



International Research Journal of Ayurveda & Yoga

An International Peer Reviewed Journal for Ayurveda & Yoga



SJIF Impact Factor : 5.69

ISRA Impact Factor : 0.415

ISSN:2581-785X

Review Article

Volume: 3

Issue: 7

Agni Karma To Manage Sandhigata Vata W.S.R. To Cervical Spondylosis : A Review

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Abstract: The human body experiences continuous degenerative changes with age. The degeneration is very commonly observed, especially in the inter-vertebral discs in between the cervical vertebrae at higher ages. This leads to the start of problematic symptoms in the neck region. Neck pain is the worst amongst them. Neck stiffening & inability to perform movements are the other complications and the associated disease is the *Sandhigata vata* (cervical spondylosis), for which there is as yet no permanent cure available in the modern system of medicine. Symptoms in the extremity may also develop due to irritation of nerve supplying it. This disease can, however be effectively managed following the *Ayurvedic* system.

Sandhigata vata (Cervical spondylosis) is the result of aggravated *Vata Dosha* with *anubandha* of *kapha avarana*.

However, *dhatu kshaya* is also the **excitatory** factor responsible for vitiation of *vata dosha*. The review of the recently published articles and the classical *Ayurvedic* literature amply demonstrate the efficacy of the classical **Agni-Karma technology** in mitigating the *Sandhigata vata* (Cervical spondylosis) disease. Besides this, *Agni-Karma* is a **safe, non-invasive** and drug free **para-surgical** procedure. It is also, a cost effective procedure, requiring no hospitalization, etc. Since, the incidence of this disease has been observed mostly in the higher age bracket, the technology can, therefore be made more patient friendly by incorporating appropriate *rasayana* drugs, *abhyanga*, anti-inflammatory medicines, etc.

Keywords : degeneration, musculoskeletal, cervical spondylosis, *sandhigata vata*, *Agni-karma*.

Article received on-17 July

Article send to reviewer on-21 July

Article send back to author on-29 July

Article again received after correction on -31 July

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How to Site the Article :Akshay Suden *Agni Karma* To Manage *Sandhigata Vata* W.S.R. To Cervical Spondylosis : A Review,IRJAY, July: 2020 Vol- 3, Issue-7; 216-241. <https://doi.org/10.47223/IRJAY.2020.3718>

INTRODUCTION:

The human body experiences continuous degenerative changes with age. The degeneration is very commonly observed, especially in the inter-vertebral discs in between the cervical vertebrae at higher ages. The slowly but gradually degenerating discs often irritate the nerve roots. This may develop symptoms in the extremity to which the irritated nerve is supplying. This leads to the start of problematic symptoms in the neck region. Neck pain is the worst amongst them. Neck stiffening & inability to perform movements are the other complications and the associated disease is the *Sandhigata vata* (cervical spondylosis), for which there is as yet no permanent cure available in the modern system of medicine. This disease can, however be effectively managed through the *Ayurvedic* system. This *roga* can be managed by using the *Agni-Karma* therapy of *Ayurveda*. The present article presents a review of the recently

conducted research on this disease adopting the *Ayurvedic* system of medicine and the ancient classical *Ayurvedic* literature on the subject.

AIMS & OBJECTIVES

Aims and objectives of this article are to present a review of the topic based on the following scientific aspects :

- *Shareera rachna* of cervical region
- *Sandhigata vata* vis-à-vis Cervical Spondylosis
- *Agni-Karma* and its procedure
- Role of *Agni-Karma* in the management of *sandhigata vata* w.s.r. to Cervical Spondylosis

MATERIAL AND METHODS

This article is based on the review of Ancient literature : **Sushruta Samhita, Charaka Samhita, Ashtanga Hridaya & Ashtanga Samgraha**, and the research & review articles published in standard *Ayurvedic* journals, cited in this article at appropriate places.

REVIEW OF PUBLISHED ARTICLES

First¹ study, clinically evaluated the efficacy of *Agni-Karma* in *sandhigata vata* w.s.r. to cervical spondylosis. The highlights of the study are :

1. The study made use of *loha shalaka* for *agni karma*.
2. The study included *Agni-karma* in conjunction with the drug *Trayodahang guggulu* to manage cervical spondylosis
3. Patients were placed into two groups **GROUP-A** : those receiving *Agni-karma* therapy & **GROUP-B** : those put on drug *Trayodahang Guggulu*
4. Significant relief was reported in *greeva stambha, greeva graha, greeva shula & shira shula* in patients treated with *Agni-karma* therapy
5. *Agni-karma* was reported to be effective against cervical spondylosis

Second² study was conducted on role of *Agni-karma & karpasasthyadi tailam* in managing cervical spondylosis. The highlights of the study are :

1. The study included *Agni-karma* in conjunction with *Karpasasthyadi Taila Nasya* to manage the disease.
2. *Panchadhatu shalaka* was used to perform *Agni-karma*.
3. Patients were placed in two groups namely, **A**: those receiving *Agni-karma* therapy and **B** : those receiving *Karpasasthyadi taila Nasya*
4. *Agni-karma* was reported to provide significant relief in pain, stiffness, head reeling & movements of the neck. Relief in headache, tingling sensation and loss of sensation were comparatively less.
5. *Karpasasthyadi taila nasya* was reported to be quite effective in head reeling, tingling sensation, pain & headache. But its effects on stiffness, restricted movements were of lesser degree.
6. The therapy also, provided relief in *greeva shula, sandhi shula* and *stambha*.

