"ROLE OF AGNIKARMA IN THE MANAGEMENT OF GRIDHRASI W.S.R TO SCIATICA"

By

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In partial fulfillment
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In

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Under the guidance of

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Declaration

I here by declare that this dissertation entitled ***"ROLE OF AGNIKARMA IN THE MANAGEMENT OF GRIDHRASI W.S.R TO SCIATICA"*** is a bonafide and genuine research work carried out by me under the guidance of ***Dr. Suresh Negalaguli.****M.D. (Ayu),* Department of Post Graduate Studies in Shalyatantra, Alva's Ayurveda Medical College, Moodbidri.

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I recommend this dissertation for the above degree to the University for the Approval.

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Endorsement

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ABREVATIONS

1) A.H : Astanga Hridaya
2) A.K : Amarakosha
3) A.S : Astanga Sangraha
4) A.T. : After Treatment
5) A.V : Atharva Veda
6) Bel.sa : Bela samhitha
7) B.P : Bhava Prakasha
8) B.T. : Before Treatment
9) C.D : Chakra Datta
10) C.S : Charaka Samhita
11) Comm.: Commentary
12) Ckr : Chakrapani.
13) D.G : Dravya Guna Vijnana
14) DL : Dalhana
15) H.P.I.M: Harrison's Principle of Internal Medicine
16) I.P.D. : In Patient Department
17) K.S : Kashyapa Samhita
18) M.N : Madhava Nidana
19) Madhu : Madhukosha
20) O.P.D : Out Patient Department
21) S.D : Standard Deviation
22) S.E : Standard Error
23) S.K.D : Shabda Kalpa Druma
24) S.S : Susrutha Samhita
25) Sh.S : Sharangadhara Samhita
26) Vag : Vagbhata
27) Vang : Vangasena
28) Y.R : Yogaratnakara

29) Yrs. : Years

30) + : Pres

31) - : Not Present

32) % : Percentage

ABBREVIATIONS OF STHANAS OF SAMHITA

1) Chi : Chikitsa sthana

2) Ind : Indriya sthana

3) Ka : Kalpa sthana

4) Ma.Kha: Madhyama Khanda

5) Ni : Nidana sthana

6) Po.Kha: Poorva Khanda

7) Sha : Shareera sthana

8) Si : Siddhi sthana

9) Su : Sutra Sthana.

10) Utt : Uttara Khanda

ABSTRACT

Gridhrasi is a Rujapradhana Nanatmaja Vata Vyadhi, intervening with the functional ability of low back & lower limbs. Low back pain is the major cause of morbidity throughout the world affecting mainly the young adults. Life time incidence of low back pain is said to be 50-70% with the incidence of Sciatica more than 40%.

Objectives of the study

1) To estimate the efficacy of Agni karma over padakanistakam (little toe) in the management of Gridhrasi w.s.r to Sciatica.

2) To establish the probable mode of action of Agni Karma in the management of Gridhrasi w.s.r to Sciatica.

Methods:

It is a single blind clinical study with pre-test and post-test design. A special proforma was prepared with all the points of history taking, physical examination and investigations.

The study was carried out in 30 Patients of Gridhrasi with Agnikarma. Data was collected from the patient on the 7th day, 14th and 21st day of the study period.

Interpretation and Results:

- The mean score of severity of Ruk showed a reduction. The results obtained were statistically highly significant (P<0.001) as assessed by the paired t. test
- The severity of Stambha was markedly decreased after Agnikarma and the results were statistically highly significant (P<0.001).
- The magnitude of Toda showed marked improvement The improvement observed after the treatment is also statistically highly significant (P<0.001).
- The effect of Agnikarma on the magnitude of tenderness found to be encouraging. The improvement observed after the treatment is also statistically significant (P<0.001).
- Highly significant improvement in mean score of SLR, Breggards test, Lasegue's SLR Test was found (P<0.001).

Conclusion:

Analysis of the overall effect of the treatment *Agnikarma* in patients of *Gridhrasi* reveals that patients showed satisfactory response with the treatment. The results revealed that there was no patient who got complete cure from the illness. At the same time, this study also reveals that all patients responded to the treatment in varying grades.

Key words:

Gridhrasi, Agnikarma,Sciatica

INTRODUCTION

Gridhrasi is a Rujapradhana Nanatmaja Vata Vyadhi[1], intervening with the functional ability of low back & lower limbs. It is particularly seen in most active period of life, involving working class people causing hindrance in routine life. Low back pain is the major cause of morbidity throughout the world affecting mainly the young adults. Life time incidence of low back pain is said to be 50-70% with the incidence of sciatica more than 40%. Such presentations were common in olden times too and ancient science of life named it as Gridhrasi.

"Gridhrasi"- as the term meaning goes indicates the typical gait that resembles a "Gridhra" or "Vulture", which is often seen in Gridhrasi. The cardinal sign and symptoms of Gridhrasi are Ruk (Pain), Toda (Pricking pain), Stambha (Stiffness) and Muhurspandana in the Sphika, Kati, Uru, Janu, Jangha and Pada in order[2] and Sakthiskhepana-nigraha[3] i.e. restriction in lifting leg.

The symptoms seen in Gridhrasi can be well correlated with "Sciatica" in modern terminology. Sciatica is a very painful condition in which pain begins in lumbar region and radiates along the postero lateral aspect of thigh and leg[4]. Hence, movement of the affected leg is restricted and patient is not able to walk properly. This problem which evidently has a favorable natural history, can be remarkably disabling, has challenged health care providers.

Moreover, the modern treatment of sciatica is not satisfactory and includes use of analgesics and few surgical procedures which is often associated with many adverse effects. Because of such problems, it effects not only the social and economic position of the individual and his family; it also leads to draining of national resource due to work hour loss, resulting into diminished production. Many researches were conducted on this disease; still the complete cure of this is a mirage.

The importance of back pain in world is underscored by the following:

1) Low back pain is the major cause of morbidity throughout the world affecting mainly the young adults. Life time incidence of low back pain is said to be 50-70% with the incidence of sciatica[5] more than 40%.
2) Back symptoms are the most common cause of disability in patients under 45 years of age.
3) In a survey, 50% of working adults admitted to have a back injury each year.

4) Approximately 1% of the U.S. population is chronically disabled because of back pain.
5) According to a survey, low back pain is extraordinarily common, and second only to the common cold
6) Prevalence of sciatica ranges from 11 to 40%. No population appears immune although physical fitness might maintain the health.

As the medical science recognized the severity, a medicament or management which relieves the pain, improves the functional ability, restores the functional ability and controls the condition with cost effectiveness is the need of the century.

Sequential administration of the Snehana, Swedana, Basti, Siravyadha and Agnikarma are lines of treatment of Gridhrasi as expounded in the Ayurveda literature.

Agnikarma chikitsa is said to be superior to Bhesaja, Shastra and Kshara chikitsa as the diseases treated effectively by Agnikarma do not reccur and the same is indicated in Gridhrasi.

Agnikarma one of the unique procedures explained for the management of Gridhrasi. Agnikarma is indicated where other managements are failed to overcome the Gridhrasi problem.

The procedure of Agnikarma does not have side effects, it is cost effective, it can be managed with patients as ambulatory and can be done in OPD itself. Considering the above facts the present dissertation is taken up to establish the effect of Agnikarma in the management of Gridhrasi. At the same time the authenticity of the reference stating that diseases effectively treated by Agnikarma do not reoccur shall also be studied.

OBJECTIVES OF THE STUDY

1) To estimate the efficacy of Agni karma over padakanistakam (little toe) in the management of Gridhrasi w.s.r to Sciatica.

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HISTORICAL REVIEW

History of medicine in India is actually the history of science of life developed by the ancient seers & later systematized into carefully woven treatises. A careful insight into ancient treasure of knowledge makes a good beginning for any study since we are proud to belong to be part of a heritage, which traces its roots into times immemorial. . Hence an attempt has been made to trace the references regarding Vatavyadhi in general and Gridhrasi in particular, right from Vedic Period. For the total coverage of historical aspect, it has been divided into 5 parts as below:

I. Vedic period
II. Upanishad and Purana period
III. Samhita period
IV. Sangraha period and others
V. Ayurveda in modern age

Vedic Period:

The Vedas are considered as the oldest recorded knowledge in the history.

Atharva Veda:

In Atharva Veda, the word Gridrasi is not clearly mentioned, but word "Vatikrita Vishanika" can be equated with Gridhrasi, which is one among the Vata Vyadhi. *Anukam*, *Anukyam* are the words used in many occasions to denote spine or back. In Atharva Veda, Vata is addressed not to leave the body but bear the limbs till the old age. Prayers saying "keep Ojus in Uru spread in Jaghana and Prishtha,which is having the capacity to straighten and erect the foot and responsible for unimpaired organs of the entire body" is also been found in Atharva Veda.

Five types of Vata viz. Prana, Apana, Vyana, Samana and Udana was also mentioned there[1].The drugs effective for the treatment of Vayu have been also described[2] and Vishanaka have been claimed as Vatikritasya Bheshaji and Vatikrita Nashini respectively[3] .In Atharvaveda description of Shroni and other words used for Asthi and Spine was also given. Kikasa denotes the vertebra[4].

Rig Veda:

The description of diseases like Angabheda and Pangu clearly show their existence during that era[5]. Description of spinal disease is also found in Rigveda. Vyamsa was mentioned in Rig Veda as the disorders which hamper the movement or Gati.

Yajur Veda:

The classification of Vata is also available in Yajurveda[6].

Upanishad and Purana period:

There are elaborate description of the functions and types of Vata, its locations, qualities etc in Upanishad.

-In Kenopanishad the description given for Vayu as one which is always in motion and continuing efforts.

-Eeshopanishad also described it in a similar fashion.

-Chhandogyopanishad highlighted the Chala property of Vayu and described its association with body and movements[7].

-Kathopanishad named the word Sushumna for spinal cord, which comes out Piercing the skull[8].

-In Prashnopanishad the anatomy of the spinal cord and its functions are depicted. According to it Sushumna is one of the 101 Nadis going upwards.With the help of this nadi the Udana Vayu moves to and fro from foot and legs to head[9].

Bhrahmasutra reveals the importance of Vyana Vata as the one that resides in the joints and responsible for the movements of the joint. The circulation is considered as the function of Samana[10].

In Garuda Purana, health related subjects are described in details. A separate chapter is available as Vatavyadhi Nidana and Gridhrasi is described as an entity there[11].

Agni Purana also holds identical description. Panini has mentioned Vata Kopa as well as Vata Shamana. He has given the term Vatiki for disorders of Vata[12].

Sushumna has been described in Harsha Charita.

Samhita Period

Charaka Samhita:

Charaka Samhita is the first and foremost Ayurvedic source for the detailed description of Gridhrasi.

* In 20th chapter of Sutrasthana – Maharogadhyaya, Gridhrasi is enumerated in the 80 types of Nanatmaja Vatavyadhi[13].
* In 19th chapter of Sutrasthana – Astodariya Adhyaya, description of two types ofGridhrasi viz. Vataja and Vata-Kaphaja has been mentioned[14].
* In 5th chapter of Sutrasthana, Matrashiteeya Adhyaya, Taila Abhyanga in Pada is indicated in Gridhrasi[15].
* In 28th chapter of Chikitsasthana – Vatavyadhi Chikitsa, the detailed symptomatology and treatment of Gridhrasi have been given[16]
* In 14th chapter of Sutrasthana – Swedadhyaya, Gridhrasi is described as a Sweda Sadhya Vyadhi[17].
* In kiyantasiraseeya adhyaya, two types of vitiation of Vata i.e caya and prakopa and different coarses of Doshas in the pathogenesis of disease are described. In Gulma Cikitsa, the explanation of Lasuna ksheera Paka is said for Gridhrasi.

Sushruta Samhita:

* In Sushruta Nidanasthana 1st chapter, Vatavyadhi Nidana, Rupa and Samprapti of Gridhrasi have been described[18].
* In Chikitsa Sthana 5th chapter - Mahavatavyadhi Chikitsitam, Gridhrasi is described during indication of Siravyedha for Vatavyadhi Chikitsa[19].
* In Sushruta Sharira Sthana 8th chapter, site for Siravyedha in Gridhrasi is Indicated[20]. In Bhagna Nidaana Adhyaya, Sushruta has explained Sandhimukta (dislocation or herniation) and Kanda Bhagna (fracture). Sandhimukta explanation resembles that of disc prolapse which is responsible for majority of disc lesions.

Harita Samhita:

* Harita has illustrated Vata vyadhis classifying according to five varieties of Vata with mentioning about 16 diseases for each type.
* He allotted separate chapters for Gridhrasi Vata where nidhana, lakshana and chikitsa have been explaind in the chapter[21.] Gridhrasi as a disorder of Vyana Vata in specific is a contribution by him[22].

Kashyapa Samhita:

In Kashyapa Samhita, Gridhrasi is enumerated under 80 types of Vata Vikara[23].

Bhela Samhita:

In the 24th chapter of Cikitsa Sthaana certain general and special Vata allevating measures are discussed. Treatment with BalaTaila, mulika taila, sahachara taila for Basti& Abhyantara pana, unmardhana and Raktamokshana are mentioned[24].

Kalyanakaraka:

The 8th chapter termed as Vatarogadhikara deals with pathology and symptomatology of Gridhrasi[25] and its treatment is given in the 12th chapter named Vata Roga Chikitsa[26].

Sangraha Kala

Ashtanga Sangraha:

In Sutrasthana 20th chapter- Doshabhediya Adhyaya, Gridhrasi is included under 80 types of Vata Vikara[27].

In Nidanasthana 15th chapter- Vatavyadhi Nidana Adhyaya, pathogenesis and symptomatology of Gridhrasi has been described[28].

In Sutrasthana 36th chapter, Siravyedha Chikitsa in Gridhrasi has been mentioned[29].

Ashtanga Hridaya:

In Nidanasthana 15th chapter Vatavyadhi Nidana symptomatology and pathogenesis of Gridhrasi is described[30].

In Sutrasthana 27th chapter, site of Siravedha in Gridhrasi has been mentioned[31].

Madhava Nidana:

In the chapter of Vata Vyadhi Nidana, he explained two types of Gridhrasi and some specific symptoms of them i.e.Dehasya Pravakrata (Sciatic scoliosis) in Vataja type and Mukhapraseka and Bhaktadvesha in Vata-Kaphaja type[32].

Chakradatta:

While describing about treatment of Gridhrasi, some herbal Preparation, vaarthaka prayogat,eranda phala payasa,raasnadhi gutika,Basthi prayoga kala and Sashtra Chikitsa ie sira vyadha & agnikarmaare mentioned in detail[33].Chakradatta has indicated Rasna Guggulu Vati in the treatment of Gridhrasi.

In Amavata Rogadhikar, he indicated Ajmodadi Vati for the management of Ugra Gridhrasi.

Arundatta:

Arundatta in his Sarvanga Sundari commentary on Ashtanga Hridaya defined clearly that due to Vata in Kandara, the pain is produced at the time of raising leg straight and it restricts the movement of thigh[34].

Gadanigraha:

In this text, treatment part of Gridhrasi has been explained at two places.

1) In 4th chapter of Prayoga Khanda termed as Gutikadhikara[35]

2) In 19th chapter Vatarogadhikara of Kayachikitsa Khanda he describes Basti chikitsa for its treatment along with Agnikarma and Raktamokshana[36]

Dalhana:

According to Dalhana, Gridhrasi is commonly known as ‘Randhini’ in which severe pain occurs[37].

Vangasena:

In this text, symptomatology[38] and line of treatment has been more clearly explained by mentioning that Deepana, Pachana, Vamana, Virechana, Basti and Siravyedha should be done in Gridhrasi. Rasna Guggulu is mentioned in the treatment of Gridhrasi[39].

Indu:

In Shashilekha commentary of Ashtanga Sangraha, Indu has described that the symptoms in gridrasi and vishwachi are similar. Manifestation in upper limb is called vishwachi and that which involves the lower limb is called gridrasi[40].

Sharangadhara Samhita:

In 7th chapter108 sloka of Purvakhanda termed as Rogaganana, Gridhrasi is counted under 80 types of Nanatmaja Vatavyadhi[41]. Treatment of Gridhrasi is described in 2nd and 5th chapter of Madhyama Khanda[42].

Rasaratna Samuchchaya:

Treatment of Gridhrasi is explained in 30th chapter of Rasaratna Samuchchaya[43].

Bhavaprakasha:

In Bhavaprakasha, Gridhrasi is described under Vatavyadhi Nidana .Types of Gridhrasi along with its treatment is mentioned.

Yogaratnakara:

Yogaratnakara explained symptomatology and classification of Gridhrasi in vata vyadhi nidhana[44]. In vata vyadhi chikitsa few preparations have also been described which are useful in Gridhrasi[45]. Vishagarbha taila has been described in Vata Vyadhi chikitsa[46].

Bhaishajya Ratnavali:

In this text treatment of Gridhrasi is described as per Chakradatta.Pathya and apathy has been described in vata vyadhi rogaadhikara[47].Vishagarbha taila has been described in vata vyadhi rogaadhikara[48].

GRIDHRASI

Vyutpatti of *Gridhrasi*

Gridhrasi is derived from '***Gridhu'*** Dhatu that means to covet, to desire, to strive after greedity, to be eager for.

The word Gridhrasi is in feminine gender. Grdhrasi + So- Atonupasargakah – adding "kah" pratyaya leads to Gridhra + So + Ka. Further by Lopa of "o" and "k", "Sha" is replaced by "Sa" by rule "Dhatvadeshu Sah Sah". The word Gridhrasi is derived by adding "Angish" pratyaya.

Finally for this word Gridhraus which is in female gender by adding '*Dis'* Pratyaya the word '*Gridhrasi'* is derived. Gridhra refers to the bird vulture.

It is opined that, in this disease the patients gait becomes altered as his legs becomes tense and slightly curved due to pain resembling walk of the vulture, hence the name *Gridhrasi* .

Niruktti of *Gridhrasi*

Gridhrasi is an illness predominantly affecting the ambulatory function of the patient and the same is stressed in the derivation of the word *Gridhrasi*. Following derivations taken from the different text books in Sanskrit literature substantiates the same.

- ***"Gridhramapisyati", 'Syati'*-as-*'Kshepana'*.**
- ***"Urusandhau Vatarogah"*** [2]
- ***"Gridhraamiva Syaati Gachhati".***

The disease *Gridhrasi* is said to cause an abnormal throwing action in the affected leg. The Sanskrit word *Syaati* in *Gridhrasi* means throwing action. By this abnormality the gait of the patients is said to resemble the gait of bird vulture and hence the name *Gridhrasi* to this unique illness. Further the author of Amarasudha opines that this disease is characterized by morbidity of Vata Dosha affecting the hip joint.

***"Gridhyati* Maansam-abhikankshati Satatam Iti. *Grudh+Krun*.**
Gridhro Maansalolupa Manushyatam. Syati Peedayati Nashyati vaa"

The above reference from Shabdakalpadruma states that, the word Gridh refers to a person who is crazy of eating meat. The word *Syaati* in Sanskrit means to cause suffering. Thus the word *Gridhrasi* applies to an illness that mostly attacks the persons who are greedy of consuming meat.

"Gridhram Api Syati So Antakarmani Atonupasargakah,
Chanchva Gridhra Iva Syati Peedayati, Gridhra Syati Bhakshati"

Gridhra is bird called as vulture in English. This bird is fond of meat and he eats flesh of an animal in such a fashion that he deeply pierce his beak in the flesh then draws it out forcefully, exactly such type of pain occurs in *Gridhrasi* and hence the name.

