Sandhi Stambha* (stiffness in the neck)
- *Akunchana Prsaran Vedana* (painful movement of the neck)
- Vernon & Minor cervical spine score (neck disability index)

B. Objective Criteria -

- Range of movement (ROM)
- Kellgren & Lawrence Scale

LABORATORY INVESTIGATIONS:

Routine blood, urine, and stool analysis was carried out to rule out other pathologies before treatment. Digital X-rays of the cervical spine, AP and Lateral view was carried out before and after treatment.

If needed, any other radiological investigations were done.

STUDY DESIGN-Allocation—In an open-label comparative clinical trial, the patients were randomly divided into two groups using a computer-generated randomization sampling method.

- **Group A:** 15 patients of *Greevasandhigata Vata* (cervical spondylosis) were treated by *Agnikarma* (L.A.) and *Shephalika Kwatha* for oral use, 20 ml twice daily.

- **Group B:** 15 patients of *Greevasandhigata Vata* (Cervical spondylosis) were treated by *Nirgundyadi Upanaha* (L.A.) along with *Shephalika Kwatha* for oral use 20 ml two times a day.

Group- A: *Agnikarma* (local application), along with *Shephalika Kwatha*.

- Intervention : *Agnikarma*
- *Dahan upakaran* : *Panchadhatushalaka*
- Type : *Bindudagdha*
- Sittings : 1 sitting at an interval of a week for four weeks (10-15 *Bindus*/sitting)
- Duration : 4 weeks
- Follow-up period: 2 weeks

Group B- *Nirgundyadi Upanaha* (local application) and *Shephalika Kwatha*.

- Duration : daily for four weeks

OBSERVATIONS & RESULTS-

- Maximum patients that were enrolled for the research work belonged to the 46-60 years (63.334%) age group, were females (53.33%), middle class (53.33%), and were married (90%).
- The majority of patients were educated (60%), housewives (33.33%), vegetarians (80%), with medium appetites (53.33%), irregular bowel habits (70%), disturbed sleep (43.33%), and *Krura Koshtha* (53.33%).
- The maximum no. of patients was *Vata-Pitta* 43.33% and *Vata-Kapha* (40%) prakriti and addicted to tea (40%) & tobacco (30%).
- According to the observation, 9 (30%) patients were acutely affected by the disease while 21 (70%) were chronically affected. So, as per the

observed data, a maximum of the patients, 70 %, were chronically ill.

- Out of all the patients, 29 (96.67%) people were complaining of neck pain, 28 (93.33%) people were complaining of neck stiffness, and 28 (93.33%) patients were suffering from restricted joint movement.

- It was found that in more than 20 patients, the X-ray findings were suggestive of degenerative changes; out of all the patients, 33.33% had osteophytic changes, and 33.33% patients had reduced disc space.

| S.no. | Variable | % difference in group A | % difference in group B |
|---------------------|---|-------------------------|-------------------------|
| 1. | Greevashula (Neck pain) | 82.1 | 70.87 |
| 2. | Greevastambha (Neck stiffness) | 73.91 | 69.93 |
| 3. | Prasaran akunchan Vedana (Restricted movement of neck) | 70.58 | 63.63 |
| 4. | Vernon & Mior scale | 74.19 | 70 |
| 5. | KL scale | 35.69 | 37.73 |
| 6. | Flexion | 71.42 | 70.79 |
| 7. | Extension | 82.35 | 70.15 |
| 8. | Lt. lat. flexion | 79.99 | 70 |
| 9. | Rt. lat. flexion | 72.60 | 70 |
| Average of % relief | | 72.48% | 65.8% |

That means the overall result of Agnikarma along with Shephalika Kwatha was 72.48%, and Nirgundyadi Upanaha along with Shephalika Kwatha was 65.8%.

DISCUSSION

Probable mode of action of Agnikarma –

Theory -1^[6]

Pain caused anywhere in the body is due to Vata Dosha; Agnikarma, being an Ushna Chikitsa, pacifies Vata thus the pain is relieved immediately after Agnikarma.