Third³ study, assessed the clinical efficacy of *Agni Karma* in the management of *Sandhigata Vata* w.s.r. to cervical spondylosis. The highlights of the study are :

1. The study used *pancha dhatu shalaka* for *agni karma*
2. Patients were placed in two groups, **A** : *Agni-karma* group included 11 patients and **B**: the *Trayodahang guggulu* group included 10 patients.

3. **Complete cure** : 18 % in Group A & 10 % in Group B
4. *Agni-karma* provided relief in *shula*, *suptata*, *bhrama* (head reeling), *chimchimayana hasta*.
5. *Trayodahanga guggulu* provided relief in the associated complaints. However the relief in *chimchimayana hasta* , *suptata* was better than with *Agni-karma* therapy.
6. The study reported that *Agni-karma* was efficacious in managing the cervical spondylosis

Fourth⁴ was a review of *Agni Karma* in the management of *Asthigata vata*. The highlights of the review article are :

1. The reviewed study made use of *Panchdhatu shalaka* in the management of *Asthigata vata*
2. The article highlighted the previous works done on cervical spondylosis :
3. One earlier study was related to patients of *Sandhigata vata* (cervical spondylosis)
4. The other earlier reported study recorded relief of 73% in neck pain, 67% in neck stiffness and 65% relief in neck movement
5. The *Agni-karma* was reported to be a safe, effective and drug-less therapy in *asthigata vata* and a number of musculo-skeletal disorders.

Fifth⁵, was a clinical study of *Agni-Karma* and *Panchatikta Guggulu* in the management of

Sandhigata vata (osteoarthritis of knee joint). The highlights of the study are :

1. *Pancha dhatu shalaka* was used to perform *Agni-karma*
2. The study included :
 - **Group A** : *Agni-karma* therapy on 18 *Sandhivata* (Osteoarthritis) patients
 - **Group B** : *Pancha tikta guggulu* on 15 *Sandhivata* (Osteoarthritis) patients
1. **Relief in sandhi shula** : 86% in group A and 78% in group B
4. **Sparsha asahayata reduction** : 69% in group A and 88% in group B
5. **Sandhi sphutana relief** : 39% in group A and 47% in group B
6. **Sandhi graha relief** : 63% in each group
7. The study showed efficacy of *Agni-karma* in *sandhi vata*
8. Combination of *Agni-karma* and *pancha tikta guggulu* showed a better option against *sandhivata* (osteoarthritis).

ANATOMICAL DETAILS OF GREEVA REGION

A. Sushruta mentions 107 *marmas* seated into the following **five** sites based on location⁶:

- *Mamsa marma*
- *Sira marma*
- *Snayu marma*
- *Asthi marma*

- *Sandhi marma*⁷

causes *shiro kampa* (head tremor or quivering)¹³

B. Sushruta, also classified the *marmas* into the following five types based on *marmaghat lakshanas*⁸:

- *Sadya pranhara marma*
- *Kalantara pranhara marma*
- *Vishalyaghna marma*
- *Vaikalyakara marma*
- *Rujakara marma*

MARMAS IN GREEVA

The *Greeva marmas* include the following⁹ :

1. *Nil marma* : 2
2. *Manya marma* : 2
3. *Matrika Marma(kantha-sirayein)* :8

In brief, the *marmas* of *greeva* region are¹⁰ :

- I. ***Dhannies*** : 4 in number, on both sides of *kanth nadi* :
 - 2 are *nila*
 - 2 are *manya*
 - Thus, in total there are 4*nila* and 4 *manya marmas*
 - On injury to them *swara nasha* (loss of speech) occurs¹¹.
- I. ***Sira matrikas***: 4 each on both the sides, thus, 8 in total¹²
- II. ***Krikatika marmas*** : 2 are situated at the junction of head and neck. Injury to them

MARMAS OF NECK

Description of *Nil Marma*¹⁴ : It includes 2 *marmas* one on each side of neck :

- It is a *sira & Vaikalyakara marma*
- It is situated in lower neck
- One each on the lateral side of Trachea
- Pulsation is felt here, due to its location in upper internal Jugular vein
- Injury exerts an effect on the vocal cords
- It may be associated with loss of voice
- Being *Sira Marma*, its injury also leads to bleeding

Description of *Manya Marma*¹⁵ :

- It includes 2 points one on each side of the neck
- It is a *Sira & Vaikalya Kara Marma*
- Its size is about 4 *Angula* (fingers)
- One and half unit inferior, and one and half unit posterior to mandibular angle
- It has control over *Rasavaha & Rakta vaha Srotas*, i.e. plasma, blood & circulatory system
- It has control over *Bodhaka Kapha & Udana Vayu*

- The *Bodhaka Kapha* provides lubrication of mouth & *Udana Vayu* regulates the upward moving air
- Lingual Nerve, Glosso-pharyngeal Nerve, Accessory Nerve, External carotid Artery & Internal Jugular Vein are related to it in the region
- Its injury leads to loss of sensation of taste & paralysis of tongue

Description of *Sira Matrika Marma*¹⁶ :

- It is a group of **8 Marmas**, 4 on each side of the neck
- It is a *Sira & Sadyo Pranhara Marma*
- Its size is about **4 angula** (fingers)
- It is mainly composed of blood vessels
- It lies one and a half *angula* lateral to outside of trachea
- It is situated on different branches of common carotid artery & covers a large area of neck.
- It controls *Raktavaha Srotas* (Blood flow from heart to head)
- It has a control over *Udana Vayu* [upward moving *Prana* (air)]
- It also has control over nervous system
- Its injury is the cause of massive blood loss, collapse & death.