In Monnier Williams, Sanskrit - English dictionary it is said that, *Gridhrasi* is Rheumatism affecting the loins.
Similar reference is also found in "Vaidyakashabda sindhu".

Paribhaasha of *Gridhrasi*

Charaka:

Gridrasi is a Vatavyadhi characterized by Stambha (stiffness), Ruk (pain), Toda (pricking pain) and Spandana (frequents tingling). These symptoms initially affect Sphik (buttock) as well as posterior aspect of Kati (waist) and then gradually radiates to posterior aspects of Uru (thigh), Janu (knee), Jangha (calf) and Pada (foot)[3].

Sushruta & Vaghbata:

Acharya Sushruta opines that there are two Kandara in the leg that gets afflicted. The two Kandara include the one extending distally from the Parshni to the toes, and other extending above from the Parshni to the Vitapa. These two Kandara when gets afflicted with the Vata Dosha limits the extension of the leg. This disease is known as *Gridhrasi*[4].

Harita:

Gridrasi is a condition originates due to vitiation of Vyana Vayu which is responsible for all the types of voluntary movements i.e. expansion, contraction, upward, downward, and oblique.

Paryaaya of *Gridrasi*:

Following are the synonyms of *Gridrasi*.

1. *Ringhi*nee - by Vachaspatimishra[5]

The word Ringhinee means the disease that cause to creep or crawling or that makes a person to go slowly.

More over according to the Shabdakalpadruma this term refers to Skhalana meaning displacement.

2. *Randhri*nee - by Dalhana this term is used by Dalhana while commenting on Sushruta, indicates weak point or rupture[6].

3. *Radhina* - by Aadhamalla & Kaashirama[7].

This term is used by Aadhamalla and Kaashirama in their Deepika and Goodhartha Deepika commentary on Sharanagadhara Samhita. It indicates pressing, compressing or destroying.

Nidana Panchaka of *Gridhrasi*

Nidana Panchaka is the combination of parameters, which are used in the diagnosis of the disease. They are –

1) Nidana
2) Purvarupa
3) Rupa
4) Upashaya-Anupashaya
5) Samprapti

Nidana of *Gridhrasi*:

The causative factors explained in the classics may be divided into many groups, but for the sake of convenience this can be grouped into two types viz.

1) General (Samanya) Nidana
2) Specific (Vishesa) Nidana

In some disease, Samanya Nidana of concerned Dosha or group of diseases have been explained and in some disease Vishesa Nidana for that particular disease have been listed. The Nidana factors of Vatavyadhi in general is also the Nidana of the *Gridhrasi*, as the exclusive Nidana of *Gridhrasi* is not elaborated. Though the etiology of all the Vatavyadhi is similar, the Samprapti and clinical presentation is unique for each Vatavyadhi, distinguishing them from one another[8].

In regard to causative factors of Vatavyadhi, only Charaka[9] and Bavaprakasha[10] has explained in detail, while in Sushruta Samhita, Ashtanga Sangraha and Ashtanga Hridaya etc. the causes of Vatavyadhi have not been clearly described. However in these texts, the causative factors provoking Vata Dosha are described.

Gridhrasi is considered as a Nanatmaja type Vatavyadhi. The provoking factors of Vata can also be taken as a cause of *Gridhrasi*.

All the etiological factors given either of Vatavyadhi or Vataprakopaka in the Ayurvedic classics can be classified into four groups.

* Aharataha
* Viharataha
* Agantuka
* Anya Hetu

Table No: 1

Nidana (Aetiological Factors) of Vata Vyadhi and Vata Prakopa.

A) AHARATAHA

Causes	Ca	Su	A.S	A.H	B.P
I Dravyatah (Substantial) Aadhaki (Cajanus cajan)	-	+	-	-	-
Bisa (Nelumbuo nucifera)	-	+	+	-	-
Chanaka (Cicer arietinum)	-	-	+	-	-
Chirbhata (Cuccumus melo)	-	-	+	-	-
Harenu (Pisum sativum)	-	+	-	-	-

Jaambava (Eugenia jambolena)	-	-	+	-	-
Kalaya (Lathyrus sativus)	-	+	+	-	-
Kalin'ga (Holarrhena antidysenterica)	-	-	+	-	-
Kariya (Cappaaris deciduas)	-	-	+	-	-
Koradusha (Paspalum scrobiculatum)	-	+	-	-	-
Masoora (Lens culinaris)	-	+	-	-	-
Mudga (Phaseolus mungo)	-	+	-	-	-
Nishpaava (Hygroryza aristata)	-	+	-	-	-
Neevara (Hygroryza aristata)	-	+	-	-	-
S'aluka (Nelumbium speciosum)	-	-	+	-	-
S'ushkas'aaka (Dry vegetable)	-	+	-	-	-
S'yaamaka (Setaria italica)	-	+	-	-	-
Tinduka (Diospyros tomentosa)	-	-	+	-	-
Trunadhaanya (Grassy grain)	-	-	+	-	-
Tumba (Lagenana valgaris)	-	-	+	-	-
Uddalaka (A variety of Paspalum scrobiculatum)	-	+	-	-	-
Varaka (Carthamus tinctorius)	-	+	-	-	-
Virood'haka (Germianated Seed)	-	-	+	-	-

II.Gunatah Rukshaanna (ununctous diet)	+	+	+	+	+
Laghvanna (light diet)	-	+	+	-	-
Gurva anna (heavy diet)	-	-	+	+	-
S'eetaanna (cold diet)	+	-	+	-	-

III.Rasatah Kashaayaanna (astringent taste)	-	+	+	+	+
Kat'vanna (acidic taste)	-	+	+	+	+
Tiktaanna (Bitter taste)	-	+	+	+	+

IV.Karmatah Vishtambhi (constipative diet)	-	-	+	-	-

V. Veeryatah S'eeta (cold)	-	-	-	-	-

VI.Maatratah Abhojana (fasting)	+	+	-	-	+
Alpaas'ana (dieting)	+	-	+	+	-
Vishmaas'ana (Taking unequal food)	-	+	-	-	-

VII. Kaalatah Adhyas'ana (eating before digestion of previous meal)	-	+	-	-	-
Jeernanta (After digestion)	-	+	+	+	+
Pramitas'ana (Taking food in improper time)	-	-	+	+	+

(B) Vihaaraja (Behaviour):

1.Mithyayogatah As'mabhramana (Whirling stone)	-	-	+	-	-
As'machalana (Shaking of stone)	-	-	+	-	-
As'mavikshepa (Throwing of stone)	-	-	+	-	-
As'motkshepa (pulling down stone)	-	-	+	-	-
Balavat vigraha (wrestling with superior healthy one)	-	+	+	-	-
Damyagaja nigraha (subduing unteameable elephant) cow and horse	-	-	+	-	-
Divaasvapna (day sleep)	+	+	-	-	-
Dukhaasana (uncomfortable sitting)	+	-	-	-	-
Dukhas'ayya (uncomfortable sleeping)	+	-	-	-	-
Ghadhotsadana (strong rubbing)	-	-	+	-	-

Kasht'abhramana (whirling of wood)	-	-	+	-	-
Kasht'achalana (shaking of wood)	-	-	+	-	-
Kasht'a vikshepa (throwing of wood)	-	-	+	-	-
Kasht'otkshepa (pulling down wood)	-	-	+	-	-
Lohabhramana (whirling of metal)	-	-	+	-	-
Lohachalana (shaking of metal)	-	-	+	-	-
Lohavikshepa (Throwing of metal)	-	-	+	-	-
Lohotkshepa (pulling down metal)	-	-	+	-	-
Paragatana (strike with others)	-	-	+	-	-
Shilabhtamana (Whirling of rock)	-	-	+	-	-
Shilachalan (Shaking of rock)	-	-	+	-	-
Shilavikshepa (Throwing of rock)	-	-	+	-	-
Shilotkshepa (Pulling down rock)	-	-	+	-	-
Bhaaraharana (Head loading)	-	+	+	-	-
Vegadharana (Voluntary suppression of natural urges)	+	+	+	+	+
Vegodeerana (Forceful drive of natural urges)	-	-	+	+	-
Vishamopachara (Abnormal gestures)	+	-	-	-	-

2. Atiyogatah Atigamana (excessive walking)	+	-	+	-	-
Atihaasya (Loud laughing)	-	+	+	+	-
Atijrumbha (Loud yawning)	-	+	-	-	-
Atikharacapakarshana (Violent stretching of the bow)	-	-	+	+	-
Atilan'ghana (Leaping over ditch)	+	+	+	-	-
Atiplavana (Excessive bounding)	+	+	-	-	-
Atiprabhashana (Countinous talking)	-	-	+	+	-
Atipradhavana (Excessive running)	+	+	-	-	-
Atiprajagarana (Excessive awakening)	+	+	+	+	+

Atiprapatana (Leaping from height)	-	+	-	-	-
Atiprapidana (Violent pressing blow)	-	+	-	-	-
Atipratarana (Excessive swimming)	-	+	+	-	-
Atiraktamokshana (Excssive Blood letting)	-	-	-	-	+
Atisrama (Over exertion)	-	-	-	-	+
AtiSthaana (Standing for a long period)	-	+	-	-	-
Ativyaayaama (Violent exercise)	+	+	+	+	+
Ativyavaaya (excessive sexual intercourse)	+	+	+	+	+
Atiadhyayana (excessive study)	-	+	+	-	-
Adyas'ana (sitting for a long period)	-	+	-	-	-
Atyuccabhaashana (speaking loudly)	-	-	-	+	-
Gajaticarya (excessive riding on elephant)	-	-	+	+	-
Kriyaatiyoga (excessive purification therapy)	-	-	+	+	+
Padaticarya (walking long distances)	-	+	-	-	-
Rathaaticarya (excessive riding on chariot)	-	+	-	-	-
Turan'gaticarya (excessive riding on horse)	-	+	-	-	-

(C) Aagantuja (External factors):

Abhighaata (trauma)	+	-	-	-	-
Gaja,Usht'ra, Ashvasighrayanapatamsana (Falling from speedy, running elephant, camel and horse)	+	-	-	-	-

(D) Manasika (Mental factors):

Bhaya (fear)	+	-	+	+	+
Cinta (worry)	+	-	+	-	-
Krodha (Anger)	+	-	-	-	-
Mada (Intoxication)	-	-	-	-	+
S'oka (Grief)	+	-	+	+	+
Utkant'ha (Anxiety)	-	-	+	-	-

(E) Kalaja (Seasonal factors):

Abhra (cloudy season)	-	+	-	-	-
Aparaahnna (evening)	-	+	+	+	+
Apararatra (the end of the night)	-	-	+	+	-
Greeshma (summer season)	-	-	+	-	-
Pravaata (windy day)	-	+	+	-	-
S'is'ira (winter day)	-	-	-	-	+
Sheetakaala (early winter)	-	+	-	-	+
Varsha (rainy season)	-	+	+	-	+

(F) Anya Hetuja (Miscellaneous causes):

Aama (undigested article)	+	-	-	-	-
AsRukshaya (loss of blood)	+	+	+	-	-
Dhatukshaya (loss of body elements)	+	-	-	-	-
Doshakshaya (depletion of Dosha)	+	-	-	-	-
Rogatikarshana (emaciation due to disease)	+	-	-	-	-
Gadakruta mamskshaya (wasting due to disease)	-	-	-	-	+

Apart from the above causative factors, Marmaghaata on particular vital parts described by Sus'ruta may lead to death, disability, paresis and pain.The Marmas having revelance to Gridhrasi are shown in the table below [11].

Table No: 2 Types and Viddha lakshana of marma

Name	Type of Marma	Location	Marma Viddha Lakshana
Kukundara	Sandhi Marma Vaikalyakara Marma	It is located on both sides of Pristavamsha	Sparshaagnana Chestanasha.
Nitamba	Asthi Marma Kalantara Pranahara	It is located upon the S'roni on both the sides	Adhakayas'osha Daurbalya Marana.
Kurcha	Snaayu Marma Vaikalyakara Marma	It is located above the Kshipra Marma in both the legs.	Pada Bramana Pada Vepana.
Kurchasira	Snaayu Marma Rujakara Marma	It is located below the Gulpha Sandhi.	Ruja Sopha
Gulpha	Sandhi Marma Rujakara Marma	It is located in between Pada and Jangha.	Ruja Stabdapada Khanjata
Ani	Snaayu Marma Vaikalyakara Marma	It is located 3 Angulas above the Janu Sandhi.	Sophabhivriddhi Stabdhasakti
Urvi	Sira Marma Vaikalyakara Marma	It is located in the middle of the Uru.	Sonitaksaya Saktis'osha

A fore mentioned etiological factor of the Vatavyadhi may lead to pathological conditions of 'Dhatukshaya' or 'Margavarana' or both at a time, which in turn cause the provocation and vitiation of Vata dosha.

Purva Rupa:

. In classics, the description regarding the Purvarupa of *Gridhrasi* is not available. Even then few of the general citations in the classics pertaining to the occurrence of the Purvarupa in Vatavyadhi is worth mentioning.

Avyakta Lakshanas are Purvarupa of Vata Vyadhi[12]

Chakrapani says that Avyakta means mild symptoms are to be taken as a Purvarupa.Gangadhara give opinion similar to that of Chakrapani[13]

Madhukosha of Madhava Nidana[14] explained that Purvarupa are not clear due to –

- Less severe causative factors
- Less or mild symptoms
- Less Avarana of Dosha

By the consideration of above cited general rule of Purvarupa in regards to Vatavyadhi, *Gridhrasi* being a Vatavyadhi, Purvarupa of this disease may be assumed. Vague low back pain, mild discomfort in the lower extremities, altered sensation in the legs and similar other symptoms of *Gridhrasi* in its minimal severity may be considered as Purvarupa. The development of these symptoms following excessive exercise straining the back, or else direct trauma to the back are always corroboratory of *Gridhrasi*.The Purvarupa also depend upon Prakriti, Dushya, Desha, Vaya, Kala, Bala, Satva, Satmya etc.

Rupa:

Rupa appears in the Vyaktavastha i.e., fifth Kriyakala of the disease. This is the unique stage of the illness, where in it is clearly recognizable as all its characteristic signs and symptoms manifest.

Pain starting from Sphik and radiating towards Kati, Uruprishtha, Jaanuprishtha, Janghaprishtha and Pada in successive order, is the cardinal symptom of *Gridhrasi*.

According to Charaka, the symptoms of *Gridhrasi*

In Vataja type

- Stambha (stiffness)
- Ruk (pain)
- Toda (pricking sensation)
- Muhuspandanam (tingling)

In Vata-Kaphaja type of *Gridhrasi*

- Tandra
- Gaurava
- Arochaka

…are additional symptoms found[15].

According to Sushruta and Vagbhatta, **Sakthanah Kshepam Nigriharniyata** that means restricted movements of lower extremities is the symptom of *Gridhrasi*[16].

According to Madhavakara, Dehapravakrata i.e. scoliosis and quevering sensation and stiffness in Janu, Kati and Uru Sandhi (Janu Kati Uru Sandhinam Sphuranam and Stabdhata) are also symptoms of Vataja type of *Gridhrasi* and Agnimandya, Mukhapraseka and aversion for food (Bhaktadwesha) are the symptoms of Vata-Kaphaja type of *Gridhrasi*[17].

Considering all the clinical manifestations of *Gridhrasi*, it may be sub divided into two distinct categories

(i) Samanya Lakshanas

(ii) Vishesha Lakshanas

Table No: 3

i) SAMANYA LAKSHANAS OF GRIDHRASI

Lakshanas	CA	SU	AS	AH	MN	BP	SS	YR	VS	HS
SphikPoorva Kati Prista Janu Jangha Padam Kramat-Ruk	+				+	+	+	+	+	
Sphik Poorva Kati Prista Janu Jangha Padam Kramat- Toda	+				+	+	+	+	+	
SphikPoorva Kati Prista Janu Jangha Padam kramat-Stambha	+				+	+	+	+	+	
Sakhnaaha Kshepana Nigraha		+	+	+						
Kati Madhye Bahuvedana										+
Uru Madhyhe Bahuvedana										+
Janu Madhye Bahuvedana										+
Muhu Spandanam	+				+	+	+	+	+	

Ruk:

"*Ruk Satatam Shoolam*"[18]

"*Ruk Shoolam*"[19]

"*Ruja Vedana*"[20]

In *Gridhrasi* Ruk or Shoola i.e pain is one of the prime symptoms and is felt throughout the lower limb, pain starts from Sphik region and radiates till the Pada. Non radiating pain felt at sites like Kati, Uru, Janu, Jangha and Pada region is also considered as the symptom of *Gridhrasi*[21]. This typical radiating pain involving the legs is suggestive of sciatic-syndrome in modern parlance where pain is felt along the course of the sciatic nerve.

Toda:

"*Todah Suchivyadhanavat Vyatha*"[22]

"*Toda Vichhinnam Shoolam*"[23]

Intermittent pain similar to the feeling of pin prick is known as Toda, the site of Toda is similar to the site of Shula i.e., from buttock to heal.

Stambha:

"*Stambha Nishchalakaranam*"[24]

"*Stambha Baahu Uru Janghaadeenaam Sankochanaadhya Bhaavah*"[25]

"Stambha Nishkriyatvam" [26]

Stambha refers to the stiffness or rigidity felt at the thigh and legs and is another symptom of *Gridhrasi*. As the movement of the legs worsen the pain, stiff muscles prevent this and there by manifesting as the symptom Stambha. The restriction to move the legs also affects the gait of the patient, as his steps are short, cautious and slow.

Sakthnaha Kshepam Nigrahanyat:

"Kshepam Prasaranam Tam Nigrahanyat Avarundhyaat Ityarthah"[27]

The movement Kshepana refers to extension. Patient of *Gridhrasi* is unable to extend his legs as extending the legs worsens the pain. Acharya Vagbhata opines that it is the Utkshepana i.e. lifting of the legs is affected in *Gridhrasi*. Further the commentator Arundutta very clearly defines this symptom as'Paada Udharane Ashakti'[28] ,expressing the inability of the patient to elevate the legs. As the extension of the legs worsens the pain patient prefers to assume the flexed position of the legs.

Kati-Uru Jaanu Madhye Bahuvedana:

It is a distinct feature of *Gridhrasi* mentioned by Acharya Harita[29]
This refers to the severe pain experienced at Kati (low back), Uru (thigh) and Janu (knee) region. Static or non-radiating pain is also characteristic of *Gridhrasi*.

Muhu Spandana:

"*Spandana Sphuranam*"[30]
"*Spandanam Hi Kinchit Chalanam*" [31]

Sphurana refers to the fasciculation. Fasciculation may be present in lower extremities in patients of *Gridhrasi*.To be more precise this symptom is seen in the muscle supplied by the sciatic nerve.

ii) Vishesha Lakshanas:

The unique symptoms of *Gridhrasi* that indicate either Vataja or Vatakaphaja *Gridhrasi* are described as Vishesha Lakshana. It is evident that the predominance of Vata Dosha or Vatakapha Dosha in the Samprapti of *Gridhrasi* leads to the manifestation of Vishesha Lakshana.