Sandhigata Vata is caused by vitiating Vata Dosha with Kapha Anubandha. Agnikarma is therefore regarded as the finest treatment to alleviate these Doshas, Because of the Usna, Tikсна, Suksma, and Asukari Gunas of Agni, which are opposite of Vata and Kapha qualities. Agnikarma was performed by ‘red hot’ Panchadhatu Shalaka. The physical heat of red-hot Shalaka was conveyed as therapeutic heat to Twak Dhatu by creating Samyak Dagdha Vrana.

Usna, Tikсна, Suksma, and Asukari Guna of Agni remove the Srotavarodha and pacify the vitiating Vata and Kapha Dosha. Local heat application increases blood flow to the site of application, relieving the pain.

Theory -2^[7]

According to Scientist Van't Hoff, when therapeutic heat is transferred from a heating object to a biological system, it increases that system's metabolism.

Various metabolic changes occur at the site of heat burns, leading to increased demand for oxygen and nutrition. Superficial sensory nerves get stimulated by Agnikarma and lead to local dilatation of blood vessels, resulting in increased blood circulation. An increase in blood circulation & metabolism is helpful to wash away Pain substances and metabolic toxins.

Theory -3^[8]

Pain receptors of the skin and motor end plate are stimulated at 45 degrees centigrade. The pathway for pain and thermal signals runs parallel and ends in the same area, but only the stronger one can be felt. Heat appears to reduce the excitability of nerves. Therefore, the complete exclusion of pain impulses by heat takes place.

Probable mode of action Nirgundyadi Upanaha-

Upanaha Swedana is one of the four types of Swedana, which relieves pain, stiffness, heaviness, and coldness and produces sweating.^[9] The primary function of Swedana is achieved by a rise in tempera-

ture, which is responsible for increased metabolic activity, increased blood flow and stimulation of neural receptors in the skin or tissues. It opens up the pores in the skin and transfers the medicated paste and nutrients to the affected site. Heat directly affects the blood vessels, causing vasodilation, particularly in the superficial area where the temperature is highest. Metabolic wastes at the local site are removed through the increased blood circulation and sweating caused. This can be understood as *Sroto-Mukha Vishodhana*; due to the *Guna* of the *Dravyas* used in *Upanaha Swedana*, the *Leena Dosha* are liquefied and expelled out from the pores of the sweat glands. It can also cause a reflex dilation of arterioles by stimulating superficial nerve endings. It also causes an anti-inflammatory effect on the local site by clearing the inflammatory mediators.

Drugs used in *Nirgundyadi Upanaha*^[10] (*Nirgundi, Karanja & Rajika*) are *Ushna & Tikshna* in nature, so they will penetrate deep down to the channels, where these drugs will activate sweat glands which will produce more heat which will cause the vasodilation and muscle relaxation and ultimately helped in relieving pain and stiffness.

Pain is the symptom of *Vata Dosha*. Drugs used in *Nirgundyadi Upanaha* had *Ushna* (hot) and *Tikshna* (sharp) properties, so it did *Doshavilayana* (liquefaction of *Dosha*) and *Srotoshodhana* (purification of channels) which helped in relieving *Margavarana* (obstruction in channels) of *Vata Dosha*, and assisted in pacifying *Vata Dosha*, thus helped in reducing pain.

Probable mode of action of Shephalika Kwatha-

According to various *Ayurveda* texts, it is said to be *Vata- Kaphaghna* and *Vedanashamak* and *Shothahar* in properties. *Acharya Chakradutta*^[11] mentioned this decoction in the management of *Gridhrisi* (*Sciatica*), a disease said to be caused by nerve compression and *Vata Kapha Dosha*. *Greevasandhigata Vata* (cervical spondylosis) is also caused by *Vata Kapha Dosha* and nerve compression, according to various kind of literature. This means these two diseases are caused by almost the same etiologies and reasons. So, this decoction is used to treat Cervical Spondylosis be-

cause of the *Vata Kaphaghna Guna, Vedana Shamakata* and *Shothahara Guna*.