KURCH SANKHYA IN GREEVA¹⁷:

There is only one *kurcha* in *greeva*

ASTHIS (BONES) IN THE BODY :

- **Sushruta**¹⁸ considers 300 *Asthis* in the body as a whole.
- **Charaka**¹⁹ differs to this, and recognises **360 Asthis** in the body.
- **Vagbhatta**²⁰ : **360** .
- As per modern view number of bones in the body is **206**

Asthies in Greeva Region :

- **Sushruta**²¹ : **9**.
- **Charaka**²² : **15** in the neck region.
- **Modren System** : **7** cervical vertebrae.

Sushruta ascribes *Greeva Asthies* to *Tarunasthis*.

ASTHI SANDHIES IN GREEVA

- According to **Sushruta**, out of **210 Asthi Sandhies** in total , **83** are in *Urdhwa-Jatrugata* region
- Of these 83 *Asthi Sandhies* in the *Urdhwa-Jatrugata* region, **8** are in the **Kanth** region²⁴.

According to **Sushruta**, the *Greeva Sandhies* belong to the *Pratara Sandhies*²⁵.

SNAYUS IN GREEVA

Sushruta, further distributes the **70 Urdhwa Jatrugata Snayus** into²⁶ :

- *Greeva* region : 36
- *Moordha* region : 34

PESHIS IN GREEVA

Urdhwa Jatrugata Peshis are 34 in number .

They include²⁷ :

- *Greeva* region : 4
- *Hanu* region : 1
- *Kaklika* region : 1
- Neck (*gala pradesha*) region : 1
- *Talu* region : 2
- *Jihwa* (tongue) : 1
- *Oshta* (lips) region : 2
- *Nasika* (nose) region : 2
- *Netra* (eyes) region : 2
- *Ganda* Region: 4
- Ears : 2
- *Lalata* : 4
- *Shira* (head) region : 1

GREEVA GATA SIRAS

- *Urdhwa Jatrugata Siras*²⁸: 164
- *Siras in Greeva*²⁹: 56

AVEDHYA SIRAS IN GREEVA

The *Avedhya Siras* are 16 in number and are classified as follows³⁰ :

- *Marma Samgyak Siraas* : 12
- *Siraas related to Krikatika Marma* : 2
- *Siras related to Vidhur Marma* : 2

ANATOMY OF CERVICAL REGION IN BRIEF

The part of the Spine lying within the Neck Region is called **Cervical Spine**

1. The Cervical Spine :

- comprises **seven cervical vertebrae**
- It lies in between the skull and the thoracic vertebrae
- Various muscles, ligaments surrounding the neck provide support to these vertebrae.
- The upper two vertebrae provide attachment to the base of the skull. These bring about the sideways movement of the neck.

2. The vertebral column :

- It is composed of **24** separate, movable, irregular bones called as vertebrae.
- The vertebrae are placed into three groups :
 - Cervical vertebrae : **7** in number
 - Thoracic vertebrae : **12** in number
 - Lumbar vertebrae : **5** in number
 - In addition, the **sacrum** consisting of **5** fused bones and **coccyx** consisting of **4** fused bones also form a part of **vertebral column**.

3. Each vertebra consists of :

- A disc shaped body lying in the front

- An arc of bone pointing backwards from the body, enclosing a space between body and **arch** called the **neural** or **spinal canal** through which **spinal cord** passes :
 - a. the arch carries **3** rough processes :
 - spinous process projecting backwards
 - two transverse processes one on either side
 - b. There are two surfaces of neural arch : superior and inferior
 - c. There are two **articular** processes which carry smooth surfaces to articulate with similar processes on the vertebrae above and below.
4. **Cervical vertebrae** are smallest separate vertebrae with relatively large openings. They run down the neck forming a slightly forward curve. They have special features :
- Each transverse process carries an opening through which a vertebral artery passes upwards to brain
 - The spinous process is forked or bifid giving attachment to muscles and ligaments.
 - The arch carries a notch on either side of the under surface.
 - The narrow part of the arch above the notch is called a **pedicel**.
 - The wide part of arch carrying the spinous process is called **lamina** which forms the back wall of the vertebral column.
- The vertebrae lie over body and over arch forming a continuous column.
 - The bodies are joined to each other by a thick pad of fibrocartilage called the **inter-vertebral disc**.
 - The discs are composed of ring of fibrocartilage and a soft pulley like centre called the **nucleus**.
 - The discs serve to allow slight movement of bone on bone and yet make very strong joints.
 - The inter-vertebral discs act as shock absorbers and thus prevent any trauma to the brain
5. **C1** vertebra is termed as **Atlas**.
- It is the superior most vertebra.
 - It is thinnest of all cervical vertebrae.
 - It plays an important role in supporting skull, spinal cord and vertebral arteries.
 - It also plays an important role in movement of head and neck.
6. **C2** vertebra is the second uppermost vertebra called as Axis. It plays an important role by allowing the head to rotate on its axis & hence derives the name.
7. **C3** to **C6** vertebrae are next in line grouped together, because of similarity in anatomical set up :