Vataja *Gridhrasi*:

Here the Samprapti of the *Gridhrasi* is characterized by the sole involvement of Vata Dosha. Evidently there will not be association of Kapha Dosha in the Samprapti. Following are the Vishesha Lakshana of Vataja *Gridhrasi*[32].

Dehasya Pravakrata:

Madhava described this symptom which means that patient of *Gridhrasi* acquires a particular posture due to pain. It may be lateral and forward bending of body. The patient of *Gridhrasi* keeps the leg in flexed position and tries to walk without much extension in the affected side. Hence the whole body is tilted on the affected side and he assumes the bending posture or limping. This gait is also typical in *Gridhrasi*.

Sphuranam:

"*Sphuranam Gatra Deshe Swalpa Chalanam*"[33]

"*Sphuranam Punah Punah Chalanam*"[34]

The symptom of fasciculation in Kati, Uru, Janu and Jangha are similar to the Spandana or Muhuspandana is characteristic of Vataja *Gridhrasi*.

Suptata:

The patient experiences varied degree of paraesthesia or sensory loss in the affected limb.

Table No: 4

LAKSHANAS OF VAATAJA GHRIDHRASI

Lakshanas	CA	SU	AS	AH	MN	BP	SS	YR	VS
Dehasya Vakrata					+	+		+	+
Stabdhatabris'am					+	+		+	+
Janusandhi Sphuranam					+	+		+	+
Katisandhi Sphuranam					+			+	
Urusandhi Sphuranam					+	+		+	+
Janghasandhi Sphuranam						+			+
Suptata								+	

Vatakaphaja *Gridhrasi*:

Involvement of Kapha Dosha in the Samprapti of *Gridhrasi*, cause the below mentioned unique features[35].

Tandra:

"*Tandrayaantu Prabodhito Api Klamayati Nidrabheda*" [36]

This occurs due to Kapha and Tama Dosha, manifests as a feeling of drowsiness or inability of sense organs to grasp their respective objects followed with yawning or even fatigue without doing any labour[37].

Gaurava:

"*Aardra Charmavanaddham Mivetyartha*"[38].

Patient feels heaviness particularly in the lower limb or limbs.

Gaurava is the feeling of heaviness of the body in general or lower extremities particular. Needless to say this symptom is due to the morbid Kapha Dosha.

Arochaka:

"*Arochakaastu Prarthite Apyupayogasamaye Anannaabhilaasha*"[39]

"*Aruchi Prarthita Anna Bhakshana Asamarthyamucchyte*"[40]

It is a subjective symptom where patient fails to appreciate the taste in the mouth irrespective of state of appetite. In comparison to the role of Vata Dosha, involvement of Kapha Dosha has much to with the manifestation of Arochaka, because the seat of Bodhaka Kapha is Jihwa which does Rasa Bodhana.

Vahani Mardava:

Sluggishness of the Jatharagni resulting in impairment of both Abhyavaharana as well as Jarana Shakti.

Mukha Praseka:

Mukhapraseka means excessive salivation in mouth is due to Kapha in association with Ama.

Bhaktadvesha:

"Dveshamayati Yo Jantu Bhaktadvesha Sa Uchyate"[41]

Secondary to the sluggishness of Jatharagni and Kaphadusti, patient of *Gridhrasi* develops aversion towards food. Association of Ama is also contended in the causation of this aversion towards food.

Staimityam:

"*Staimityam Gatranaam Nirutsaahatvam"*[42.]

Inertness of the body, feeling of freezing sensation in the affected lower limb. Staimitya means timidness or frozen sensation.Due to Kapha vitiation, patient feels as if his lower extremities are covered with wet cloth.

Table No: 5

LAKSHANAS OF VAATAKAPHAJA GRIDHRASI

Lakshanas	CA	SU	AS	AH	HS	MN	VS	BP	SS	YR
Mukhapraseka						+	+	+		+
Arochaka	+					+			+	+
Bhaktadwesha						+	+	+		+
Vahnimardhava						+	+	+		+
Tandra	+					+	+	+	+	+
Gaurava	+						+	+	+	+
Staimitya							+			+

Upashaya and Anupashaya:

Upashaya are the medicines, diets and regimens which bring about happiness either by acting directly against the cause of the disease or it may produce such effect on the disease indirectly. Upashaya is rightly called as exploratory therapy. It is essential to know the Sadhyaasadhyata of a disease before the treatment. Charaka says, "A physician who can distinguish between curable and incurable diseases and initiate treatment in time with the full knowledge about the various aspects of the therapeutics can certainly accomplish his object of curing the disease"

When identical symptoms having two or more disease are encountered in such conditions, disease could be best differentiated by adopting Upashaya.

Upashaya for *Gridhrasi* has not been mentioned particularly. But, if there is uncertainty as whether the disease is Urusthambha or *Gridhrasi*, to differentiate these two we can adopt Upashaya. If symptoms aggravate on the application of oil, then we can consider it to be Urusthambha and if the symptoms alleviate we can consider it as *Gridhrasi*. The Nidana mentioned for Vatavyadhi are considered as Anupashaya for *Gridhrasi*.

Samprapti:

The manner of Doshic vitiation and the course they follow, culminating in the development of specific clinical manifestation is known by the name Samprapti[44]. Jaati and Aagati are its synonyms. A proper understanding of Samprapti is vital in the planning of the treatment of any disease, since Chikitsa as enunciated in Ayurvedic texts is nothing but Samprapti Vighatana[45].

No detailed Samprapti of *Gridhrasi* is described in texts, which is based on the Pratyaksha Lakshana found in the patients.The description of Samprapti of *Gridhrasi* is restricted to the naming of the Dosha and Dushya involved in the causation of this illness. *Gridhrasi* is enumerated under the Nanatmaja type of Vatavyadhi. Also considering the Anubandha of Kapha Dosha in the Vatakaphaja type of *Gridhrasi* is described. Thus the clinical manifestation of this disease is produced due to the morbid Vata Dosha or the combination of Vata and Kapha Dosha.

On the basis of symptomatology given in classics, the probable Samprapti-Ghataka of *Gridhrasi* can be traced out as below –

Dosha – Vata (Vyana) and Kapha(vata kaphaja).

Dushya – Kandara, Snayu, Sira, Asthi & Mamsa.

Srotasa - Raktavaha, Mamsavaha, Asthivaha.

Srotodushti Prakara – Sanga.

Agni - Jatharagni and Dhatwagni

Ama - Jatharagnijanya and Dhatwagnijanya

Udbhavasthana – Pakwashaya

Sanchara Sthana – Katiand adharanga

Adhisthana - Kati, Sphik.

Vyakta sthana – Spik, kati prista, Uru, Janu, Jangha and Pada.

The different factors involved in pathogenesis of *Gridhrasi* can be described individually as follows-

Dosha:

Being a Nanatmaja type of Vata Vyadhi, definite involvement of Vata Dosha in the pathogenesis is characteristic of *Gridhrasi*. Prakopa of Vata may occur in two ways viz. due to Dhatukshaya and Margavarodha.In the first instance, Ruksha, Laghu, Sheeta, Pramitashana, Vyayama, Abhighata etc., Nidana leads to direct Sanchaya and later Prakopa of Vayu.

In the case of Margavarodha, accumulation of Kapha Dosha plays an important role, particularly in producing Vatakaphaja type of *Gridhrasi*. In rare cases of *Gridhrasi*, there may be burning sensation along with pain, which indicates even the involvement of the Pitta Dosha.

As described in Sushruta Samhita, in *Gridhrasi* Sakthanah Kshepam Nigrahaniyat is one of the cardinal symptoms to be found in *Gridhrasi* patients. This Kshepana and Utkshepana etc. activities are being attributed to Vyana Vayu. By this observation it is evident that out of five types of Vata, morbid Vyana Vayu is the primary cause of the illness.The role of other Vata can not be ruled out as these types of Vata are mostly interrelated in their physiological functioning.

Shleshaka Kapha invariably gets involved in pathogenesis as it resides in Sandhi. In Vatakaphaja *Gridhrasi*, Arochaka and Bhaktadvesha are the distinguishing features and is due to vitiation of Bodhaka Kapha. Even the Kledaka Kapha may indirectly involve in the pathogenesis; more particularly in isolated cases of *Gridhrasi* predominated by the imbalance of Kapha Dosha in association with Vata. So to say, Vata and its association with Kapha are the Doshas involved in *Gridhrasi*.

Dushya:

The symptoms like pain at the Kati and Prishtha is suggestive of involvement of Asthi Sandhi. Pain in the leg radiating from the buttock to heal is suggestive of affection of Snayu Updhatu. Pain and stiffness of the legs, symptom Sankocha and the inability related to walking all are suggestive of Mamsa Dhaatu affliction.

According to Sushruta, Kandara is affected by vitiated Dosha in this disease. According to Charaka, Kandara is Upadhatu of Rakta Dhatu[46]. Chakrapani says that Kandara may also be taken as Sthula Snayu[47]. Snayu is Mulasthana of Mamsa as well as Upadhatu of Meda[48].

On the other hand, Asthi is the site of Vata and there is an inverse relation between each other. For instance, increasing Vayu causes Asthikshaya which lead to the further Prakopa of Vata. Here involvement of Asthi sandhi is evident by the symptom of Sakthanah Kshepam Nigrahaniyat.Depletion of the Asthi Dhatu at the joint is the possible pathology in *Gridhrasi*.

The Prakupita Vata when involves Mamsa and its sudden Sankocha may also lead to Bhramsa in the Sandhi, manifesting as *Gridhrasi*.

Srotas:

On the basis of Ashrayashrayi Bhava with the vitiation of Vata and above mentioned Dushyas, they are also known to be involved. Hence, Raktavaha, Mamsavaha and Asthivaha Srotas may be involved in this disease.

Srotodushti:

Srotodushti found in Gridhrasi is Sanga.

Agni and Ama:

Praseka, Arochaka, Bhaktadwesha are some of the distinguishing clinical manifestation of Vatakaphaja *Gridhrasi* and is indicative of Jatharagni Mandya.

Here Agni i.e. Jatharagni and Dhatvagni becomes Manda and Ama is also Jatharagnimandyajanita and Dhatvagnimandyajanita.

Udbhavasthana:

The Udbhava Sthana of this disease is Pakwashaya because it is a Nanatmaja Vata Vyadhi.

Sancharasthana:-

Distribution of symptoms like pain in the low back region extending up to the thigh, legs and heal indicates the lower half of the body as the Sanchara Sthana of the Dosha. In addition to this the typical symptoms of Vatakaphaja *Gridhrasi* like Aruchi, Gaurava and Tandra point towards the ambiquitous distribution of vitiated Dosha.

Adhishthana:

According to Chakradatta, Kati and Sphik are the initial sites, from where the disease begins. According to Sushruta, Kandara of Parshni, Pada and Anguli are affected by vitiated Dosha.

Vyakta sthana:

Spik, kati prista, Uru, Janu,Jangha and Pada are the vyakyha sthaana of the disease Gridhrasi.

VYAVACCHEDAKA NIDAANA:

To differentiate the other diseases and to arrive at right diagnosis Vyavacchedaka Nidaana should be done. Diagnosis of Gridrasi can be made on the basis of its cardinal features like pain experienced from Pristha, Kati , Sphik, and radiating down towards Uru, Janu, Jangha and Pada. But in some diseases like Khalli, Pangu, UruStambha, Khanja which are having some symptoms in common with Gridhrasi should be differentiated.

The Vyavacchedaka Nidaanas include

Khalli:

In Khalli, the aggrevated Vaata produces pain of “Avamotana type” (crushing pain) in Pada, Jangha, Uru & Hasta[49] and further Vagbhata says that severe acute pain of Gridhrasi or viswachi as khalli [50].In Khalliroga there is no explanation regarding the radiating type of pain.

Khanja and Pangu:

In Khanja and Pangu the vitiated Vaata takes its Stanasamshraya in Kati and manifests in symptoms such as paralysis and loss of sensation in one leg or both legs respectively[51]. Here the patient feels difficulty in walking, Mamsas'osha and there is no pain.

Khalaya khanja:

The presence of stammers at the commencement of walking, limping, later on and looseness of joints of the legs are the features. This is the lameness caused by ingestion of pea or Masuradala [52]. Here the typical pain of Gridhrasi is absent.

Uru'stambha:

Vitiated Vaata gets lodged in Urupradesha by the Avarana of Kapha and Medha which leads to heaviness, numbness in Uru, difficulty in walking, Jwara, Angamarda, Ruja, Romaharsha are the symptoms[53,54].In UruStambha characteristic pain is absent.

Vaatakantaka:

In Vaatakantaka, the whole of the leg is not involved and no radiation of pain to legs is described. The Ruk is restricted to the area of Gulpha Sandhi only[55,56]

Padaharsha:

The aggrevated Vaata along with association of kapha Dosha produces Suptata and Harsha (tingling sensation) in the leg but there will be no Ruk or pain [57,58,59.]

GudagataVaata:

In GudagataVaata in addition to pain in foot, symptoms like s'osha, retension of stools, urine, and flatus, colic and flatulence may be present[60]. The typical pain of Gridhrasi is absent.

SnaayugataVaata:

Snaayugata Vaata is a disease complex as it produces Aayama and other disorders, These symptoms are not seen in Gridhrasi[61]. But Vagbhata has stated that Gridhrasi pathology is due to Snaayugata Vaata.

Pakwashayagata Vaata:

Here pain will be in Trika, Prista, and Kati region along with distension of abdomen and colic [62].

Kukundara Marmabhighata:

This Marma situated on either sides of prista vamsha at the level of Kati (lumbar region). Any injury to this Marma results in Adah s'akha Sparshanaasa and Chesthahani i,e both sensory and motor dysfunction [63]. Pain of Gridhrasi is absent here.

Sadhya-Asadhyata

It is essential to know the Sadhyasadhyata of a disease before the treatment[64].

"A physician who can distinguish between curable and incurable diseases and initiate the treatment with full knowledge regarding the different aspect of the therapeutics can certainly accomplish his object of curing the disease".

Sushruta consider the Vata Vyadhi as Mahagada due to its tendency to be fatal or incurable. He also says that if the patient of Vatavyadhi develops the complication like Sunam (odema/inflammation), Suptatvachan (tactile senselessness), Bhagna (Fracture), Kampa (tremors), Adhamana (distention of abdomen with tenderness) and pain in internal organs, then he doesn't survive[65].

Vagbhatta calls it as Maharoga. Most of the Acharyas are of the opinion that generally Vata Vyadhis are very difficult to cure[66, 67]. In classics, there is no separate prognosis is mentioned regarding the diseases *Gridhrasi*. For the prognosis of Vata Vyadhis, Charaka[68] said that if the disease is of recent origin and without any associated disease, then it is curable. According to Acharya Charaka, if Vatavyadhi is connected withSandhichyuti, Kunjanam, Kubjata, Ardita,Pakshaghata, Anshashosha, Panguta and those which are Majja and Asthigata are usually cured with difficulty or even incurable.

In disease *Gridhrasi*, the vitiation occurs in the Sphika, Kati, Prishtha regions involving the Sandhi and Sandhibandhana in these areas which will ultimately give rise to the vitiation of the *Gridhrasi* Nadi which is a structure developing from the Majja. So, *Gridhrasi* by nature is Kashtasadhya. However, the Sadhyata-Asadhyata of the disease depends on many factors such as the Bala of Nidana & Rogibala, the strength of Dosha Prakopa, the Sthana of the disease, severity of signs and symptoms, duration of the disease, Rogamarga, Dhatudushti etc.

When the *Gridhrasi* is associated with Vata and Kapha Dosha, the Chances of cure are easier than that when it is occurred due to Kevala Vata Dosha.

Upadrava:

Upadravas are produced as a sequel of the disease proper. Their emergence increases the graveness and complexity of treatment. Their description in various classics is as follows

Sushruta Samhita:-

Sushruta has elaborately described Upadravas of eight Maharogas including Vatavyadhi in general as well as that of Vata-vyadhi independently [69]

Upadravas of Eight Mahavyadhi:

Bala Kshaya Shvasa Trishna

Mamsa Shosa Vamana Jwara

Murchha Atisara Hikka

If these are present then a wise should not start any treatment procedure.

Specific Upadrava of Vatavyadhi:-

- Shotha
- Suptata
- Bhagna
- Kampa
- Adhmana

If Vata Vyadhi co-exist with any of the above mentioned Upadravas, then in such patient disease come under the heading of Asadhya (incurable) category.

CHIKITSA:

As the Gridhrasi is described in chapter of Vaatavyadhi, the Vaatahara measures are to be adopted at the beginning. The general principles of treatment of Vaata Dosha should be adopted in cases of Gridhrasi after the assessment of Dooshya, Prakruti, Vaya, Linga, Bala, Satwa, and Saatmya. The treatment of Gridhrasi has various measures to suit its varied clinical entities stages and associated complaints. The treatment also constitutes the Oushadhas, Aahara, Vihara, Samana and surgical measures. The specific causes of the diseases must be identified and efforts must be made for its Parivarjana. The etiological factors mentioned previously pertaining to Aahara Vihara etc is to be avoided with special reference to the identification of the actual cause of the patient's present condition. After reviewing the classics it is ideal to start the management with general principles of Vaatahara therapies.

SNEHANA:

Snehana may be performed 'Bahya' as well as 'Abhyantara.'

In Bahya type the following may be done viz, Snehadhara, Abhyanga, Avagaha etc. Sus'ruta stated that Sneha applied externally will reach the Majja Dhatu in 900 Matrakalas [70]. Thus it may help in Gridhrasi also.

Abhyantaratah: Snehapana can be adopted in Gridhrasi except in conditions of Ama, AvritaVaata, Ajeerna, Aruchi etc. In case of associated Ama or Kapha Dosha, Langhana and Pachana are the first line of treatment preceeding Snehapana to facilitiate the Niramaavasta.

SWEDANA:

After proper Snehana is achieved, Swedana karma must be adopted.

Among the different forms of Sweda procedures, Avagaha Sweda, Pizhichil, Naadi Sweda, Patrapinda Sweda, Pinda Sweda, and Upanaaha Sweda may be performed in Gridhradi [71]. The Swedana may be done in entire body or in affected part of the body like kati, Prista etc. Swedana is useful if there is stiffness in Prista, Kati, Uru, Janu, Jangha, Pada, excessive heaviness, numbness, pain in legs, s'otha etc. If kapha is predominant then Ruksha Swedanas like Istika Sweda or Valuka Sweda is beneficial.

MR'DU SAMS'ODHANA

VAMANA:

Usually in Vaataja disorders, Vamana is contra indicated. But Cakrapaani and Bhavamishra have indicated Vamana followed by Basti karma specifically for Gridhrasi Cikitsa. Further Cakrapani says that without Sodhana, Basti Cikitsa may not be beneficial [72]. Vamana is useful in aggrevation of Kapha in general and Vaatakaphaja Gridhrasi particularly. It should be performed when Kapha is in Utklesha state, Gaurava, Aruchi are present. It facilitates the elimination of Kapha from its nearest route, checks the further progression of the disease.

VIRECHANA:

In Vaatavyadhi Mrdu Virechana is mentioned[73]. In Gridhrasi, Mrdu Virechana may be sufficient which induces Vaatanulomana and Mala Nirharana and hence cures the disease. VriddhaVagbhata specifies that Virechana must be employed in Vaata disorders which are not subsided by Snehana and Swedana [137]. For the purpose of Virechana, Tilvaka Ghrita or Eranda Taila with milk is preferred [74].