DISCUSSION ON EFFECT OF THERAPY

Pain (Shula)-

The effect of *Agnikarma* along with *Shephalika Kwatha* was found to be better (82.1%) in terms of relieving pain than *Nirgundyadi Upanaha* along with *Shephalika Kwatha* (70.87%). These were extremely significant results, proved on data analysis. The sensation of pain can be carried with the involvement of *Vata Dosha*. *Vata Dosha* predominantly has *Sheeta Guna*, which is opposite to *Ushna Guna* of *Agni*. So, this further shows, according to *Samanaya Vishesh Siddhant*, that *Agni* is capable of producing relief in pain by its *Ushana Guna*, and as such, results were seen in this study. Due to the application of heat to a particular part of the body, blood circulation increases to the applied site and reduces the accumulation of pain modulators. The *Usna, Sukhma, Asukari Guna* of *Agnikarma* gave instant relief to the patient; these qualities are opposite to *Vata Dosa*. Gate Control Theory can consider probable mode of action of *Agnikarma* on pain. A Gate prevents the pain sensation from travelling to the central nervous system. This might be the reason that pain was instantly relieved after the *Agnikarma* procedure. *Upanaha Sweda* has the properties of relieving pain, stiffness, etc., because of the *Ushna Guna* and increasing the blood flow to the affected area by vasodilation; the drugs used in the *Sweda* are also *Vedanashamak* in properties. So, these drugs will also relieve pain in the neck.

Stiffness (stambha)-

Again, in neck stiffness, results of *Agnikarma* along with *Shephalika Kwatha* were better (73.91%) than *Nirgundyadi Upanaha* along with *Shephalika Kwatha* (69.93%). Results in both of the groups were highly significant on data analysis. *Stambha* is mainly due to *Vata-Kapha Dosha* vitiation and due to its *Sheeta* and *Ruksha Guna* predominantly, too. So, according to *Samanaya Vishesh Siddhant*, *Agnikarma* having *Ushna Guna* acts as an antagonist to *Vata Kapha* properties, indirectly providing relief in *Stambha*. *Vata*, due to its *Ruksha* and *Khara Guna*, produce dryness and decreases the sliminess or *Snighdata* or

Shalakshanata (Shleshaka Kapha) in *Mansa Dhatu* (muscle tissue) that is essential for proper contraction and relaxation of muscles. This *Khara* and *Ruksha Gunas* are antagonized by *Guna* of *Agni*, thus giving relief in *Stambha*. In *Agnikarma*, the temperature at the applied site is increased, which reduces nerve reflexes, resulting in muscle relaxation. Muscle relaxes more readily when tissues are warm, and pain relief also facilitates this. *Nirgundyadi Upanaha Sweda* also has exactly opposite properties of *Vata Kapha Dosh*, like *Ushna Guna* of *Upanaha* and *Vata Kapha Shamak* properties of the drugs used in it. The local effect of *Ushna Upanaha* will increase the blood flow at the affected area and relax the muscle, reducing stiffness at local area.

Akunchana Prasaran Vedana-

Agnikarma and *Shephalika Kwatha* were found to be better (70.58%) than *Nirgundyadi Upanaha* and *Shephalika Kwatha* (63.63%) in managing *Akunchana Prasaran Vedana*. However, the results in both groups were significant enough on data analysis. This is because the primary cause of Restriction of motion is pain and stiffness. Once the pain is relieved by the *Agnikarma* procedure or *Nirgundyadi Upanaha*, range of motion is also improved simultaneously. The relief of muscle spasms makes it possible to improve *Akunchana Prasarana Vedana*.