- These play an important role in movement of neck and provides support to head as well as neck.
 - They, also provide anchorage to muscles concerned with their movement.
8. C7 vertebra is the largest and most inferior vertebra in the neck region.
 - Unlike other vertebra it has a large spinous process .
 - This process can be felt as a projection at the base of the neck.
 - It continues downward as thoracic vertebrae.
 - Its body supports the collective weight of head and neck.
 - Fibro-cartilagenous discs above & below C7 provide cushioning.
 - Facets and discs surrounding provide flexibility and stability to neck
 9. The sides of vertebrae are bound together by facet joints.
 10. In between the vertebrae lies the intervertebral disc.
 - Intervertebral discs are thin masses of fibrocartilage with soft gel like centre.
 - Each disc acts as a shock absorber and helps in holding the vertebral column in alignment.
 11. The disc is differentiated into two parts outer hard & inner soft part.
 12. They act as shock absorbers and help the spine maintain its flexibility.
 13. The ligaments provide support to the vertebrae.
 14. The muscles help in maintaining the flexibility at various levels in between the vertebrae, a pair of nerves towards either side of spine project out.
 15. These pair of nerves originate from spine, project out from the inter-vertebral spaces and supply the extremities or parts lying towards either side of spinal cord.

CERVICAL SPONDYLOSIS DISEASE

Process of Occurrence

Cervical spondylosis is an age-related **degeneration** (wear and tear) of the bones (vertebrae) and discs in the neck. It is encountered by most of the people. The degenerative process usually starts after **forty years** of age. Due to degeneration, there gradually occurs roughening of small areas of the bone, especially in intervertebral discs. These roughened areas become **osteophytes**. The degeneration process, if unchecked leads to **thinning** of the **discs** . It may, often cause **irritation** of the **nerves**, surrounding **muscles, ligaments** and ultimately bring on pain and great discomfort to the affected persons.

AYURVEDIC PERSPECTIVE

Sandhigata Vata (Cervical spondylosis)

This disease when viewed from *Ayurvedic* angle, its most specific symptoms match, closely with those of *Sandhigata Vata* the predominant causes are described below :

1. *Sandhigata Vata* (cervical spondylosis) is a form of *sandhivata* where the vitiated *Vatadi Doshas* become localised in the *Greevagata Sandhis* (joints between cervical vertebrae).
2. It is a *Vata-Prakopa Janya Vyadhi*.
3. The *Vata-Prakopa* manifests in either of the two forms^(31,32) :
 - a. *Kewala Vata-Prakopa Janya* :
 - Where only derangement of *Vata Dosha* occurs
 - But the *Sansarga* (association) of *Prakupita Vata Dosha* with other *Doshas* does not occur
 - b. *Samsarga* (association) of *Vata Dosha* with other *Doshas* occurs
 - When *Vata Dosha* gets associated with *Kapha* and *Pitta*. This is accordingly, called *Kapha-Avritta Vata* and *Pitta-Avritta Vata*.
 - c. *Dhatu Kshaya* also plays a role in the *Utpatti* of the disease.
4. It may be correlated to *arthritis, osteoarthritis, rheumatoid arthritis, etc.*
5. Most of the **musculo skeletal** disorders such as *kati-shula, sandhi-shula,*

sandhigata vata, gridhrasi, pakshaghata are the outcome of the deranged *Vatadi Doshas*.

6. **Charaka** includes *Vata-Vyadhi* under *Ashta Mahagadas* (eight incurable diseases).

NIDANA

1. Broadly, the pathological events are placed into two categories viz. *Marga Avarodha Janya* and *Dhatu Kshaya Janya*
2. Basically it is a result of vitiation of *Vata Dosha* and its *anubandha* (*avarana*) with *kapha*. The *Nidanas* of *Vata Vyadhis & Sandhigata Vata* (cervical spondylosis) include *Vata Prakopaka Nidanas*
3. *Nidanas* are, therefore summed up as under :
 - *Aaraja Nidana*
 - *Viharaja Nidanas*
 - *Kalakrit Nidanas*
 - *Mansika Nidanas*

AHARAJA NIDANA (DIETIC FACTORS)

1. *Excess katu tikta kshaya rasa sevana* : These *rasas* are *vata prakopaka* and thus would lead to *sneha shunyata* and *utpatti* of disease
2. **Sushruta** mentioned the *gunas* (features) of *Vayu* as under³³ :

- *Rooksha*
- *Laghu*
- *Sheeta*
- *Sheeta*
- *Khara gunas*
- *Dosha dhatu & mala sanchara*
- Occupies special seats in *pakwashaya & guda* regions
- It is the chief *Dosha* to cause all the *rakta, pitta, kapha janya rogas*

3. **Charaka** recognises the *sewana* of the following *ahara* as responsible for *vata dushti* and *utpatti* of *vataja vikaras*³⁴:

- *Rooksha ahara sewana*
- *Sheeta ahara sewana*
- *Alpahara sewana*
- *Laghu ahara sewana*

VIHARAJA NIDANAS³⁵

The views of **Charaka** on *Vata Prakopaka Nidanas* are mentioned in Table-1.