BASTI:

Basti is said to be the Pradhana Cikitsa for Vaata Rogas [75] because it immediately enters into Pakwashaya and corructs the root of vitiated Vaata Dosha dwelling in other parts of the body. Sus'ruta stressed that the disorders of Vaata either Sarvanga or Ekanga can be corrected by Basti alone.The Basti has various effects on body will increase strength, complexion, restoration and equillibrium of Dosha Dhatu Malas. It is useful in almost all Vaata Rogas and relieves stiffness and contractures also. Vangasena advised sodhana and administration of basti [76]. Vangasena in Bastikarmaadhikara quoted Vaitarana Basti which is useful in KatiS'ula, Uru S'ula, Prista S'ula, S'otha, and other Vaataja disorders. It is specifically said as useful in long standing diseases like Urustambha, Gridhrasi, Vis'ama Jwara, and Kleebata.

SIRAVYADHA AND RAKTAMOKSHANA:

Siravyadha, a type of Raktamokshana is specifically indicated in cases of Gridhrasi, It is more useful in Raktadusti. Caraka has advised to perform Siravyadha

between kandara and Gulpha in Gridhrasi[77]. Sus'ruta[78] and Vagbhata[79] have advised to perform Siravyadha 4 angulas above or below the Janusandhi. Cakradatta has advised Siravyadha 4 inches below the Indrabasti Marma or in the middle of calf.

It is a general rule that, when the regular treatment with Shadvidhopakrama fails to give relief in any disease, then the disease is said to be due to Raktaja origin and in such occasions Raktamokshana is to be performed [80]. In Gridhrasi also this holds good.

AGNI KARMA:

Aacharya Caraka has specified the site of Agnikarma as between Kandara and Gulpha [81]. Sus'ruta and Vagbhata indicated Agnikarma indirectly by mentioning it as a treatment in Snaayu, Sandhi, Vaatavyadhi [82, 83, 84].

Acharya Sushruta and Acharya Vagbhata indicate Agni Karma in Snayu

and Sandhigata VataVyadhi.

VataVyadhi. Gridhrasi is a Snayu gata Vata Vyadhi, hence here it is

indirectly indicated.

Charkradatta: - Pada Kanistika anguli (little toe of the affected leg).

Cakradatta further states that, if the disease doesn't subside even after Agnikarma at specified site then the small and little toe of the leg should be burnt by the following way.

Surgical interference and cauterization

At first, the leg of the patient of sciatica should be massaged, fomented and pressed with feet so as to make the nerve prominent. Then it should be put on the little finger gradually and prominently elevated pointed should be incised, the sprout- like portion be removed and finally be cauterized and pasted with madhuyasti and candana.[85]. Haareeta has specified Loha Shalaka for Agnikarma [86].

SAMANA CIKITSA:

Several preparations are enlisted in classical texts. There are different type of preparations like Choorna, Kwatha, Arishta, Ghrita, Taila, Lepa, Vati, and Guggulu Kalpas. Some of the examples are listed in the table below.

Table No: 6

S'amanaushadhi's used in Gridhrasi:

Choornas

KALPANAS	Y R	S S	B P	B R	C D	G N
Ajamodadi Choorna	-	+	-	-	-	-
Abhadi Choorna	+	-	-	-	-	-
Krishnadi Choorna	-	-	+	-	-	-
Rasnadi Choorna	+	-	-	-	-	-
Dashamooladi Choorna	-	+	-	-	-	-

Kalka and Lepa

KALPANAS	Y R	SS	BP	BR	CD	GN
MahaNimba Kalka	+	+	-	-	-	-
Rasona Kalka	_	+	-	-	-	-
SwalpaRasona Pinda	-	-	-	+	-	-
Gunjaphala Lepa	+	+	-	-	-	-
Vaatahara Pradeha	-	-	-	+	-	-

Kwatha and Arishta

KALPANAS	Y R	S S	B P	B R	C D	G N
Maharasnadi Kashaya	+	+	+	-	-	-
Shefalikapatra Kashaya	-	+	-	+	+	+
Erandadi Kashaya	-	-	-	+	-	-
Dashamoola Kashaya	+	+	-	-	-	-
Balarishta	-	-	-	+	-	-
Dashamoolarishta	-	+	-	-	-	-

Taila and Ghrita

KALPANAS	Y R	S S	B P	B R	C D	G N
Bala Taila	-	+	+	-	-	-
Eranda Taila	+	-	+	+	+	-
Vajigandhadi Taila	+	-	-	-	-	+
Saindhavadya Taila	+	-	-	-	+	-
Mashadi Taila	-	+	-	-	+	-
Vishagarbha Taila	+	-	-	+	-	-
Prasarini Taila	+	+	-	-	-	-
Mahabaladi Taila	+	+	-	-	-	-
Shatavari Taila	+	+	-	-	-	-
Narayana Taila	-	+	-	-	-	-
Vishnu Taila and Ghrita	-	-	-		+	-
Vijaya bhairava Taila	-	-	-	-	+	-
Rasnapootika Taila	+	-	-	-	-	-

Saptaprastamasha Taila	-	-	-	-	+	-
Eladi Taila	-	-	-	-	+	-
Datturadi Taila	-	+	-	-	-	-

Vati, Guggulu and Rasayogas

KALPANAS	**Y R**	**S S**	**B P**	**B R**	**C D**	**G N**
Trayodashanga Guggulu	+	-	-	+	+	-
Yogaraja Guggulu	-	+	-	+	-	-
Mahayograj Guggulu	-	-	+	-	-	-
Pathyadi Guggulu	-	+	-	+	-	-
Vaatari Rasa	-	-	-	+	-	-
Vaatagajankusha Rasa	-	-	-	+	-	-
Vaatarakshasa Taila	+	-	-	-	-	-
Swacchandabhairava Rasa-	+	-	-	-	-	-

Pathya Apathya

Pathya:

Those Aharadi Dravyas, which are beneficial to Srotas and have no adverse effect on body and mind, are termed as Pathya. Pathya is a major pillar supporting the line of treatment of any disease; separately Pathya and Apathya of *Gridhrasi* are not described. Hence Pathya and Apathya of Vata Vyadhi in general can be applied for patients of *Gridhrasi*.

Ahara:

- Anna Varga: Kulathi, Masha, Godhuma, Raktashali, Navina Tila, Purana Shalyodana.
- Phala Varga: Amla, Rasayukta Phala, Dadima, Draksha, Jambira, Badara.
- Shaka Varga: Patola, Shigru, Rasona.
- Dugdha Varga: Kshira, Ghrita, Navneeta.
- Dravya Varga: Mamsa Rasa, Mudga Yusha, Dhanyamla.
- Taila Varga: Tila Taila, Sasharpa Taila, Eranda Taila.
- Anya Varga: Tambula, Ela, Kustha.

Vihara:

Sukhoshna Pariseka, Nirvata Sthana, Samvahana, Avagahana, Abhyanga, Brahmacharya, Ushna Pravarana, Agni Aatapa Sevana, Snigdha- Ushna Lepa

Apathya:

Those Ahara and Vihara which have adverse effects on body and are nonhomologatory to body are called Apathya.

Ahara:

Kalaya, Chanaka, Kanguni, Kodrava, Shyamaka, Nivara, Nishpava Beeja, Rajmasha, Karira, Jambu, Trinaka, Tinduka, Shushka Mamsa, Dushita Jala.

Vihara:

Vegadharana, Vyavaya, Vyayama, Vamana, Raktamokshana,Prajagarana, Diwaswapna, Adhava, Ati-Gaja-Ashwa-Ushtra-Yana Sevana.

SCIATICA

Gridhrasi, according to its sign and symptoms can be compared to sciatica in modern medical science and many Ayurvedic authors of recent peroid have compared Gridhrasi as sciatica. Hence, the disease sciatica will be discussed in detail in this chapter.

History of the Disease

Modern knowledge of the disease sciatica seems to be only four centuries old. First time in 1608 Shakespeare William has wrote about sciatica in Limon of Athen – IV (Armstrong J. R. 65). In 1764, an Italian Dominico described sciatica as a clinical entity. In 1805, the full account of the anatomical structure of the disc and their pathological changes were published by Virchow and Vanluschka. The close association between sciatica and low back pain was not clearly recognized until 1864, when Lasegue – a Paris Neurologist drew attention to the importance of straight leg raising sign in sciatica. Later shown to be due to stretching of the sciatic nerve. The characteristic posture of the patient with sciatica and sciatic scoliosis were described by Chartcot in 1888. In 1927, Putti suggested that irritation or inflammation of the sciatic nerve can be classified according to the site of casual lesion and would be correlated with associated low back disorders.

In 1933, Mixter and Barr pointed out that compression of caudaequina or nerve roots were caused by herniation of inter vertebral disc which is also cause of unilateral sciatica.Though,Schmoral had extensively done anatomical and radiological investigations on 3000 vertebral column removed at autopsy, it didn't lead him to think the herniation of disc material posteriorily had any significance. He was more impressed with the herniation of the disc material in the vertebral body, the famous Schmoral's node. In1941, lumbar disc protrusion was reported in the patients with relapsing of low back ache and sciatica by American neuro-surgeon Walter Dandy. Mental stress was suggested as a precipitating factor of low back pain by Lindbloom and Scott in 1952. in 1970, Cotunnius Somenico, Nepolitan anatomist described the condition sciatica as neuralgia of the sciatic nerve. Neuralgia is a modern term for somewhat indefinite pain in the area supplied by one nerve. The term seems to have come in use about the beginning of the 19th century, entering English from French. (Henary Alana Skinnre, 1949)[1].

Introduction & Definition:

Aches and pains in the musculoskeletal system are common features of every day life. Each year about 40% of the populations develop some symptoms relating to their locomotor system. The commonest locomotor system is low back pain[2].

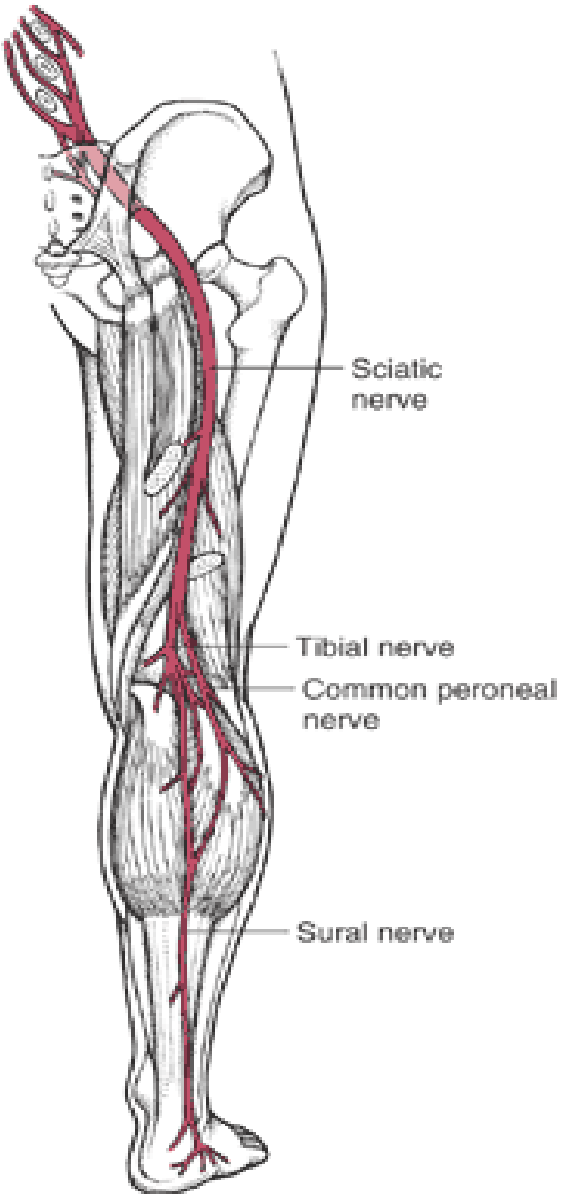
Sciatica is a symptom of a problem at some point along the sciatic nerve rather than an ailment in itself. In sciatica there is pain, weakness, numbness and other discomfort along the path of the sciatic nerve. A herniated disc in the back, spinal stenosis and piriformis syndrome are medical disorders that can cause sciatica. Individuals who have sciatica are often crippled by it, and are driven to seek relief from conventional medical treatment, alternative therapies and miracle cures.

- Sciati (Si-at-ik) (L-Sciaticus, Gr – ischiadikas) – pertaining to or located near the ischium, as the sciatic nerve or vein[3].
- Sciatica "A syndrome characterized by pain radiating from the back into the buttock and into the lower extremities along its posterior or lateral aspect and most commonly caused by prolapse of the intervertebral disc, the term is also used to refer to pain anywhere along course of sciatic nerve[4].
- Sciatic – (Si-at'ik) (Mediew-L-Sciaticus, a corruption of Gr – Ischiadikos Fr – ischion, the hip joint, ISCHI).

1) Relating to or situated in the neighborhood of the ischium or hip joint.
2) Relating to sciatica.

- Sciatica – Sciatica is the name given to a painful condition, commencing from the buttock and radiates posterior surface of the thigh, outer and posterior surface of the leg and outer side of the foot, more or less comprising of the area of distribution of great sciatic nerve. This affection is often unilateral but may occasionally bilateral also[5].

Anatomy and Physiology of SciaticNerve:



The sciatic nerve is the largest and longest nerve in the human body, about as big around as a thumb (2 cm) at its largest point. The nerve arises from the sacral plexus which is situated largely anterior to the sacral and formed by the ventral rami of the spinal nerves $L_4 – L_5$ and the 1st, 2nd and 3rd (S_1, S_2, S_3) sacral spinal nerves. Thus, the five nerves group together on the front surface of the piriformis muscle (in the buttocks) and become one large nerve – The Sciatic Nerve. This nerve travels then down the back of each leg, branching out to innervate specific regions of the leg and the foot. Though the two main divisions of sciatic nerve i.e. the tibial nerve (medial popliteal) and the common peroneal nerve (lateral popliteal) are bound together by common sheath of connective tissue, they are separable upto the sacral plexus because of its different root value[6].

Root Value:

The tibial part of the sciatic nerve derives its fibers from the ventral division of the ventral rami of $L_4 – L_5$ and S_1, S_2, S_3 whereas the common peroneal part of the sciatic nerve derives its fibers from the dorsal division of the ventral rami of L_4, L_5, S_1 and S_2[7].

Course and Relation:

1) In the Pelvis:

The nerve lies in front of the piriformis, under cover of its fascia.

2) In the Glueteal Region:

The sciatic nerve enters the gluteal region through greater sciatic foramen (below the piriformis). It runs downwards with a slight lateral convexity, passing between the ischial tuberosity and the greater trochanter. It has a following relation in the gluteal region.

a) Superficial (Posterior): Gluteal maximus and sometimes the posterior cutaneous nerve of the thigh.
b) Deep (Anterior): i) Body of the ischium and nerve to the quadratus femoris; ii) Tendon of the obturator internus with the gemelli; iii) Quadratus femoris, obturator externus, and ascending branch of the medial circumflex femoral artery; iv) The capsule of the hip joint which lies deep to the forementioned muscles and v) the upper, transverse fibers of the adductors magnus.
c) Medial: i) Inferior gluteal nerve and vessels, ii) Sometimes the posterior cutaneous nerve of the thigh.

2) In The Thigh :

The sciatic nerve enters the back of the thigh at the lower border of the gluteus maximum, and runs vertically downward upto the superior angle of the popliteal fossa (at the junction of the upper 2/3rd and lower 1/3rd of the thigh) where it terminates by dividing into the tibial and the common peroneal nerve. It has the following relations in the thigh.

a) Superficial (Posterior): The sciatic nerve is crossed by the long head of the biceps femoris.
b) Deep (Anterior): The nerve lies on the adductor magnus.
c) Medial: The posterior cutaneous nerve of the thigh, the semi-membranous and the semi-tendinosus.
d) Lateral: Biceps femoris.

The division into tibial and common peronneal takes place usually at knee or at any point between the pelvis and the lower 3rd of the thigh[8].

Tibial Nerve (Medial Popliteal Nerve):

This is the longer terminal branch of the sciatic nerve. It supplies the skin of the lateral and posterior part of the lower 1/3rd of the leg. It runs downward through the popliteal fossa, lying first on the lateral side of the popliteal artery, then posterior to it and finally medial to it. The popliteal vein lies in between the nerve and artery throughout its course. The nerve enters the posterior compartment of the leg by passing beneath the soleus muscle.

Its branches are as below:

1) Medial Planter: It supplies the abductor hallusis, flexor digitorum brevis and flexure hallucis brevis muscles; skin over medial 2/3rd of planter surface of the foot.
2) Lateral Planter: It supplies remaining muscles of a foot not supplied by medial planter nerve. Skin over lateral 3rd of planter surface of food.

Common Peroneal Nerve (Lateral Popliteal Nerve):

This is the smaller terminal branch of the sciatic nerve arises in the lower 3rd of the thigh. It runs downward through the popliteal fossa, closely following the medial border of the biceps muscle. It leaves the fossa by crossing superficially the lateral head of the gastro nemius muscle. It then passes behind the head of the fibula, winds laterally around the neck of the bone, pierce the peroneus longus muscle and divides in two terminal branches.

1) Superficial peroneal nerve: It supplies the peroneus longus and pernoneus brevis muscles; skin over distal 3rd of anterior aspect of leg and dorsum of foot.
2) Deep peroneal nerve: It supplies tibialis anterior, extensor hallucis longus, peroneus tertius and extensor digitorum longus and brevis muscles; skin on adjacent side of great and second toes.

Causes of Sciatica[9]:

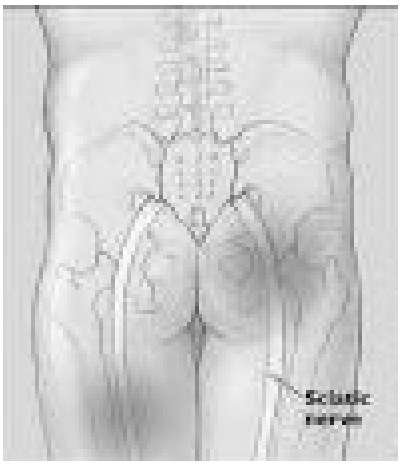
Sciatica can occur due to variety of pathological lesions, the vast majority of all cases of sciatica is due to herniation or degenerative changes in lumbar intervertebral disc, spondylosis or sacroiliac diseases. But there are some predisposing causes towards herniation and degenerative changes such as there is often history of trauma

as twisting of the spine, lifting heavy objects or exposure to cold. Motor vehicle driving is also positively associated with HNP and sciatica. Age, sex, body weight, occupation, environmental factors etc. also play an important role in producing such type of conditions. In females Instrumental delivery may be a cause of sciatica. There are many such diseases of spinal cord, cord space, vertebral column, pelvis etc. which exert mechanical pressure on the nerve root or nerve and presents as sciatica. The causes are grossly divided in the following manner.

1) Intraspinal causes :
   - Prolapsed intervertebral disc
   - Arachanoiditis
   - Intraspinal tumor
   - Osteoarthritis
   - Tuberculosis of the lumbar spine
   - Osteomyelitis
   - Developmental narrowing of the lumbar canal.
   - Malformation of lumbar root
2) Pressure or irritation at intervertebral foramina :
   - Osteoarthritis
   - Spondylolisthesis
   - Ankylosing spondylitis
   - Paget's disease
3) Pressure or irritation in course of nerve
   - Inflammation or malignant disease of pelvic viscera
   - Injury to nerve itself
   - Tumor of nerve sheath
   - Peripheral neuritis
4) True sciatic neuritis :
   - Leprosy
   - Polyarteritis nodosa
   - Nerve injury due to injection or trauma
   - Post herpatic neuralgia.