KL scale -

The KL Scale is a parameter made up based on changes seen in x-rays of the cervical spine. In both the groups, X-ray cervical spine AP and Lateral view were done before and after treatment. In more than 20 patients, the X-ray findings were found to suggest degenerative changes; out of all patients, 33.33% had osteophytic changes, and 33.33% of patients had reduced disc space. In this study, an x-ray was observed after treatment, and many patients were observed to have an improvement in inter-vertebral disc space reduction, but osteophytic changes were not seen at all. The effect in group A was 35.69%, and group B was 37.73%. It may be because of the local effect of *Upanaha*, and the deep penetration of drugs used in it. That may have improved bone health by local impact. Neck pain might be due to muscle

spasms or a reduction in the molecular size of proteoglycan of the nucleus pulposus. As the disc starts to degenerate, once it starts to dehydrate, it diminishes in height and loses its capacity to withstand loading. Additionally, surrounding ligaments become less elastic and develop traction spurs. Para spinal muscle of cervical vertebrae plays a crucial function in maintaining normal Cervical curvature and intervertebral disc space. There was no change in osteophyte after treatment. But in the case of facet joint arthrosis, some changes were observed in both of the groups. That might be due to the heating effect of *Agnikarma* and *Upanaha* that may stimulate the lateral spinothalamic tract with a descending pain inhibitory pathway, which blocks the transmission of pain and improves the range of motion. By increasing the range of motion, some changes in facet joint arthrosis were also noted. The local effect of heat increases blood circulation, which ultimately improves nutrition in that part.

Vernon & Mior scale-

The Vernon & Mior scale is based on a questionnaire designed to gather basic information about how neck pain has affected the patient's ability to manage his daily routine work. The scale includes questions on lifting, headache, reading, work, and sleeping. The effects of *Agnikarma*, along with *Shephalika Kwatha* (74.19%), and *Nirgundyadi Upanaha*, along with *Shephalika Kwatha* (70%), were found significant in the Vernon & Mior Scale. The parameters included in the scale were dependent on pain, stiffness, and restricted neck movement. Once therapies relieve these symptoms, co-dependent symptoms will also be resolved because of improvement in local vascularity and muscle relaxation.

Range of motion-

The range of motion is measured by a goniometer, which includes four types of motion of the neck.

- **Flexion-** The effect of *Agnikarma* along with *Shephalika Kwatha* (70.42%) and *Nirgundyadi Upanaha* along with *Shephalika Kwatha* (70.79%) were found significant in flexion.
- **Extension-** The effect of *Agnikarma* along with *Shephalika Kwatha* (82.35%) and *Nirgundyadi*

Upanaha along with Shephalika Kwatha (70.15%) were significant in extension.

- **Left lateral flexion-** The effect of Agnikarma along with Shephalika Kwatha (79.99%) and Nirgundyadi Upanaha along with Shephalika Kwatha (70%) were found significant in left lateral flexion.
- **Right lateral flexion-** The effect of Agnikarma along with Shephalika Kwatha (72.60%) and Nirgundyadi Upanaha along with Shephalika Kwatha (70%) were significant in right lateral flexion.

Since the range of motion of the cervical spine is dependent on the spasm of paraspinal muscles of the neck, pain and stiffness in the neck, once the pain and stiffness are relieved by the Agnikarma procedure or Nirgundyadi Upanaha, the range of motion is also improved simultaneously. The muscle spasm is improved by the local heat effect of Agnikarma and Upanaha, which will provide better circulation to the local area, and normal motion of muscles will be restored, which will improve the range of motion.

CONCLUSION

Cervical Spondylosis is an age-related degenerative entity which causes degeneration of cervical spine vertebrae and disc, resulting in a reduction in intervertebral disc space, disc prolapse and peripheral osteophytes formation. Pressure by osteophytes on the nerve root is responsible for the symptoms. These are pain, stiffness of neck joint, radiation of pain in shoulder & arm and headache etc.

- Cervical spondylosis is a common problem affecting people of older age groups. Females are more prone compared to Males, especially after menopause.
- Patients of different ages and occupation who have more exposure to occupational stress, faulty sitting posture with continuous work exertion are more susceptible for Cervical Spondylosis.

- Agnikarma relieves pain, tenderness, stiffness and range of motion in the areas where it is applied locally.
- Agnikarma gives instant results, so it can be used in acute conditions of neck pain.
- Nirgundyadi Upanaha is Vata Kapha Shamak in properties, hence relieves pain, tenderness and stiffness in the local area.
- Shephalika Kwatha is Vedanashamak and Vata Shamak in Gunas; that's why it is helpful in treating pain and tenderness.

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