<ul style="list-style-type: none"> • <i>Ativyavaya</i> • <i>Prajagara</i> • <i>Result of visham chikitsa</i> • <i>Ati sravan of asrik</i> • <i>Atisravana of mala, mutra</i> 	<ul style="list-style-type: none"> • <i>Langhana</i> • <i>Plavanaa</i> • <i>Atyadhvagaman</i> • <i>Ativyayam</i> • <i>Ati chesta</i> • <i>Dhatu sankshaya</i> • <i>Chintana</i> 	<ul style="list-style-type: none"> • <i>Shoka,</i> • <i>Roga</i> • <i>Ati asrik</i> • <i>Sravana janya karshana</i> • <i>Dukha shayyasana</i> • <i>Krodha</i> • <i>Diwaswapana</i> 	<ul style="list-style-type: none"> • <i>Vega samdharana</i> • <i>Abhighata</i> • <i>Marmaghata</i> • <i>Gaja ushtra ashwa shighra yaan patana</i> • <i>Avatamsana (dhatu hraas)</i>
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These *nidanas* lead to *vata prakopa* and *dhatu hraas* (loss) creating hollow space in between the joints of cervical vertebrae. The deranged *vayu* settles in this empty space and does further *shoshana* of *dhatu*s there, leading to symptoms of cervical spondylosis.

MANSIKA NIDANA³⁶

The *mansika* factors responsible for derangement of *vata* include:

- *Bhaya* (fear)
- *Shoka* (sadness)
- *Krodha* (anger)
- *Chintana* (contemplation)

KALAJA NIDANA

- It is a *vardhakya janya vikara* (perversion, disorder). Most of the cases belong to elderly age group.
- It is degenerative or *dhatu-kshaya janya-vikara*.
- This *dhatu kshaya* in elders is a factor favourable to *vata dushti*.
- Effect of *ritus* (seasons) is also a factor which has its impact on *dosha* vitiation
- Traumatic injuries resulting in fractures & ligament /tendon rupture
- Continuous exposure of joint to repetitive stress
- Prolonged immobilisation.

OTHER CAUSES

Karmas (Actions) of vata :

Sushruta mentioned the *karmas* (actions) of *Vayu* as under³⁷ (Table-2) :

Table-2: Karmas of vata			
<ul style="list-style-type: none"> • <i>Kritsandehacharo</i> • <i>Sweda sravan karma</i> 	<ul style="list-style-type: none"> • <i>Asrik sravana</i> • <i>Gati</i> • <i>Apaksheman</i> 	<ul style="list-style-type: none"> • <i>Utkshepana</i> • <i>Nimesh</i> • <i>Unmesh</i> 	<ul style="list-style-type: none"> • Promotes <i>panchvidha chestas</i> (activities)

Being the cause behind various *chestas* (activities), it helps the body in bringing about the movements of various parts. Its derangement will therefore results in *jadta* (stiffening) of the body parts i.e. the joints, bones, or vertebrae. This stiffening together with other age related factors will in turn result in a number of pathological conditions of musculo-skeletal system, *sandhigata vata* is one among those conditions.

Sushruta explained that .³⁸

1. *Prakupita* (deranged) *vata* in the *sandhis* produces symptoms such as *sandhi shula*
2. *Asthi gata kupita vata* is the cause behind the following :
 - *Asthi Shosha* (Osteoporosis)
 - *Asthi Bheda* (bone fragility)
 - *Asthi Shula* (Ostalgia)
3. *Snayu Gata Kupita Vata* is the cause behind the following :
 - *Stambha*
 - *Sharira Kampa* (body quiver, tremor)
 - *Shula* (pain)
 - *Akshepa*

4. *Majjagata kupita vata* is the cause behind the following :

- Continuous body ache
- *Majja-shosha*

Sushruta held *Avarana* of *vata* with *kapha* and *dhatu kshaya* to be responsible for the symptoms of *sandhigata vata*.(cervical spondylosis)

In this context of *avarana of vyana vayu*, **Sushruta** explained that³⁹ :

1. *Pittavritta vyana vayu* produces the *lakshanas* :
 - *Vikshepana* of body
 - *Daha utpatti* (Burning sensation)
2. *Kapha-avritta vyan vyau* produces the *Lakshanas* :
 - *Guruta* (heaviness) over all the parts of the body
 - *Asthi jadyata* (stiffening of bones)
 - *Sandhi jadyata* (stiffening of joints)
 - *Hasta pada chesta stambha* (loss of movements of hand & feet)

LAKSHANAS OF SANDHIGATA VATA

Charaka mentioned the *lakshnas* of *sandhigata vata*⁴⁰ as :

- *Vatapurna Driti Sparsha*
- *Shotha* : Inflammation
- *Sandhigata Anile* : as if air occupies joint space
- *Prasarana Akunchana Sa-vedna* : inability to perform activities

CLINICAL FEATURES

A **Patient** of *sandhigata vata* (cervical spondylosis) presents the following clinical features :

1. *Shula* (Pain) :

- Pain in the posterior aspect of the neck
- Pain in both the shoulders
- Pain is not necessarily the predominant symptom in cervical spondylosis.

2. *Tingling or Numbness (Suptata)* :

- Tingling & numbness sensation in the hands may be experienced by the patient

3. *Stiffening* :

- Stiffness of neck

4. *Restricted movements* :

- Restriction of neck movements (*stambha*)
- Difficulty in certain hand movements such as buttoning

5. *Imbalance in advance stage* :

- With advancement of spondylosis, the patient might complain of imbalance in moving (often when spondylosis causes compression of spinal chord .