PATHOLOGY

The intervertebral discs serve the purpose of "shock absorbers". Each disc is composed of three distinct morphological parts namely, the cartilaginous plates, the annulus fibrosus situated peripherally and the nucleus pulposus held in position by the annulus fibrosus. The cartilaginous plates cover the superior and inferior surfaces of the disc and are connected to the intervertebral surfaces of adjacent vertebral bodies by calcified cartilage. The cartilaginous plates and the annulus fibrosis enclose the semi-gelatinous nucleus pulposus which does not lie free in the disc but is formed by interlacing fibers in which is embedded the semigelatinous matrix of mucoid material, interspersed with cartilage cells. The nucleus pulposus is held in position by the annulus fibrosus and the cartilaginous plates under tension; it is incompressible, tough and plastic in character. On the other hand, the annulus fibrosus is compressible and elastic.



The intact disc is very resistant to injuries and is not damaged under conditions of compression which are adequate to fracture the vertebral bodies. However, the disc is liable to degenerate becoming more rigid and drier with advanced in age; it may become soft during pregnancy or may be damaged by repeated injuries. Progressive degeneration of the disc with loss of elasticity and resilience may lead to its thinning or to a partial posterior rupture; the rupture may be the result of a severe trauma or may occur during the course of ordinary activities of a person. The nucleus usually ruptures postero-laterally, but sometimes it may herniate through the superior or inferior cartilaginous plate (vertical ruptures), in which case it herniates into the adjoining vertebral body and gives characteristic X-ray picture known as Schmorl's node. Usually, prolapse of the intervertebral disc takes place when the nucleus pulposus appears through a tear in the annulus fibrosus under the posterior longitudinal ligaments. Midline protrusion

of the disc is possible though rare and, when it occurs in the lumber region depending on its size, it may cause compression of one root, the roots of both sides of one segment of cord or on all roots of the cauda equina. Herniation of more than one disc has also been occasionally observed.

The incidence of herniation of the disc is by far the highest in the lumber region and of 500 cases analyzed by Love and Walsh, 96 percent showed lumber prolapse and only 4% cervical or thoracic prolapse. Of the lumber discs, the commonest to herniate is the one between the 4th lumber and 5th (about 90%), less commonly between the 5th lumbar and the first sacral, or the one between the 3rd and the 4th lumbar vertebra. The reason why the incidence is so high in the lumbo sacral region is on account of mechanical factors. The annulus firbrosus is weakest posteriorly and the first change in the disk is a posterior herniation of the annulus, soon followed by its rupture and then a prolapse of the nucleus pulposus through the postero-lateral tear, separated from the vertebral canal and its contents by the posterior longitudinal ligament. It is due to the pressure of this prolapsed nucleus pulposus on the adjacent nerve root or roots that the symptoms of sciatica arise. Moreover, the nucleus contains nerve fibers and is sensitive to pain. The intra-spinal extra-dural nerve roots are relatively fixed in position and hence are vulnerable by pressure from the prolapsed nucleus pulposus.

A spontaneous rupture of the annulus is a rare phenomenon and the normal anatomy is never restored. The nucleus pulposus also does not regain its elasticity and the tear in the annulus fibrosus is also not likely to heal completely. However, it is pertinent to state that Falconer, McGeorge, and Begg and Dandy pointed out that sometimes the protrusion of the nucleus pulposus through a tear in the annulus fibrosus under the posterior longitudinal ligament is likely to return through the same tear and this condition has been known as “mobile prolapse”, “concealed ruptured disc” or “intermittent prolapse”. Herniation of the nucleus pulposus arises in a hyper-extended position of the vertebral column. A severe trauma can cause herniation of a disc even in a younger individual where changes of degeneration may not have set in. This, however, is a rare occurrence and, in most of the cases of disc herniation, degenerative changes in the disc are supposed to have preceded the trauma, the later

being a predisposing or precipitating factor. It has been stated that in some cases an infection of the disc rather than trauma is the responsible factor.

Signs and Symptoms:

Sciatica doesn't have symptoms. It is a symptom itself consisting of pain, burning, tingling or electric shock like feelings in the path of the sciatic nerve. It usually results from injury to the fibers that make up the sciatic nerve. So in sciatica there is a pain which begins in the lower back and radiates through the buttock, thigh, leg, calf and occasionally the foot. There may be the symptoms in all these areas or only in a few of these areas. The order in which the symptoms appear may vary. Sometimes the back pain comes before the sciatica and sometimes it will follow. The initial complaint of the patients is usually acute severe pain in the lumbar region, rigidity, immobility of the lumbar spine, tenderness over the region – in fact, characteristic features of lumbago. The course of such symptoms runs for months or years and during one of such episodes typical pain of sciatica may make its appearance. Usually the pain is unilateral since, as soon as the nucleus pulposus herniates through at postero-lateral tear on one side, it is no longer held under tension as in a normal subject where it is completely surrounded by the annulus fibrosus. The unilateral herniation presses upon the spinal nerve roots on the affected side. Bilateral herniation through postero-lateral tear is possible, though not common, and may give rise to bilateral sciatica[10, 11].

The typical symptoms of sciatica usually arise when the disc between the 4th and 5th lumbar vertebra or the disk between the 5th lumbar and the 1st sacral is displaced whereas if the disc between the 3rd and the 4th vertebra is involved, there is pain along the medial aspect of the leg and diminution of sensation in the same region.

It is convenient to divide the symptoms of disc herniation into two group namely - Spinal symptoms and Radicular symptoms. Accordingly, the symptoms may be categorized as follows –

1) Spinal symptoms :

- A reduction of the normal lordosis in the region of the lumbar spine or even a lumbar kyphosis. Sometimes there may be even appearance of a lumbar scoliosis.
- Diminished mobility of the lumbar spine. The patient may be asked to bend backwards and forwards without flexion at the knee joints.
- Pain particularly localized over the region of the displaced disc; tenderness on percussion.
- Muscle spasm and rigidity.

2) Radicular symptoms :

- Presence of Laseague's and straight leg raising (S.L.R.) signs or any test proposed to stretch the sciatic nerve.
- Tenderness over the course of the sciatic nerve after it exit from the pelvis.
- Sciatic pain aggravated by coughing, sneezing, straining or pressure on the jugular veins; sometimes by movements of the head, trunk or legs.
- Paraesthesia in the region of the affected dermatomes.
- Sensory loss in the region of the distribution of the nerve roots pressed upon.
- Paresis or weakness of dorsiflexion of the foot on the affected side in the case of displacement of L_4, L_5 disc and weakness of planter flexion, when the disc between L_5 and S_1 is herniated.
- Loss of deep reflexes, in case of L_3, L_4 displacement, there is absence or depression of knee jerk, whereas the herniation of L_4/L_5 or L_5/S_1 tends to diminish the ankle jerk or to abolish it entirely.

Table. No: 7

Objective signs met with following herniation of the various lumbar discs[12].

Root compression	Pain referred	Motor weakness	Reflex changes	Sensory changes	Muscle wasting
L2	Upper anterior thigh	Flexion and adduction of hip	None or reduced knee reflex	None or upper lateral and anterior thigh	None

L3	Anterior thigh knee	Knee extension hip flexion and adduction	Reduced or absent knee reflex	None or lower anterior & medial	Thigh
L4	Lateral thigh, medial calf	Foot inversion & ankle dorsiflexion, knee extension	Reduced or absent knee reflex	Antero medial calf	Thigh
L5	Buttock, back side thigh, lower leg	Extension and adductor of hip. Flexion of knee, dorsiflexion of ankle, foot and toes eversion	Reduced ankle reflex	Lateral calf dorsal & medial food especially hallux	Calf
S1	Buttock, back of thigh and calf to heel	Flexion knee, foot eversion and ankle plantar flexion	Reduced or absent ankle reflex	Lateral foot ankle and lower calf back of heel and sole of foot	Calf

Aggravation of Pain:

Back and sciatic discomfort is spondylogenic in nature.That is to say, the pain is aggravated by general and specific activities and relieved by rest. Bedding, stooping, lifting, coughing, sneezing, straining at stool and on jugular compression will intensify the pain. In short, when the sciatic nerve is put on stretch, these particular activities vary from patient to patient. Most of the patients with sciatica find difficulty in sitting, especially in a soft lounge chair, including most automobile seats. Standing and walking although not comfortable are usually more tolerable.

Relief of the Pain:

Most patients get some relief from lying in the hip – knee flexed position. Sleeping is a more comfortable position for most of the patients when it is done with a pillow under the knees or on the asymptomatic side in the fetal position. Some patients have so much sciatic discomfort that there is no position of comfort. This is especially true for the high lumbar root lesion.

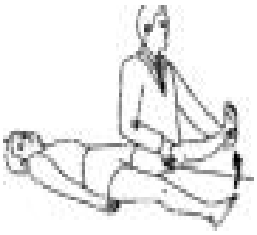
Physical Signs:

A) Lumbar Spine :

Shape, mobility, muscle spasm, sciatic scoliosis, local tenderness and presence of trigger points in back and limbs. Sciatica may be the first symptom of spinal caries[13].

B) Special Sign :

1) SLR (Straight Leg Raising) Test :



The patient is asked to lie down in completely relaxed position. Now the raising of the entire leg, with the knee joint fully extended, by holding the knee with one hand. Limitations of raising is found in sciatica, the degree of limitation being roughly proportional to the severity of the pain.

Restriction of SLR is usually much more marked in lesions affecting the nerve roots than in purely skeletal affections. This test gives a useful indication of the severity of the sciatica and increased capacity for painless straight leg raising is a helpful objective measure of improvement[14, 15].

2) Laseague's SLR[16] :

The Patient in supine.Place one hand under the patient's ankle & the other hand on the knee & raise the leg 90^0**.**

3) Browstring Sign :

This sign is an important indication of root tension or irritation. The examiner carries out SLR to the point at which the patient experiences some discomfort in the distribution of the sciatic nerve. At this level the knee is allowed to flex, and the patient's foot is allowed to rest on the examiner's shoulder. The test demands sudden firm pressure applied to the popliteal nerve in the popliteal fossa[17].

4) Sciatic Nerved Stretch Test :Braggard's

The patient is in supine used for radicular pain.Raise the affected limb to the point of radicular pain.Then lower it 5 degree or until the leg no longer causes radicular symptoms thn dorsiflex the foot[18].

5) Flip Test:

Ask the patient to sit on the end of the couch with hips & knees flexed to 90^0 .Examine the knee reflexes then extend the knee ,as if to examine the ankle jerk.the genuine suffer will lie back.This test helps to rule out functional pain[19].

DIAGNOSIS:

Sciatica diagnosed clinically and is confirmed using following investigations.

Investigations:

1) Laboratory Investigations :

A complete blood count (C.B.C.), erythrocyte sedimentation rate (E.S.R. specially helpful in screening for infection or myeloma). Measurement of serum protein, calcium phosphate, uric acid, alkaline phosphate, acid phosphate (if one suspect metastasis, C.A. prostate), tuberculin test, test for Rheumatoid arthritis factor, cerebrospinal fluid examination (C.S.F. proteins raised in intraspinal neoplasm), serum protein electrophoresis (myeloma proteins), agglutination test for brucella.

2) Radiological findings :

X-ray examination should be carried out in all the cases of sciatica since many cases of sciatic pain are associated with bony changes visible in radiographs. Roentgenograms of lumbar spine in AP and lateral view gives differential diagnosis of narrowing of disc space, spondylolisthesis, sclerosis of vertebral body, disc herniation, prolapse etc.

3) Myelogram :

Examination of the spinal canal with a contrast medium – myelogram may demonstrate a filling defect and is only indicated if pain is persistent despite of adequate rest, immobilization and surgical treatment is contemplated. Lumbar disc herniataion and prolapse, lesions or fissuring of annulus, protrusion of the lumbar posterior longitudinal ligaments, cyst on sacral nerve roots, lumbar canal stenosis is often apparent on myelography. Epidurography can be done for the diagnosis of intraspinal lesions not visualized by conventional myelography. Injections of contrast medium directly into the intervertebral disc (discogram) is a procedure but difficult to interpret and carries the risk of damage and infection.

4) C.T. Scan :

Computed tomography (C.T.) if combined with instillation of water soluble contrast media provides excellent definition of a narrow canal, destructive lesion of vertebral bodies and posterior elements or presence of para-vertebral soft tissue mass. Appropriate computerized reconstruction techniques can also identify disc herniation, sometimes with greater accuracy than the myelogram.

5) M.R.I. :

Nowadays M.R.I. virtually replaces C.T. for the study of degenerative disc and its relation to the adjacent roots, definition of soft tissue alteration.

Others:

Confirmation of proximal motor and sensory nerve root disease can be obtained by nerve conduction studies, H & F response (H- reflexes of the tibialis posterior nerve and F- reflexes of peroneous profunolus nerve) and electromyography (E.M.G.). Aortic arteriography, intravenous pyelography and barium enema may be necessary to find out aortic aneurism or any pelvic or rectal pathology.

DIFFERENTIAL DIAGNOSIS OF SCIATICA

1) Intraspinal Causes

- Proximal to disc : conus and cauda equina lesions (e.g. neurofibroma, ependymoma)
- Disc level :
  - Herniated nucleus pulposus
  - Stenosis (canal or recess)
  - Infection : osteomyelitis or discitis (with nerve root pressure)
  - Neoplasm : benign or malignant with nerve root pressure

2) Extraspinal Causes

- Pelvis
  - Cardiovascular conditions (e.g. peripheral vascular disease)
  - Gynecological conditions
  - Orthopedic conditions (e.g. osteoarthritis of hip)
  - Neoplasm (invading or compressing lumbosacral plexus
- Peripheral nerve lesions
  - Neuropathy (diabetic, tumor, alcohol)
  - Local sciatic nerve conditions (trauma, tumor)
  - Inflammation (herpes zoster)

Conditions that mimic as sciatica include –

1) **Lumbar Herniated Disc :**

A herniated disc occurs when the soft inner core of the disc (nucleus pulposus) extrudes through the fibrous outer core (annulus) and the bulge places pressure on the contiguous nerve root. In general, it is thought that a sudden twisting motion or injury can lead to an eventual disc herniation. A herniated disc is sometimes referred to as a slipped, ruptured, bulging and protruding disc for a pinched nerve. X-ray – L.S. Spine taken in AP and lateral view is diagnostic.

2) **Lumber Spinal Stenosis :**

This condition involves a narrowing of the spinal canal. It is more common in adult over 60 and typically results from enlarged facet joints placing pressure on the nerve roots as they exit the spine. There is absence of abnormal SLR and spinal stiffness which is present in sciatica. Spinal stenosis may manifest itself as a disorder of micturition.

3) **Cauda Equina Syndrome :**

Cauda equina compression is most serious condition. Sometimes massive derangement of disc or the extrusion of large free fragments into the spinal canal causes compression of cauda equina usually at the level of L_4, L_5 or L_5, S_1. Pain may be mild or severe, usually bilateral sciatica, weakness and numbness of lower limbs are the main features. Involvement of all the nerves may occur with profound motor and sensory changes in the legs. Saddle anaesthesia and absence of buttock muscle tone are sign of S_2, S_3 root damage. Further, involvement of sacral nerves will produce additional sensory changes but more importantly sphincter disturbance with retention of urine and feaces.

4) **Degenerative Disc Disease**

While disc degeneration is a natural process that occurs with aging, in some cases it can also lead to pain along the sciatic nerve. The condition is diagnosed, when a weakened disc results in excessive micro-motion at the corresponding vertebral level and inflammatory proteins from inside the disc can become exposed and irritate the area.

5) **Spondylolisthesis :**

In spondylolisthesis, signs of disc lesions together with lumbar deformity are seen. There is back ache after prolonged standing or bilateral sciatica. X-ray taken with the patients in standing position is diagnostic.

6) **Piriformis Syndrome :**

The patient with piriformis syndrome, complaints of the sciatic pain, tenderness in the buttock and more difficulty in sitting than standing. Physical findings include tenderness of the buttock region, increased pain with adduction and negative S.L.R. test.

7) **Sacroiliac Joint Arthritis :**

Alteration of pain is significant i.e. pain comes in one buttock and posterior thigh and then it transfers itself to the other side. Sign of involvement of 1st and 2nd sacral segments. No lumbar signs pressure on anterior iliac spine provokes pain in the buttock, S.L.R. normal.

8) **Arthritis Of Hip :**

Hip movements restricted and pain provoked by passive movements. Radiograph of pelvis is diagnostic.

9) **Secondary Deposit In Spine :**

Gradually increasing central back ache, tendency to radiate to lower limb soon to both, marked limitation of movements at lumbar spine and S.L.R. of full range though painful at the extreme. Multiradicular sings in lower limbs, muscle weakness bilateral, unequal and marked.

10) **Benign Spinal Tumour :**

Progressive increase in symptoms, neurological signs are more severe and progressive than disc lesion. The diagnosis should be done by C.S.F. examination.

11) **Major Lesions In The Buttock :**

Such as acute osteomyelitis of ilium or upper femur, ischiorectal abscess pointing into buttock, septic gluteal bursitis, S.L.R. and hip flexion both very painful.

12) **Intermittent Claudication :**

When internal iliac artery is affected alone, claudication in gluteus maximus on walking may be the only symptom. Diagnostic signs – patient lies prone and his hip is extended passively; this causes no pain. He is then asked to keep the leg extended for a minute. This brings on the claudication. Spinal claudication is to be suspected when the patient gets pins and needles type of pain in both lower limbs on walking a certain distance. Examination shows all arteries of the lower limbs to be patent. The

cause is intra-spinal ischaemia of the nerve roots compressed by a disc lesion or involved in arachnoiditis.

13) **Dissecting Aneurism :**

A rare cause of sciatica is a slowly expanding aneurism at the bifurcation of aorta compressing 3rd and 4th lumber nerves and causing local pain and accompanied by paraesthesia and weakness in left lower limb, patient complaints of severe back ache.

PROGNOSIS OF SCIATICA

In most cases of sciatica, spontaneous recovery occurs rather slowly with some liability to recurrence. In mild cases, the stage of severe pain lasts only for 2 - 3 weeks and a patient recovers within one or two months but, he may time to time experience aching along the course of the nerve and stooping may still excite some pain in the affected leg.

In more severe cases there may be slight improvement after several weeks, but the condition then becomes stationary and the patient continues to suffer from considerable pain which is fluctuating in severity and sustains for months or years together. Finally the recovery occurs in most cases but some symptoms remains as residue. Though, there is symptomatic relief but relapses are very common as underlying pathology i.e. disc protrusion, osteophytes, spurs etc. hardly change without surgical interventions. In some cases, relapse occurs at frequent intervals and in some, second attack may be developed ten or more years after the first.

Surgery gives good result in 90% patients. After surgery relapses can be seen in 10% patients. Such cases are difficult to manage. In such cases C.T. and Myelogram is repeated to see any rupture or disc disease at any other level or all the disc material might not be removed at previous operation, in which another operation gives success. If there is evidence of radiculopathy but not disc material or scar tissue, one does not know whether the pain is due to injury from initially rupture or from the surgery. Various hypothetical explanations are then evoked e.g. radiculitis, facet syndrome, lumber arachnoditis etc. which for the most part are unstable. In such cases prognosis is doubtful/bad. Occupational injuries in which workman's

compensation or litigation are factors, make the patient report of therapeutic effects almost worthless.