6. *Giddiness (Bhrama)* :

- Giddiness may be complained in some cases of cervical spondylosis

SAMPRAPTI OF SANDHIGATA VATA (Cervical spondylosis)

Dosha, Dhatu, Mala & Srotas play an important role in the occurrence of this disease. The sequence for *roga utpatti* is :

1. *Dhatu Kshayakara & Vata Prakopaka Nidana Sevana*
2. *Dosha Prakopa* Occurs
3. *Prasara* (spread) of *Prakupita Dosha*
4. Localisation of *Prakupita Dosha* occurs in *Greevagata Sandhis* (cervical vertebrae)
5. *Roga Utpatti* occurs

Explanation :

- *Srotasa* always has dominance of *Akasha Mahabhuta*.
- *Akasha & Vayu Mahabhuta* are interrelated because *Vayu* occupies the hollow space created by *akasha mahabhuta*. This *hollow space* represents the *Kha-Vaigunya*.
- The hollow space in the *srotas* means absence of *shlesma* induced *sneha*. In other words *shunyata* (vacuum) occurs.
- *Shleshaka kapha* occupying the joint spaces (*asthivaha srotas*) is responsible for bringing about lubrication of joints
- Depletion of this *shleshaka kapha* leads to emptiness or *shunyata* of *srotas*

- *Sandhis* are made up of *dhatu, upadhatus* etc. so *sewana* of *dhatu kshayakara bhavas* lead to *dhatu kshaya* & loss of *sneha* between joints. This too will create hollowness within the joint (cervical vertebrae).
- This hollowness provides space to the vitiated *vayu* which then gets localised in the space between joints of cervical vertebrae & leads to symptoms of cervical spondylosis.
- It is also important to note that *dhatu-kshaya* and *marga-avrodha* are also the outcome of *vata prakopa*
- *Vata* occupies the hollow space of *srotas* in *greevagata sandhis* leading to *sandhi vata* (Cervical Spondylosis)
- The other *doshas* such as *kapha* and *pitta* may do the *avarana* of *prakupita vata* occupying the empty space between the joint. This *avritta vata* further does the *shoshana* of *dhatu*, there by producing the symptoms.
- *Medo roga* is also one of the cause. Excess *meda* may do the *avarana* of *vata* which will again lead to the symptoms of disease.

PHYSICAL EXAMINATION

1. Spurlings' test for the Assessment of the nerve root pain :

Procedure

- Patient is made to sit with head turned to the affected side
- The clinician should be behind the patient
- Apply the downward compression over the patients' head
- Radiating pain all along the forearm on application of force is a diagnostic feature

2. Lhermitte's sign

- Patients neck is flexed
- Electric shock like sensation is experienced by the patient on flexion of his neck
- Sensation radiates down the arms, usually, the legs & occasionally the trunk

3. Hoffman's sign

- Nail of middle or ring finger is flicked
- Flexion of the fingers towards thumb is the aim
- Presence of reflex indicates upper motor neuron lesion arising out of nerve compression

4. Wide gait (advanced stage)

- Widened gait is seen due to **myelopathy**
- Clumsy, staggering movements are seen
- Typically in cervical spine compression

DIAGNOSTIC MODALITIES⁴¹:

1. X-rays- to look for spinal abnormalities such as spurs

2. CT scan

3. An MRI scan

4. Myelogram :

- To diagnose spondylitic myelopathy resulting from advancement of spondylosis.
 - A dye injection is used to highlight certain areas of the spine.
 - CT scans or X-rays are then used to provide more detailed images of these areas.
5. An **electro-myogram (EMG)** : To Measure nerves electrical activity :
 - Transmission of impulse across muscles is also assessed.
 - Nerve conduction studies to assess signal strength & nerve conduction

CHIKITSA

Sushruta advised :

- Use of *snehana, upnaha, Agni-karma, bandhana* and *mardana* in the management of *snayu, asthi & sandhi gata vata prakopa*⁴²
- Use of *Agni-karma* in all painful conditions associated with deranged *vata*⁴³.
- *Shamana* of *skandha gata, vaksha gata, kati gata & manya gata vata shiro-virechana karma* should be utilized⁴⁴

Ashang Hridaya advises :

- The utility of *sneha*, *swedana* in all the vataja disorders associated with *jadyata*, *stambha*, painful conditions⁴⁵.
- The utility of *taila* formulations in *asthi* and *majjagata rogas*. Also it is clarified that in such condition use of calcium rich preparations such as *shankha*, *seepa*, *moti*, *praval* is contraindicated as being *sheeta* these are *vatakara*. Their use will still make the condition worse. However in such cases oils may be used to do the *shamana* of deranged *vata*⁴⁶.

AGNI-KARMA

Agni-Karma is far superior to *Kshara* in performing the *dahana karmas*, because of non-recurrence of the disease, once cauterized with *Agni-Karma*.

1. **Sushruta** mentioned that *Agni-Karma* is effective in curing the diseases which are otherwise incurable with⁴⁷ :
 - *Aushadha* (medicines)
 - *Shastra* (surgery)
 - *Kshara Karma*.