MANAGEMENT OF SCIATICA

A) Conservative treatment[20]

Choices in conservative treatment can be classified as below :

1) Rest :

The first essential of conservative treatment is rest in bed and avoidance of movement which would prevent the recession of the disc in its corresponding space. The patient is required to lie down on a hard mattress. Bony has suggested the extension of the spinal column with exertion of a pull on the pelvis. A special apparatus has been advised and used in some countries for this purpose. A plaster jacket has been suggested by some.

2) Medication[21] :

Obviously analgesic, anti-inflammatory and occasionally muscle relaxant medication will help the patient. Comply with the prescription for bed rest.

Table No: 8

COMMONLY USED NSAIDs

Class	Chemical Name	Trade Name
Salicylates	Aspirin	Numerous
	Enteric coated ASA	Ecotrin
Salicylates substitutes	Diflunisal	Dolobid
	Salsalate	Disolcid
Propionicacid derivatives	Ibuprofen	Motrin
	Naproxen	Naprosyn

	Ketoprofen	Orudis
	Flubiprofen	Ansaid
	Ketorolac Tromethamine	Toradol
Indoles (acetic acid)	Sulindac	Clinoril
	Indomethacin	Indocin
	Tolmetin	Tolectin
Oxicam	Piroxicam	Feldene
Pyrazolones	Phenylbutazone	Butazolidin

3) Modalities:

Ice[22]: Ice can provide relief from lower back pain in a number of ways, including –

- Ice packs decrease circulation to the area of contact, which reduces inflammation, swelling, spasm and therefore pain.
- Numbs sore tissue (providing pain relief like a local anaesthetic).
- Slow the nerve impulses in the area, which interrupts the pain – pain-spasm reaction between the nerves.
- It decreases tissue damage.
- It is only useful in acute phase.

Heat[23]:

Heat may be superficial (hot packs/infrared) or deep (ultrasound or **short wave diathermy**).

- The heat increases the blood flow to the damaged or inflamed tissue, claring away noxious metabolites and bringing oxygen to the area. It also increases the stretchability of collegen tissue.
- Because of the increased vasodilatation, heat should not be used in the acute phase of injury.

3) Traction :

Traction has also been used over the centuries to treat low back pain on the theory that stretching the muscles and separating the vertebra will have a positive effect on the disc. Some therorize that pulling the vertebra apart, will allow “dislocated” disc to recede back into the disc space.

4) Exercise :

Once the phase of acute pain has passed, gradual exercises are of considerable value in improving the mobility of the affected portion of the spine and power in weakened muscles.

The two popular low back floor exercise programs are the Williams flexion program and the Mckenzie hyperextension program. The William program is designed to strengthen abdominal muscles and reduce lumber lordosis, which in turn opens the facet joints and widens the exiting foramen. The Mckenzie program is designed to shift the nucleus pulposus forward in the disc cavity, reducing its pressure effects on the posterior annulus and nerve roots. An effective extension program “centralizes” pain, that is reduces leg pain and increases central back pain. This transfer of pain location can then be treated with a William program. The William flexion program tends to be more effective for back pain that occurs with walking and standing, whereas the Mckenzie program is more effective for leg pain that is increased by sitting.

5) Miscellaneous forms :

a.***Transcutaneous electrical nerve stimulation (TENS) unit:*** TENS unit is attached to the patient’s right belt line; it will stimulate electrode pads on the patient’s low back and right thigh. Theoretically it closes gates in the CNS. By transcutaneously sending an electrical impulses into the peripheral nerve, the large (fast conducting) myelinated A-alpha nerve fibers are stimulated such that the smaller (slower conducting) unmyelinated C-fibers are blocked at the gate from transmitting their nociceptor impulses[24].

b.***Epidural Steroid:*** Epidural corticosteroid injection can be recommended as additional therapy especially in the acute phase of the conservative management of sciatica. It is given at the sacral hiatus[25, 26].

B) Surgical treatment :

Successful surgical outcome depends 90% on proper patient selection and 10% on surgical technique. Therefore, before considering surgical interventions C.T. scan, M.R.I., Myelogram or other useful investigation must be done to localize the lesion.

- **Absolute indication :**

1) ***The cauda equina syndrome[26,27] (bladder and bowel involvement) :*** The acute massive disc herniation that causes bladder and bowel paralysis is usually a sequestered disc that requires immediate surgical excision for the best prognosis.
2) ***Increasing neurological deficit :*** In the face of progressing weakness, it is wised to intervene early with surgical excision of the disc rupture.

- **Relative indication :**

1) Failure of conservative treatment
2) Recurrent sciatica
3) Significant neurological deficit with significant S.L.R. reduction
4) A disc rupture into a stenotic canal
5) Recurrent neurological deficit.

C) Treatment Options :

1) **Para-radicular Infiltration:** In this procedure the pharmaceutical agents are injected between the nerve root and the epiradicular sheath, depicting the nerve root in tubular fashion which permits precise applications of steroid into the vicinity of the irritated nerve root resulting in a massive concentration of the agent at the site. Indication of pararadicular infiltration include radicular pain and/or intermittent claudication without neurologic findings atypical leg pain, multiple nerve root signs, intra and extra foraminal lestions etc. The mechanism of this procedure may be blocking of afferent impulses from the periphery or increased intraradicular blood flow.
2) **Chemonucleolysis:** Chymopapain is an extract of latex of the tropical fruit papaya of the proteolyic enzymes in Papaya, chymopapine is the most specific in its activity on the nucleus pulposus and the least antigenic. Despite the fact that it is less antigenic then papin, it is still a foreign protein to the human body and can precipitate allergic reactions.

There is only one indication for chymonucleolysis with chymopapapin, herniated nucleus pulposus, causing sciatica and unresponsive to conservative care.

Preventive Measures:

Once the pain of sciatica has passed, there are exercise, stretches and other measures that may prevent its return. A physical therapist can develop a complete, personalized program. Here are some steps that one can take in the mean time.

- ☞ Loss of weight where indicated
- ☞ Practice good posture
- ☞ Practice abdominal crunches
- ☞ Walk – gentle exercise such as walking and swimming can help to strengthen the lower back.
- ☞ Lift object safely – Always lift from a squatting position, using hips and legs to do the heavy work. Never bend over and lift with a straight back.
- ☞ Avoid sitting or standing for extended period of time.
- ☞ Use proper sleeping posture
- ☞ Stretch – Sit in a chair and bend down towards the floor. Stop when he feels just slight discomfort, hold for 30 seconds then release. Repeat 6 – 8 times.
- ☞ Avoid wearing high heels

REVIEW OF LITERATURE ON AGNIKARMA

INTRODUCTION:

Agnikarma as the name indicates, is made up of two words i.e., agni and karma. Agni, which has got the swabhava of moving upwards, is the important one among the pancha mahabhutas. No object in nature can be concieved, if it has not inherited fire in it, let it be even in water and wood. The agni, in the form of bhootagni, jatharagni and dhatwagni is the life for the creatures. Its equilibrium helps in the maintenance of arogya, bala, varna, oja, utsaha, prabha and metabolism. Whereas its vitiation is roga and its distruction is death.

On the basis of the loka – purusha sadharmya, the agni that exists in the body, possesses the same properties as that of agni in the world. So the think tank of ayurveda, have found out the many fold utilisation of agni, by its application through different ways. Agni, the musculine world derived from the root agigatau agyati agnayamna prapyanti i.e., it gives the rebirth, is utilised to cure and prevent the diseases.

In agnikarma, agni is applied directly or indirectly with the help of different materials to cure the diseased. So any procedure that involves the agni directly or indirectly is considered under agnikarma.[1]

The agnikarma is also known by different names like dahanakarma, dahakarma, dagdhakarma, jalanakarma, tapanakarma and pachanakarma, finds its role in the vataja and kaphaja vyadhi involving the dhatu that are predominant with pruthvi and ap mahabhutha.

Mere utilisation of agnikarma, which is counted in anushastra, upayantra and shashti upakrama provides the shalyatantra the unique position among the eight faculties of ayurveda.

VYUTPATTI:

The term Agnikarma consists of two words Agni and karma, i.e. fire and procedure.

AÎalÉÈ – mÉÑÇÎssÉ…¡û [2]

The word Agni is in Male gender.

rÉ²É A…¡ûÌiÉ FkuÉïÇ aÉÎcdiÉ CÌiÉ | AÎalÉ aÉiÉÉæ | [3]

The word Agni denotes its upward going nature and universal presence.

NIRUKTI:

AÎalÉlÉÉ MÚüiuÉÉ rÉiÉç MüqÉï, [4]

The specific procedure performed with the help of Agni for treating the disease is called as Agnikarma.

AalÉåÈ xÉÇoÉÎlkÉ uÉÉ rÉiÉç MüqÉï, iÉSÎalÉMüqÉï; [5] (Su.Ch.12 Sl.3 p.50)

The procedure which is related to Agni is called as Agnikarma.

PARYAYAS:

uÉæµÉÉlÉU, uÉÎlWûÈ, euÉsÉlÉÈ, uÉÏÌiÉWûÉå§ÉÈ, kÉlÉgeÉrÉÈ, iÉåeÉ, SWûlÉ, xÉÔÍcÉ [6]

HISTORICAL REVIEW

Regarding the Agnikarma Chikitsa various references are available in the Ayurvedic literature.

Vedas:

- In Atharvaveda, Agni is accepted as God and Bhesaja in the reference of Krimi [7]
- In Rhigveda [8]Agnikarma Chikitsa available in the reference of obstetric disease.
- In Yajurveda [9] as a treatment of Sheeta.
- In Samaveda, importance of Agni is proved by the presence of the chapter known as Agneykanda.

Charaka Samhita:

- Acharya Charaka explained the Agnikarma Chikitsa in thereference of [10]i.e. Shastra Pranidhana.
- Charaka also explained Agnikarma Chikitsa in Divarniya Adhyaya Chikitsa as a treatment of Vrana.[11]
- In Charaka Samhita in the context of Vidhishonita Adhyaya (Ch.Su. 24/46)[12], In Vividhashitapitiya Adhyaya [13].
- In Charaka Chikitsa in the context of Gulma Chikitsa in the reference of Kaphaja Gulma.[14]
- In Charaka Chikitsa in the context of Shvayathu Chikitsa in thereference of Granthi Roga and Bhagandara Chikitsa. [15]
- In Charaka Chikitsa in the context of Udara Chikitsa in the reference of Pleehodara Roga and Yakrutodara Chikitsa. [16]

- In Charaka Chikitsa in the context of Arsha Chikitsa in thereference of Arshashastra Karma, Kshara Karma and Agnikarma.[17]
- In Charaka Chikitsa in the context of Visarpa Chikitsa in the reference of Granthi Visarpa Chikitsa.[18]
- In Charaka Chikitsa in the context of Visha Chikitsa in the reference of Visha Vega Chikitsa. [19]
- In Charaka Chikitsa in the context of Udara Chikitsa in the reference of Pleehodara Roga and Yakrutodara Chikitsa.
- In Charaka Chikitsa in the context of Vatavyadhi Chikitsa in the reference of Gridhrasi Roga Chikitsa. [20]
- In Charaka Siddhisthan in the context of Trimarmiya Chikitsa in the reference of Ardhavabhedaka Roga Chikitsa. [21]

Sushruta Samhita:

- Maharshi Sushruta told Agnikarma as a Parasurgical procedure and it is superior to all Parasurgical procedure. Many references are available in Sushruta Samhita regarding Agnikarma.
- In Sushruta Sutrasthana in the context of Yantravidhi Adhyaya as an Upayantra. [22]
- In Sushruta Sutrasthana, Detailed Agnikarma Vidhi Adhyaya described [23]
- In Sushruta Sutrasthana in the context of Shalya Upaniya Adhyaya as a Shalyaniraharana.[24]
- In Sushruta Chikitsa Sthana in the context of Vatavyadhi Chikitsa in the reference of Sira, Snayu, Sandhi, Asthi, samprapti.[25]
- In Sushruta Chikitsa Sthana in the context of Arsha roga Chikitsa.[26]
- In Sushruta Chikitsa Sthana in the context of Ashmari Chikitsa as a Varana. [27]
- In Sushruta Chikitsa Sthana in the context of Bhagandara Chikitsa as a Varana [28]
- In Sushruta Chikitsa Sthana in the context of Kustha Chikitsa [29]
- In Sushruta Chikitsa Sthana in the context of Prameha Chikitsa [28]
- In Sushruta Chikitsa Sthana in the context of Granthiapachayaarbuda Chikitsa [29]
- In Sushruta Chikitsa Sthana in the context of Vrudhiupadhansha Chikitsa [30]
- In Sushruta Chikitsa Sthana in the context of Kshudra Roga Chikitsa [31]
- In Sushruta Chikitsa Sthana in the context of Mukha roga Chikitsa [32]
- In Sushruta Kalpasthana in the reference of [33]

- In Sushruta in the context of Agropaharaniya, as Upayantra, Anushastra and one of 60 Upakarma of Vrana [34]

Ashtanga Samgraha:

- In A. S. Su. 40 deals with Agnikarma Vidhi and there are many other references of other diseases regarding Agnikarma.

Ashtanga Hridaya:

- In A. H. Su. 30 deals with Agnikarma Vidhi and there are many other references of other diseases regarding Agnikarma.

Harita Samhita:

- In Harita Samhita, Agnikarma indicated as a important types of treatment out of eight types of treatment [35,36 ,37,38,39,40.]

Chakradatta:

- In the context of Vata vyadhi, Chakradatta has explained the Agnikarma regarding the disease Gridhrasi.

Yogaratnakara:

- In the context of Vata vyadhi, Yogaratnakara has explained the Agnikarma regarding the disease Gridhrasi.
- Sharangadhara, Gadanigraha, Vangasena, Bhavaprakasha also mentioned Agnikarma Chikitsa in the management of various disease

Importance:

Agni Karma is superior to Ksharakarma as a disease burnt with Agni will never reoccure. Disease which can not be cured with medicines, Kshara and Surgery can be cured with Agni[41].

The Surgical excision should be done with the sharp instrument which is heated by Agni with benefit of asepsis, otherwise there will be sepsis by unheated instrument.[42]

There will be vaso constriction due to heat and it will check the haemorrhage.[43]

By this virtue Agni Karma is superior to every other procedure.

Classification of agnikarma:

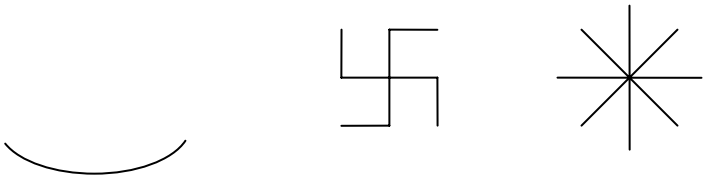
Agnikarma can be classified depending upon the following criteria:

1. Shape[44] –

Valaya Bindu Vilekha Pratisarana

Bindu Valaya Vilekha Pratisarana

Acharya Vagbhata has added more three types[45].



Ardha-Chandra Swastika Astapada

2. According to Dhatus:-

According to Acharya Sushruta and Vagbhata the Agni Karma should be done as per involvement of the Dhatus such [46] as

a. Twak dagdha b. Mamsadagdha

c. Sira, snayu dagdha d. sandhi – asthi dagdha

But Sushruta have classified it in two groups only –

(a) Twaka dagdha

(b) Mamsa dagdha[47]

While Acharya Kashyapa and Bhadra Shounaka have contraindicated Agni Karma in other dhatu besides Twaka and Mamsa even in case of Snake bite.

3. Site

a. Sthanika dahanakarma b. Sthanantarika dahanakarma

4. Target

a. Preventive (Seasonal)

b. Curative (Disease)

5. Materials used

a. Snigdha

b. Rooksha

8. Stage of intervention

a. As Pradhanakarma

b. As Paschatkarma

Description of Agnikarma according to shape[48]:

Acharya Dalhana have given explanation regarding the shapes of Agni Karma in his commentary[49].

1. *Valaya* The agnikarma is done at the site of disease in circular manner around the moola of the vyakta anatomical changes.
2. *Bindu* – The tip of the shalaka yantra, which is heated to red-hot, is applied at the site of the vyadhi in the shape of dot, to cover the maximum area when the vyakta sthana is big enough.
3. *Vilekha* – The lines of various shapes i.e., transverse, vertical and angular are produced with red hot shara or shalaka, to achieve the effect of either cutting out the tract of bhagandara etc nadivrina or to subside the avaruddhavata.
4. *Pratisarana* – The affected part is rubbed with red-hot shalaka or jamboshta yantra so that, the lekhana or chedana effect along with the haemostasis can be obtained.

Above mentioned four types are explained by Acharya Sushruta in the context of Agnikarma vidhi adhyaya[50]. On the other hand, Acharya Vagbhata has added more three types[51].

1. *Ardhachandrakruti* – Semi circular shape of burnings are applied over the affected area with the help of particular type of shalaka.
2. *Swastika* - In swastika type of agnikarma, swastika shaped yantra is used for the purpose.

3. *Ashtapada* – It is like making eight lines crossing each other at a single point with red-hot shara.

According to the involvement of dhatus: [52]

a. Twak dagdha:

When agnikarma is applied to the skin, it will give rise to "chod-chod" sound, durgandhata, twak sankocha (Shrinking of skin)

Indications: Padmini kantaka, tilakalaka, mashaka, angaglani, shirashoola, adhimantha, Keela, tila [53]etc.

b. Mamsa dagdha:

When agnikarma is applied to flesh, it will give rise blackish brown colour marked by pain and little swelling and incidentally ulcer becomes dry and contracted.

Indications: Arsha, bhagandara, granti, nadivrina, dushtavrina, arbuda, gandamala, Galashundika etc.

c. Sira and snayu dagdha:

In the case where a nerve or a vein is burnt, the ulcer present as elevated, black in colour with stoppage of all the secretion.

Indication: Shlishtavartma, asruksrava, neelya and asamyak sira vyadhana, asamyak nadi, snayu, sandhi and asthi cheda, dantanadi, and upapakshma etc.[47]

d. Asthi and sandhi dagdha:

After cauterising the bone and joint, the created ulcer has a parched red hue and becomes hard and rough.

Indications: Sandhi vedana, Sandhi stabdhata, Sandhivata, Sandhigata vrina, kunaka.

According to site

a. Sthanika dahanakarma:

Agnikarma applied over the diseased area.

e.g., arsha, bhagandara, kadara, bhinna udara, mootrasravayukta vrina, Medoja granthi, medoja oshtaroga etc.

b. Sthanantarika dahanakarma:

The agnikarma is done in the other places from the diseased area means, the diseases are located in one place and the agnikarma is applied to some other place.

E.g. 1.Agnikarma is applied in the lower leg, twelve angulas from the parshni avoiding the indrabasti marma, to take out the meda in apachi roga.

2. In vataja and kaphaja vriddhi, agnikarma is applied in between the angushta and tarjani of right side in case of left-sided antravriddhi and vice versa.
3. Pleehodara is treated by agnikarma, with taptshara applied at left manibandha sandhigata sira.