AGNI- KARMA DAHANA UPAKARANA

The following items & instruments are needed to perform the *Agni-Karma* :

1. *Pippali*
2. *Aja-shakrit* : Fecal pellets of goat
3. *Godant* : Cow's Teeth
4. *Shara* : Arrow Head
5. *Shalaka*(rod)made of :

- *Jambavoshta*
- *Shalaka* made of silver, gold or *loha* (iron)

6. ***Kshaudra***: A kind of *Madhu* (honey)
7. ***Guda***
8. ***Ghrita* : *Sneha padartha***
9. ***Taila* : *Sneha***

UTILITY OF DIFFERENT DAHANA UPAKARANAS⁴⁸

Twak Gata Rogas :

- *Pippali*
- *Aja-shakrit*
- *Godanta*
- *Shara*
- *Shalaka*

Mamsa Gata Rogas :

- *Jambavaushta*
- *Shalaka* of other metals

Sira , Snayu , Sandhi, Asthi gata rogas :

- *Madhu*
- *Guda*
- *Sneha Padartha*

KAAL NIRDHARAN FOR AGNI-KARMA⁴⁹

- *All the Ritus except Sharad & Grishma Ritus*
- *Sharad & Grishma Ritus* :
 - Usually contraindicated

- Performed only in emergency
- If the disease is *sadhya* by *Agni-karma* only
- *Purva karma*
- *Pradhana karma*
- *Paschat karma*

AGNI-KARMA VIDHI

The entire *Agni-Karma* procedure is divided into three phases :

INDICATIONS FOR AGNI-KARMA⁵⁰

Agni-karma may be performed in the following conditions (Table-3) :

Table-3: Indications for performing <i>Agni-Karma</i>				
<i>Vata gata :</i>	<i>Vata gata :</i>	• <i>Arbudha</i>	• <i>Charmkeela</i>	• <i>Vrana</i> having <i>unnat mamsa</i>
• <i>Twak pain</i>	• <i>Sandhi pain</i>	• <i>Bhagandara</i>	• <i>Tilakalaka</i>	• <i>Kathinta yukt vrana</i>
• <i>Mamsa pain</i>	• <i>Asthi pain</i>	• <i>Apachi</i>	• <i>Nadi vrana</i>	• Bleeding due to <i>sira chhedana</i>
• <i>Sira pain</i>	• <i>Suptata of mamsa</i>	• <i>Shlipada</i>	• <i>Granthi</i>	
• <i>Snayu pain</i>	• <i>Sandhigata roga</i>	• <i>Arsha</i>	• <i>Antravriddhi</i>	

CONTRA-INDICATIONS FOR AGNI-KARMA⁵¹

Patients with following complaints are contraindicated for *Agni-Karma* (Table-4) :

Table-4: Contra-indications for <i>Agni-Karma</i>		
• <i>Pitta prakriti rogi</i>	• Elderly	• <i>Bhiru</i> (afraid/fearful)
• <i>Raktpitta</i>	• <i>Bhinna koshta rogi</i>	• <i>Anudhritta shalya yukta rogi</i>
• <i>Atisara</i>	• <i>Durbala rogi</i>	• <i>Aswedya rogi</i> (Contraindicated for <i>Swedana Karma</i>)
• Children	• Multiple <i>vranas</i>	

AGNI-KARMA PRAKARA⁵²

Sushruta advocated four different ways for performing an *Agni-Karma* :

1. *Valaya* : In a circular fashion (ring shaped pattern)
2. *Bindu* : In the form of dots
3. *Vilekha* : In the linear fashion (lines)
4. *Pratisarana* : By rubbing the hot material at the site

Ashtanga Samgraha adds three more ways to perform this :

5. *Ardha Chandra*-half moon or crescent shape
6. *Swastika*- like swastika yantra
7. *Ashtapada*- in the form of 8 lines in different directions.

TYPES OF AGNI-KARMA

Though, there is no clear mention about the classification of *Agni-Karma* in the ancient *Ayurvedic* classics, still a classification based

on the type of its application have been made to facilitate their distinction from each other, as mentioned below :

A. According to *Dravyas* used :

1. *Snigdha Agni-karma* : Based on the use of *madhu, ghrita, tailam* to treat diseases seated in *Sira, Snayu, Sandhi, Asthi*.
2. *Ruksha Agni-karma*: Based on the use of *pippali, shara, shalaka, godanta* to treat diseases seated in *Twak* and *Mamsa-dhatu*.

B. **Dalhana** mentioned three types of **vlekha dahana** as⁵³ :

1. *Tiryak* (Oblique)
2. *Riju* (Straight)
3. *Vakra* (Zigzag)

MATERIALS AND METHODS REQUIRED FOR AGNI-KARMA

Items required for conducting the *Agni-Karma* procedure are mentioned in Table-5 :

Table-5: Instruments and medicines required for <i>Agni-Karma</i> Procedure		
<ul style="list-style-type: none"> • <i>Panchloha shalaka</i> • <i>Ghritakumari majja</i> • <i>Triphala kwath</i> 	<ul style="list-style-type: none"> • <i>Madhu</i> • <i>Sarpi</i> • Sterile drapes 	<ul style="list-style-type: none"> • Source of heat-may be gas stove • Sterile gauze pieces • Sponge holder

Panch loha / Pancha Dhatu shalaka composition⁵⁴

- *Tamra*(copper) : 40%
- *Loha*(iron) : 30%
- *Yashada*(zinc) : 10%

- *Rajata*(silver) : 10%
- *Vanga*(tin) : 10%

SAMYAG DAGDHA LAKSHNAS

Samyag dagdha lakshanas are :

- *Na avagadha vrana* :vrana which is not deep
- *Taal phala sadrisha varna* : colour of vrana is like that of *taal phala*
- *Susamsthita vrana* : well defined vrana
- *Lakshanas same as that of* :*twak, mamsa, sira dagdha*