According to materials used:

- *Rooksha dravya* are utilised to apply the agni, incase of kapha pradhana vyadhi and prakruti. The kashta, pashana and loshtra etc are used for the purpose.
- *Snigdha dravya* like sneha, vasa, majja, ghruta and taila are used for vatapradhana vyadhi and prakruti.

According to stage of intervention[54]:

As pradhana karma: Arshankura that are karkasha, sthira, prathu and kathina are burnt with jamboshta shalaka i.e., agnikarma itself is the main procedure for the particular disease to be taken out from its root.

As paschatkarma: Agnikarma is used after chedanadhi ashtavidha shastrakarma, to reduce the possiblity of reccurance of disease.

For e.g., Sthana of bigger arshankura are burnt after the excision (Chedana) of arshankura.

Agantuja bhagandara is cut opened with shastra, followed by agnikarma with tapta shalaka yantra, till the vrina turns to jambuphalavarna.

Table No. 9: Indications for agnikarma [55, 56, 57,58,]

Sthana	**Vyadhi**
Shira	Shiroroga,
Netra	Adhimantha, pakshmakopa, linganasha, lagana
Nasa	Nasarsha
Mukha	Medoja oshtharoga; Jalarbuda; Krimidanta; Dantanadi; Dantavidradhi etc.
Koshta	Kaphaja gulma; pleehodara; moodhagarbha; visuchika; antravrudhi etc.
Kantha	Medaja galaganda
Guda gata	Arsha; bhagandara
Kshudra roga	Charmakeela, tilakalaka, kunaka, valmika, jatumani
Others	Twak – sira – mamsa – snayu – sandhi and astigata vata; kathina, uchrita suptamamsa; vrina; granti; apachi; shleepada; arbuda; sandhiroga;

	sirachedana; nadivrina and shonita atipravrutti etc.

Table No.10: Contra Indication for agnikarma [59,60,61,62]

Unsuitable Prakruti	Pittaja
Unsuitable season	Sharada and greeshma
Unsuitable age	Bala and vrudha
Unsuitable according to strength	Durbala, abala, bheeru
Unsuitable conditions	Garbhini, vishadayukta
Unsuitable diseases	Antahashonita; rakta pitta; anudhruta shalya; bhinna koshta; aneka vrina peedita; trishna; jwara; netra vrina, kustha vrina; visha jushta; aswedya like pandu; pramehi; kshayartha; kshama; ajeerni; udara rogi; chardi peedita; madhya peetha and atisari
Unsuitable sthana	Marma and snayugata vrina; (Even the sira dahana for the purpose of curing siragata vyadhi is contra indicated as the sira, snayu, sandhi and asthigata vyadhi can be cured by the mamsa dahana itself. But to control the shonita atipravruthi siradahana can be applied.)
Unsuitable dushya	Rakta (rakta pradoshaja vyadhi, which are only limited to rakta and caused by the vitiation of pitta, are contra indicated for agnikarma as agni, because of its ushna veerya aggrevates rakta and pitta, which are similar in veerya as well as rasa (katu). Thus producing excessive burning sensation, sphota utpatti, jwara and trishna.)

According to Charaka Agni Karma should not be done in the Vrana of Snayu, Marma, Netra, Kushtha and Vrana with Visha and Shalya.[63]

Dahanupkarana:

Dahanupakarana are the instrument to produce therapeutic burns (Samyak Dagdha) during Agnikarma chikitsa. They are classified as follows according to various Acharyas

Table No.11: Showing the list of Dahanopakaranas[64, 65, 66, 67, 68, 69]

1. **Dahanupakarana**	**Su.**	**Ch.**	**A.S.**	**A.H.**
2. Pippali	+	_	+	_
3. Aja shakrida	+	_	+	_
4. Godanta	+	_	+	+
5. Shara	+	+	+	+
6. Shalaka	+	_	+	_
7. Jambavastha	+	_	+	+
8. Dhatu	+	_	_	_
9. Madhu	+	+	+	+
10. Madhuchista	+	+	+	_
11. Godanta	+	_	+	+
12. Guda	+	_	+	+
13. Vasa	+	_	+	+
14. Ghrita	+	+	+	+
15. Tailam	+	+	+	+
16. Yastimadhu	_	_	+	_
17. Suchi	_	_	+	_
18. Varti	_	_	_	+
19. Suryakanta	_	_	+	_

Above-mentioned Dahanupakarana are distributed in three groups.

1st group is useful in Agnikarma chikitsa of Twak dhatu (skin).

- Pippali
- Ajashakrat

- Godanta
- Shara
- Shalaka

2nd group is useful in Agnikarma chikitsa of Mamsa dhatu.

- Jambaustha
- Other Loha

3rd group is useful in Agnikarma chikitsa of Sira, Snayu, Sandhi, Asthi dhatu.

- Madhu
- Guda
- Sneha

Details of Instruments:

Pippali – It is a well-known herbal drug, used in dry form. Fruit is medicinally used. Pippali is helpful in the dahakarma of skin, for mashaka, tilkalaka, charmakila, abhishyanda, and adhimanta, pain in eyebrow and temporal region and ardita.

Ajashakrita – This is the fecal matter of goat – used in dry condition. Again it is used for dahakarma for twakdahana.

Godanta – "Teeth of cows" is also used as twaka dahanopakarana.

Shara – Red-hot tip of the iron made arrow was used in dahakarma of the skin.

Suryakanta – It is mentioned for twakdaha. It converges the following sunlight and accumulates it on a specific spot so that heat produced by it is utilised for dahakarma.

Kshaudra (Madhu) – This animal product is produced by honeybees. It is indicated for dahakarma in diseases of sira, snayu, sandhi and asthi. The madhu is also used for dahakarma in mamsa and sira.

Madhuccista (Bee wax) – This animal product is indicated for mamsa, sira, snayu, asthi and sandhi dahakarma.

Guda – This herbal product used for dahakarma in the diseases of sira, snayu and sandhi. In krimidanta it is advised to fill up hole by guda followed by dahakarma.

Sneha – There are four types of sneha, such as taila, ghrita, vasa and majja. These sneha are used for dahakarma of nadivrina and bhagandara. It is also included in appliances of sira daha.

Suchi – is mentioned for dahakarma in sira, especially it is used in the treatment of pakshmakopa.

Jambvostha – This is one type of shalaka yantra. It has got three types, as they are classifed under the heading of shalaka yantra used for mamsa daha.

(i) One is 12 angula in length and has phalaka of 2 angula

(ii) Length 10 angula and phalaka 1 angula

(iii) Length 8 angula, phalaka 1/2 angula

Again on the general size there are three types of shalaka, i.e., sthula, anu, deergha for agnikarma. These instruments have their anterior part like the shape of jambav seed.

Shalaka – is mentioned for cauterisation of skin, mamsa daha, twak daha, and sira daha.

This shalaka should be made up of iron, silver, gold, copper and kansya.

It is advised to use iron shalaka in visarpa and gold shalaka in granthi visarpa.

Shalaka made up of iron and gold is used in pakshama kopa.

Ardhendu vakra shalaka – The tip of this shalaka is semilunar in shape and used for dahakarma in vriddhi.

Kolasthi shalaka – The tip of this shalaka is having the shape of half of the seed of badara.

Varti – Used for twak daha.

Guggulu – This is used for the dahakarma in inflammed, externally opened and lacerated sinus, and infected ulcers.

Dagdha Bheda:

According to Sushruta[70], all dagdha are included under four types of dagdha Vrana.

1.Plushtha Dagdha : insufficient burn results into panduvarna and excessive burning sensation without the production of sphota.

2.Dagdha : improperly applied agni will result into sphototpatti, daha, raga, paka, chosha for longer period, thus resulting into durdagdhavrina.

3.Atidagdha – excessive application of heat will cause mamsavalambhana, gatra vishlesha, pain in sira, snayu, sandhi and asthi, jwara, daha, pipasa and the wound heals after long time leaving behind the scar.

4.Samyaka Dagdha : There are Samanya Lakshana (common symptoms) produced in any type of Dhatu (tissue) and special symptoms are only related to the Dhatu concerned.

Samanya Lakshana of Samyaka Dagdha Vrana:

Ana-awagadha Vranata (Wound which is not deep)

Talphala Varnata (Fruit of Tala tree-blue-black in color)

Susamshita Vrana (Without elevation or depression)

Special Symptoms of Samyaka Dagdha Vrana Related to Skin

Shabdapradurbhao (Production of sound)

Durgandhata (Bed odor)

Twak Sankocha (Contraction of the skin)

Special symptoms of Samyaka Dagdha Vrana

Kapotvarnata (Color like that of pigeon i.e. ashy, dark grey)

Alpa Swayathu (Mild swelling)

Alpa Vedana (Less pain)

Shuska Sankuchit Vranata (Dry, contracted wound)

Special symptoms and signs of Samyaka Dagdha Vrana Related to Sira, Snayu –

Krishna Vranata (Black coloration)

Unnata Vranata (Elevated)

Shrava – Sannirodha (Stoppage of discharge)

Special symptoms and signs of Samyaka Dagdha Vrana Related to Sandhi, Asthi –

Rukshata (Dryness)

Arunata (Dark red coloration)

Karkashata (Roughness)

Sthirata (Stability)

4. Ati Dagdha:

Mamsa-avalambana (Hanging, burnt tissue)

Gatra-vishlesha (Parts become loose and useless)

Distruction of Sira, Snayu, Sandhi (Tendons in joints)

Jwara (Fever)

Daha (Burning)

Pipasa (Thirst)

Murchha (Unconsciousness)

Wound heals after a long time and healed ulcers have discoloration.

Blood aggravated by fire undergoes still greater aggravation in the body of the person, then; even pitta also gets aggravated in the same speed because both these are identical in their taste and substance, hence both these give rise to severe

burning sensation by their nature, blebs (vesicles) develop quickly, fever and thirst, trouble the body very much.

This knowledge of the features of these four kinds (degrees) of burns will be helpful for performing his (of the physician) activities (treatments). According to modern terminology, Plushtha is scorched burn, durdagdha is blistered burn, Samyaka dagdha is superficial burn which is ideal and Atidagdha is deep burn which is excess.

Dagdha Chikitsa

Upachara: [71]

1. *Plushta dagdha* – patient should be subjected for agni pratapana i.e., swedana and ushnakriya comprising of ushna aoushadha, alepa, annapana etc.
2. *Durdagdha* – sheetakriya is applied for avagadha mooladagdha (deep tissue burns)
    - ushnakriya is applied for anavagadha mooladagdha (superficial tissue burns)
3. *Atidagdha* – take out the visheerna mamsa
    - kundana of shali tandula
    - lepa of tinduki twak + ghrita
    - cover the wound with guduchi patra and padmotpala
    - treatment as of pittaja visarpa

Chances of recurrence:

Disease treated with improper dahana, may reccur as the person indulges in dosha prakopaka nidana, like mithya ahara vihara or when the disease like arbuda etc, are not taken out along with their root.

Agni Karma Kala (Suitable Time)

Agni Karma can be done during all the seasons except Grishma (summer)and Sharada. (Autumn); it because of, in Sharad there is a Prakopa Pitta and Agni karma also aggravates Pitta and it may be lead Pitta Prakopa, due to this Agnikarma is contraindicated. Even in these seasons it can be done in diseases of emergency, after adopting counter methods[72]

Dalhana mentions covering the body or the site of Agnikarma with moist cloth, use

of cold foods and applying pastes which are cooling etc. as counter methods to mitigate the effect of burning.

Pre Agni Karma Diet:

In all diseases and during all seasons, the Agni Karma can be done after feeding the patient with pichhila diet, and on an empty stomach in case of Malpresentation of foetus, Calculous diseases, Fistula in ano, abdominal diseases, Piles and diseases of Oral Cavity.[73]

Pre Agni Karma Assessment:

Before going to any surgical or para surgical procedure complete assessment should be carried out regarding all the factors. So here too before going to Agni Karma a thorough examination of patient, shape of the lesion, related vital part of the body, the disease and the season etc. should be done. [74]

Procedure of Agni karma chikitsa vidhi:-

Regarding the procedure of Agni Karma, there is a detailed description is available in Astang Samgraha [75] i.e., before doing the procedure of Agni Karma, benedication chanting and collection of related materials and instruments should be done, the patient kept in suitable position by keeping head in the East direction and held by expert assistants to avoid movement. After this the surgeon should make the different shapes of Agni Karma viz. : - Valaya, Ardhchandra, Swastika, etc. as per need by heated Jambvostha or Shalaka in a smoke free fire of Khadira or Badara with the help a blower or a fan. During this period if patients feels discomfort then keep them satisfies by courageful, consolating talks, give cold water for drink and sprink cold water.

But procedure of Agni Karma should be done till production of complete cauterisation, anoint the Madhu, Ghrita, and followed by cold and lubricating Dravyas applications.

Post Agni Karma Management:

After completion of Agni Karma the part where Agni Karma has done Should be anointed with Madhu and Ghrita for Ropana of Dagdha Varna.[76]

Precaution*:*

Agni, visha, shastra, kshara are dreadful when they are in unskillful hands. Hence should be used with great care and skill.

Agni Karma in Modern Perspective:

After the detailed description of Agni Karma from Ayurvedic view point, a brief description in modern perspective of the same therapy has been presented in following paragraphs.

There are two procedures similar to Agni Karma are available in modern science :

1. Electrocautery
2. Diathermy

(1) Electrocautery[77]

Electrocautery is one of the most useful instruments for surgical procedure.

It consists essentially of a platinum wire which, can be heated to red hot by means of an electric current.

Application of the red hot wire to tissues will either cut them or seal any bleeding points by coagulation. It is thus ideal for removing small skin tags and pappillomas etc and for controlling the bleeding following curetting works, granulomas and similar lesions. The earliest Electrocauteries used a standard battery, and rheostat to control the temperature of the tip. Subsequently with the change in domestic electricity supplies from D.C. to A.C. It was possible to use step down transformers and rheostats and it avoided flat batteries. Most recently with the introduction of nickel cadmium rechargeable batteries with their ability to with stand high current drain without damage.

A variety of different shaped Platinum tips are produced for different applications, but for general use simply a wire is all that is needed, with careful handling. It will last for many years, does not corrode, and can be immediately sterilised merely switching on the current and heating the tip for a few seconds.

(2) Diathermy[78]

It is a bi-polar apparatus being used in most of operative procedures. In this a very high frequency current is passed through the patients body and generates heat.

Three types of diathermy are available.

I Medicinal diathermy:-

It is mild degree and does not cause destruction of tissues.

II Short wave diathermy:-

It is used as a therapeutic elevation of temperature in the tissue by means of an oscillating electric current of extremely high frequency (10-100 million cycles/seconds) and a short wave length of 3-30 meters.

III Surgical diathermy:-

In this diathermy, a very high frequency current is passed through the patient's body and generated heat. By making one electrode relatively large and strapping it firmly to one limb and making the other electrode a pointed moveable tip, sufficient heat is generated at the tip to coagulate or cut tissue. The effect is localised because the current from live electrode spreads out in the patient's body and travels to the 'Indifferent' electrode which is a large electrode placed in contact with the patient's body. A high density of current occurs only immediately beneath the live electrode because further away the current density is too small to have any heating effect.

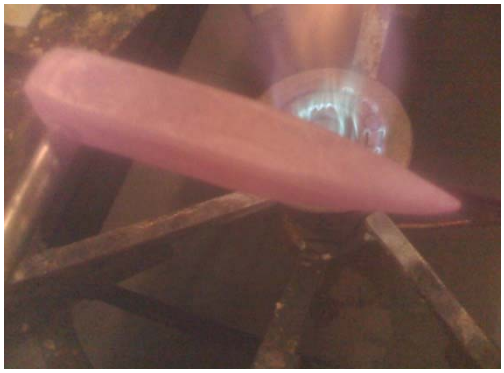
Advantage:-

Absence of bleeding; its effect is very similar to that of the electrocautery, and the heat generated automatically sterilises the area treated, a sterile dry dressing or no dressing at all, therefore all that is needed to promote healing.

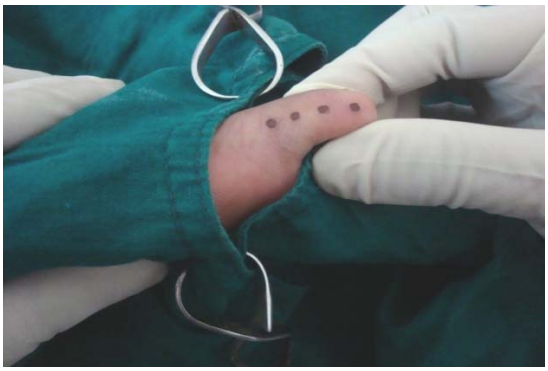
Disadvantage:-

1. Histological examination of the treated lesion is not usually possible due to the distortion of the cells from the heat, thus a preliminary biopsy needs to be done, where the diagnosis is in doubt.
2. Current is likely to cause ventricular fibrillation and can cause probable death of the patients.

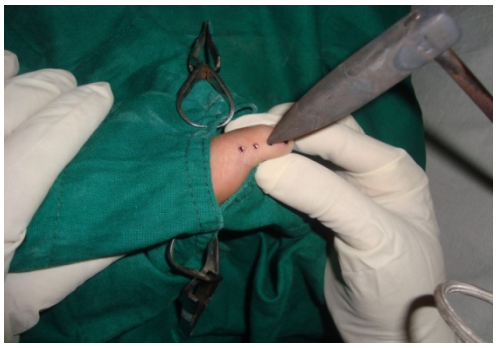
PHOTOS



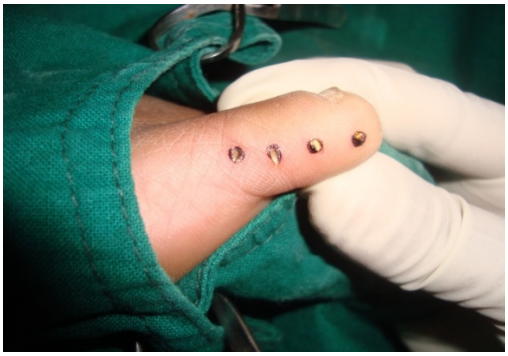
Pancha Loha Shalaka



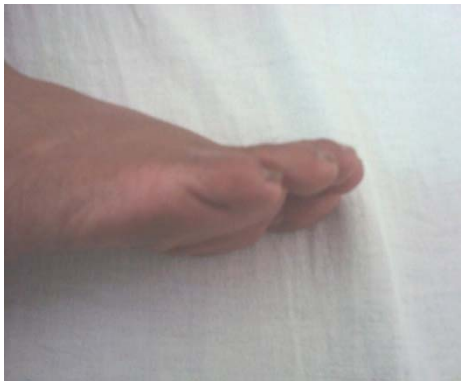
Marked Points before Treatment



During Treatment



Immediately after the treatment



Site of Agnikarma after 21 days of treatment

MATERIALS AND METHODS

Source:

1) Conceptual study:-

All the classical, modern literatures and contemporary texts including the websites about the disease and treatment is reviewed and documented for the intended study.

2) Clinical study: -

1. Patients is randomly selected from O.P.D and I.P.D of PG studies in Alva's Ayurveda Medical College Hospital, Moodbidri.
2. Medical camps and other referrals.

METHOD OF COLLECTION OF DATA

Minimum 30 patients presenting with Sciatica will be randomly selected irrespective of their sex, religion etc.