PURVA KARMA

Purva Karma includes the following :

1. Due consideration should be made regarding⁵⁵ :
 - Thickness of the site (*Roga samsthana*) of *Agni-Karma*
 - Keep in mind the *marma sthanas* while prescribing *Agni-Karma*
 - Check the strength (*bala*) of the patient
 - Assess the likely impact of the prevailing *Ritukala*
2. Explain the procedure and its cons & pros to the patient
3. Take written consent the patient/parent/guardian
4. Complete all the necessary investigations.
5. Give *pichhila anna* to eat before performing *Agni-Karma* except⁵⁶ :

- In *mudhagarbha, ashmari, bhagandara, udara, arsha & mukha rogas* which require empty stomach⁵⁷.

6. Ensure the availability of all the requirements

7. **Preparation of the part**⁵⁸:

- Wash the part with *Triphala kwath*
- Wipe & dry the part with sterile gauze piece
- Draping is done

8. Place the *panchdhatu shalaka* over heat stove till it gets red hot

PRADHANA KARMA

The main goal of *Pradhana karma* is to perform *Agni-Karma* till *samyag dagdha lakshnas* appear. Perform the following :

1. Keep ready the swab dipped in *Ghrita kumari pulp paste* & hold with swab holding forceps
2. The *dahan karma* in the form of *bindu* i.e. Dots with red hot *Panchdhatu shalaka* is performed over the pre identified tender points .
3. Soon after *dahan karma*, *ghrita kumari pulp gel* is applied on the *dahana* site to avoid pain during the procedure
4. Repeat this each time a *dahan karma* is carried out leaving behind a burnt spot in the form of *Bindu*.
5. Bear in mind that *Agni-karma* should always be targeted to *Samyag dagdha laksana utpatti*.

6. Take Precaution to avoid any *asamyag* or *atidagdha lakshanas*.
7. 4-5 sittings with a gap of 7 days in between are usually required to get relieved off the complaints.

PASCHAT KARMA

Paschat Karma requires the performance of the following :

1. *Samyag dagdha laxanas* mark the completion of *Pradhan Agni Karma*
2. Wipe out the *ghrita kumari* pulp gel application with the sterile gauze piece
3. Apply the mixture of *madhu & ghrita* on the burnt site⁵⁹
4. Patient is discharged and advised to apply gel of *haridra* in coconut oil at bed time.

ADVICE ON DISCHARGE

It is essential to give the following advice to the patient on discharge :

1. Avoid contact of *samyag dagdha vrana* site with water
- Adopt strict adherence to *pathya*, and avoid *apathyakara ahara-vihara*.

DISCUSSION

The review of the published research and review articles clearly demonstrate the

efficacy and practical utility of the classical *Agni-Karma* technology against the *Sandhigata vata* (Cervical spondylosis). The review of the ancient *Samhitas* presented in a comparative and systematic way would assist more easier adoption of the *Agni-Karma* technology.

Mechanism of action of *Agni-Karma* on the disease under review has been described below⁶⁰ :

A. Agni has the following gunas :

- *Ushna, tikshna, sukshma, ashukari*
- Opposite to the *gunas of vata & kapha*
- These *gunas* of *Agni-Karma* are responsible in its efficacy against *sandhigata vata* (Cervical spondylosis) because :
 - It eradicates *sroto avarodha*
 - It improves *rakta sanchara* to the affected joint
 - It pacifies *vata & kapha doshas*
 - Thus, *Agni-karma* reduces pain

B. Dhatvagni :

- Indicator of nourishment of *dhatu*s, and status of *doshas*
- *Agni-karma* increases *ushnata & dhatvagni* to the affected part
- It improves Metabolism & *pachana*

C. Peripheral nerve stimulation concept for relief of Pain (Offset Analgesia)⁶¹ : *Agni-Karma* causes peripheral nerve stimulation resulting in relief of pain etc.

D. Gate control theory⁶²: The Gate control theory of pain asserts that the non-painful stimulus closes the nerve gates to the painful stimuli. This prevents pain sensation from travelling to the Central Nervous System

E. Third Concept⁶³

- These receptors undergo stimulation at 45 degrees
- It is based on the principle that though pain and thermal signal pathways run parallel to each other & end at same area but only the stronger one is usually felt
- Thus complete exclusion of pain by heat occurs.

F. Other beneficial effects of heat⁶⁴:

- The heating stimulates metabolic process in the tissue and causes production of metabolites. Oxygen and nutrient demand is increased.
- The heat received by the part brings about vasodilatation, thus improving the circulation to the part. Improved circulation drains out all the metabolites. Improved circulation

meets the oxygen & nutrient demands leading to rapid recovery.

- Transferred heat brings about muscle relaxation, essential in stiffening of neck, etc.

CONCLUSION

The review of the recently published articles and the classical literature amply demonstrate the efficacy of the classical *Agni-Karma Agni-Karma* is a safe, non invasive and drug free para-surgical procedure. It is a cost effective procedure requiring no hospitalization, etc. Since, the incidence of this disease has been observed mostly in the higher age bracket, the technology can, therefore be made more patient friendly by incorporating appropriate *rasayana* drugs, *abhyanga*, anti-inflammatory medicines, etc.

Acknowledgement:- Nil

Financial Assistant:- Nil

Conflict of interest :- Nil

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