PROCEDURE OF AGNI KARMA CHIKITSA VIDHI:-

The entire procedure consists of three parts.

a) Purva karma (pre operative procedure)

b) Pradhana karma (Operative procedure)

c) Paschat karma (Post-operative procedure)

a)Purva karma (pre operative procedure)

A patient who is considered to be fit for procedure is prepared accordingly.

Preparation of the part i.e. Pada Kanistika anguli (little toe of the affected leg) is thoroughly cleaned and painted with antiseptic agents. Before main procedure patients are advised to take pichchhila diet.

Agropaharaniya:-Before starting procedure, a specially made loha Shalaka with a pointed tip, gas stove, sterilized artery forceps, sterilized gauge pieces, sprit, Shatadoutha ghritha, Jatyadi Taila, Haridra churna, cotton and

adhesive tape all were kept ready. By taking all these consideration the patients were taken for Pradhana karma.

b) Pradhana karma (Operative procedure)

Patient is kept in prone position before starting the procedure. Now Loha Shalaka which is having pointed tip (Bindu) is heated up to red-hot and placed on Pada Kanistika anguli (little toe of the affected leg) till the Samayaka Twak Dagdha lakshanas occurred i.e. sabdapradurbhava, durgandhata, twak sankocha etc.It should be followed by simultaneous application of shatadhauta ghritha to avoid burning sensation.

c) Paschat karma (Post-operative procedure)

Immediately after the completion of the procedure the vrana is dressed with Haridra churna with the help of sterile gauge pieces and adhesive tape.

During the procedure patient is carefully observed for any untoward complication. Patient is advised to keep area dry, clean, avoid exertion, trauma and unwholesome diet.

Next dressing should be done on alternate day with Jatyadi Taila application till vrana ropana.

d) Follow up and Duration

After completion of the treatment the patients is followed at regular interval of 7 days, for a period of 21 days

e) Inclusion criteria

- Patients aged between 20-60 yrs irrespective of sex, religion and economic status.
- Patients with pratyatma lakshana of Gridhrasi.
- Patients with positive physical sign or test of radicular pain.

f) Exclusion criteria

- Pregnancy.
- Traumatic, infective, neoplastic & congenital condition of the spine.

- Patient with systemic disorder which interfere with the course of treatment.
- Patients contraindicated for Agni karma.
- Patients with cauda equina syndrome.

g) <u>Diagnostic criteria</u>

History:

Aching pain in the low back region which radiates to the lower limb with or without c/o other sensory/motor deficits. .

SIGNS:

1) Restricted straight- leg raising as an objective measure for diagnosis as well as for improvement of treatment.
2) Bragaards test

h) <u>Assesment criteria</u>

The improvement in the patient is assessed mainly on the basis of relief in the cardinal signs and symptoms of disease. To assess the effect of therapy subjectively and objectively, all the signs and symptoms are given scoring depending upon their severity.

Subjective :

1. Stambha(Stiffness)
2. Ruk(Pain)
3. Toda(Pricking sensation)
4. Spandana(Twiching)
5. Aruchi(Anorexia)
6. Tandra(Stupor)
7. Gourava(Heaviness)

Objective:

1. Tenderness
2. Deep tendon reflex
3. Muscle tone
4. Muscle power
5. SLR test

6. Braggards test
7. Lasegue's SLR test
8. Flip test

i) Laboratary investigation:

- Blood Routine & Urine routine.
- X- Ray of lumbo sacral spine AP /lateral view if needed.
- Other investigations like CT and MRI according to the need.

j) Assessment Criteria:

Ruk

No pain	0
Painful, walks without limping	1
Painful, walks with limping but without support	2
Painful, can walk only with support	3
Painful, unable to walk	4

Stambha

No stiffness	0
Mild stiffness (1-10 min)	1
Moderate stiffness (11-20 min)	2
Severe stiffness (21-30 min)	3
Very severe stiffness (more than 30 min)	4

Toda

No pricking sensation	0
Mild pricking sensation	1
Moderate pricking sensation	2
Severe pricking sensation	3

Tenderness:

No Tenderness	0
Patient says joint is tender	1
Patient winces	2
Patient winces & withdraws the affected part	3
Patient will not allow joint to be touched	4

Spandana

No fasciculation	0
Mild fasciculation	1
Moderate fasciculation	2
Severe fasciculation	3

Deep tendon reflex

Absent	0
Present (Normal)	1
Brisk	2
Very Brisk	3
Clonus	4

Muscle tone

Hypotonia	0
Normotonia	1
Hypertonia	2

Power

Complete paralysis	0
Flicker of contraction	1
Joint movement when effect of gravity eliminated	2
Movement sufficient to overcome effect of gravity	3
Movement overcomes gravity plus added resistance	4
Normal power	5

Flip test:

Absent - 0

Positive - 1

Braggards test:

Absent - 0

Positive - 1

SLR and Lasegue's SLR:

These tests were measured using a goniometer and the angle of measurement was recorded in degrees before and after treatment.

The results obtained are statistically analyzed and conclusions were drawn.

OBSERVATIONS

The following observations were made during this study. Observations were made before the treatment, during the treatment and after the treatment. In the present study, 30 patients fulfilling the inclusion criteria of Gridhrasi were studied.

Incidence observation:

As per the prepared proforma, observations were made regarding the incidence of Age, sex, occupation, religion, socio-economic status, marital status, habitat, diet factors.

Age:

Out of 30 cases, 6(20.0%) were below the age group of 30yrs, 7 (23.33%) were under the age group of 31 to 40 yrs, 8 (26.66%) were under the age group of 41 to 50yrs, and 9(30.0%) were under the age group of 51 to 60 yrs.

Table No.12 showing the distribution of cases in different Age group

Age group in years	**Number of cases**	**Percentage**
Upto 30	6	20
31-40	7	23.37
41-50	8	26.67
51-60	9	30
Total	30	100

Sex:

Out of total 30 cases selected, 15 (50%) were Male and 15 (50%) were Female.

Table No.13 Showing the distribution of cases in different Sex

Sex	Total	
	Number of cases	**Perecentage**
Male	15	50
Female	15	50
Total	30	100

Religion:

Out of total 30 cases selected, 15 (50%) were Hindus, 10(33.34%) were Christians and 5 (16.67%) were Muslims.

Table No.14 showing the distribution of cases in different Religion

Religion	Total	
	Number of cases	**percentage**
Hindu	15	50
Muslim	5	16.67
Christian	10	33.37
Total	30	100

Occupation:

Out of total 30 selected cases, 2 (6.67%) were Farmers, 5 (16.66%) were Labours, 3 (10.0%) were Business men, 3 (10%) were Govt. employees, 15 (50%) were Housewives and 2(6.67%) were Students.

Table No 15: Distribution of 30 patients according to occupation

Occupation	Total	%
Farmers	2	6.67
Manual labor	5	16.66
Housewife	15	50

Business	3	10
Govt employee	3	10
students	2	6.67

Chronicity:

Out of total 30 cases, 15 (50%) had the chronicity of less than 3 months, 11 (36.67%) had the chronicity between 3 to 6 months and 4 (13.33%) had the chronicity between 6 to 12 months.

Table No.16 showing the distribution of cases based on the Chronicity

Chronicity	**Number of cases**	**Percentage**
<3 months	**15**	**50**
3-6 months	**11**	**36.67**
6-12 months	**4**	**13.33**
Total	**30**	**100**

Incidence of prakruti:

Among the 30 patients, 6 (20%) were having kaphaja, vatakaphaj and kapha-pittaja prakruti. 3 (10%) patients were of vata-pittaja prakruti and 9(30%) patients were of vataja prakruti.

Table No. 17: Incidence of prakruti in 30 patients

Prakruti	**Number of patients**	**Percentage**
Vataja	09	30%
Pittaja	00	00%
Kaphaja	06	20%
Vatapittaja	03	10%
Vatakaphaja	06	22%
Kapha pittaja	06	20%
Sannipataja	00	00%
Total	30	100%

Economical incidence:

Middle income group people were about 20 among the 30 patient thus accounting for 66.66%. Low income group people were about 7 (patients) among the 30 thus accounting for 23.33%. Whereas the high income group people were of lowest peak only with 3 patients among the 30 thus accounting for only 10%.

Table No. 18: Socio-economic distribution of 30 patients

Economic group	Number of patients	Percentage
Low income	07	23.33%
Middle income	20	66.66%
High income	03	10%
Total	30	100%

Professional incidence:

Majority of suffers were of the profession, which requires moderate strain accounting for almost half i.e., 21 out of 30 people (70%). Whereas 16.66% the patients were of the profession of more strenuous work i.e., 5 out of 30. Surprisingly only 4 patients had sedentary work thus accounting for 13.33%.

Table No. 19: Nature of work in 30 patients

Nature of work	Number of patients	Percentage
Sedentary	04	13.33%
Moderate	21	70%
Strenuous	05	16.66%
Total	30	100%

Food habit:

22 of 30 patients reported were non-vegetarians. Whereas remaining 8 patients who were vegetarians make the count low in the food habit category.

Table No. 20: Food habit in 30 patients

Food habit	Number of patients	Percentage
Vegetarian	08	26.66%
Non-vegetarian	22	73.33%

Distribution of patients according to symptamatology:

The symptom Ruk, was observed in all of patients (100%), Toda in 60% of patients, stambha in 80% and spandana in 10% of patients. The other incidence of symptomatology is given in the table below.

Table No 21: Distribution of patients according to symptamatology

Symptomatology	Total	% of patients
Stambha	24	80%
Ruk	30	100%
Toda	18	60%
Spandana	3	10%
Aruci	0	00%
Gaurava	0	00%
Tandra	0	00%

RESULTS

The clinical study of ***Agnikarma in the Management of Gridhrasi*** was carried out on selected 30 patients

Data was collected from the patient on the 7th day, 14th, and 21st day of the study period.

Assessment of the condition was done based on detailed proforma adopting standard scoring methods of subjective & objective parameters.

As the assessment parameters include a mixture of qualitative and quantitative data, the sample size is small, and a single group is compared for pre and post values the following statistical analysis is used.

Qualitative Data and **Quantitative Data:**

- Average is found using **Mean and standard deviation**.
- For pre –post comparison '**Paired t' test** is used.

Effect of Agnikarma on Ruk

The mean score observed in ruk before the treatment was 2.4, after 7days of Agni karma the Mean difference between B.T and AT1 was 0.77±0.43and percentage improvement was 33.09% .

After 14 days Mean difference was 1.14±0.461 and improvement in percentage was 47.5.

'Paired t' test value was 13.85 which is statistically highly significant (P< 0.001).

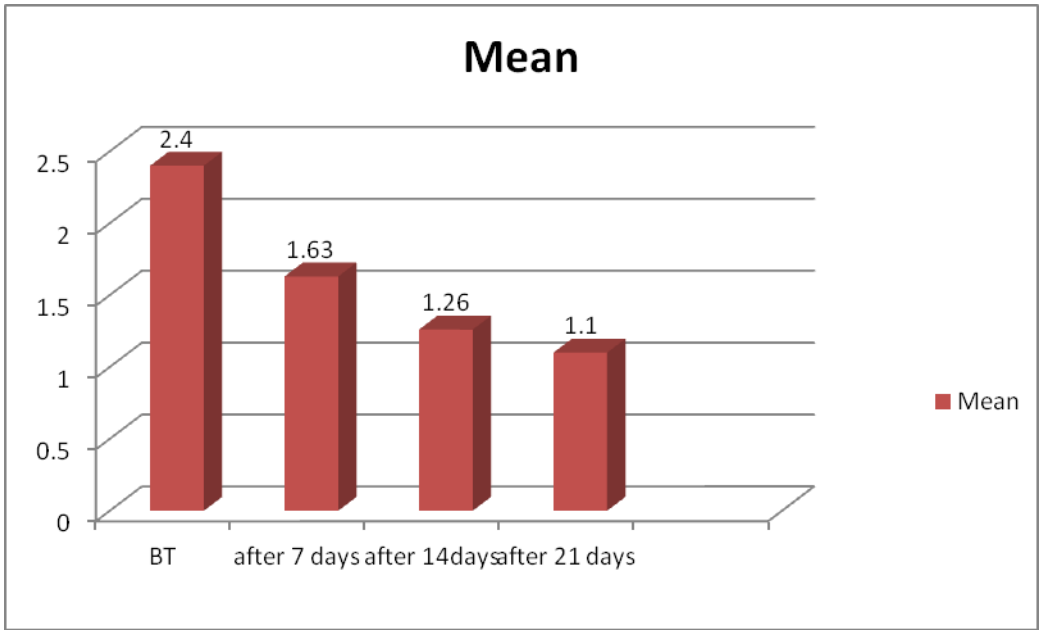
After 21 days Mean difference was 1.3±0.466 and improvement in percentage was 54.17.

'Paired t' test value was 15.28 which is statistically highly significant (P< 0.001).

Table no 22: Showing the effect of Agnikarma on Ruk

DAY OF ASSESSMENT	SUMMARY STATISTICS					TEST OF SIGNIFICANCE	
	Mean	B.T-A.T	%	S.D of diff b/w means	S.E of diff b/w means	Paired 't' test value	P value
BT	2.4	-	-	-	-	-	-
AT1	1.63	0.77	33.09	0.430	0.078	9.803	<0.001
AT2	1.26	1.14	47.5	0.461	0.084	13.85	<0.001
AT3	1.1	1.3	54.17	0.466	0.085	15.28	<0.001

Graph No.1: Showing the effect of Agnikarma on Ruk



Effect of Agnikarma on Toda

The mean score observed in toda before the treatment was 2.33, after 7days of Agnikarma the Mean difference was1.00±0.49and percentage improvement was 42.92% .

'Paired t' test value was 6.596 which is statistically highly significant (P< 0.001).

After 14 days Mean difference was1.33±0.761 and improvement in percentage was 57.08

'Paired t' test value was 5.756 which is statistically highly significant (P< 0.001).

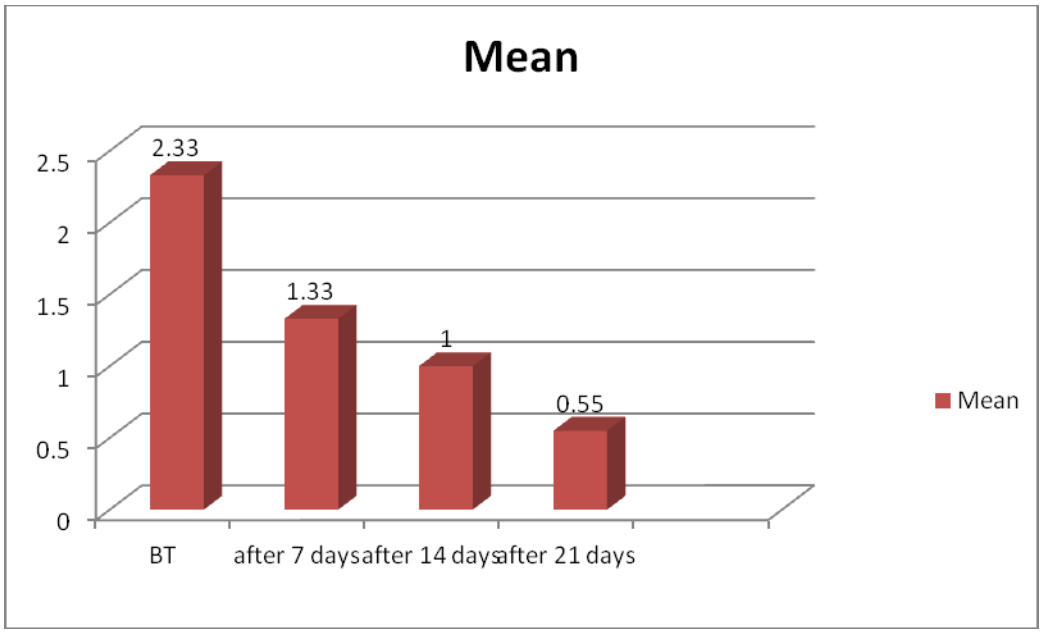
After 21 days Mean difference was 1.78±0.944 and improvement in percentage was 76.39

'Paired t' test value was 6.147 which is statistically highly significant (P< 0.001).

Table no 23: Showing the effect of Agnikarma on Toda

DAY OF ASSESSMENT	SUMMARY STATISTICS					TEST OF SIGNIFICANCE	
	Mean	B.T-A.T	%	S.D of diff b/w means	S.E of diff b/w means	Paired 't' test value	P value
B.T	2.33	-	-	-	-	-	-
AT1	1.33	1.00	42.92	0.49	0.090	6.596	<0.001
AT2	1.00	1.33	57.08	0.761	0.138	5.756	<0.001
AT3	0.55	1.78	76.39	0.944	0.172	6.147	<0.001

Graph No.2: Showing the effect of Agnikarma on Toda



Effect of Agnikarma on Stambha

The mean score observed in stambha before the treatment was 2.916, after 7days of Agnikarma the Mean difference was1.00±0.4068and percentage improvement was 34.29%.

'Paired t' test value was 10.77 which is statistically highly significant (P< 0.001).

After 14 days Mean difference was 1.556±0.8022 and improvement in percentage was 54.38

'Paired t' test value was 9.079which is statistically highly significant (P< 0.001).

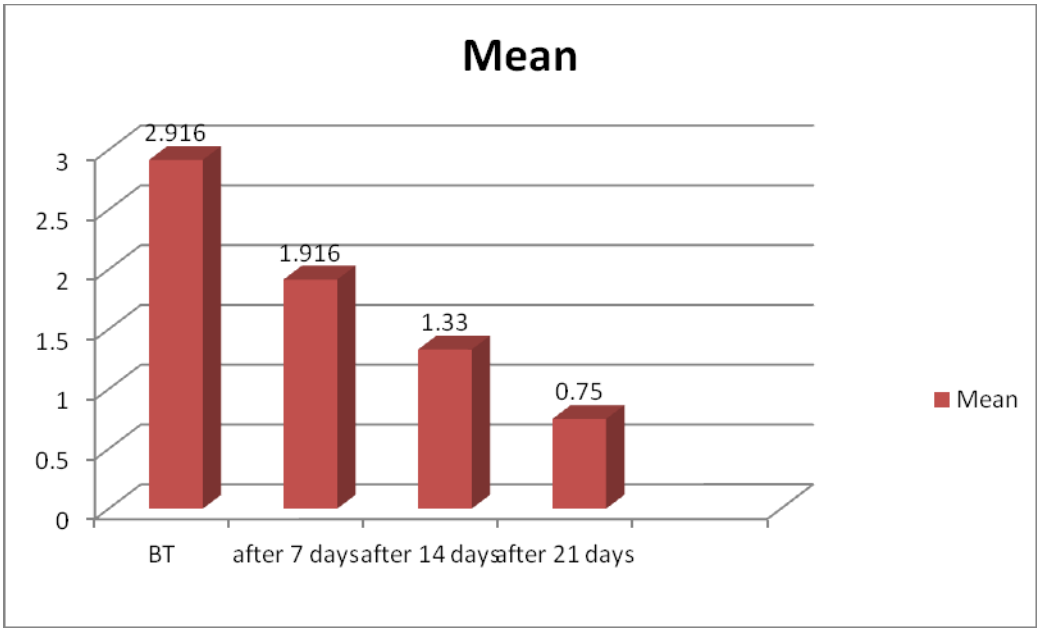
After 21 days Mean difference was 2.166±0.944 and improvement in percentage was 74.27

'Paired t' test value was 10.033 which is statistically highly significant (P< 0.001).

Table no 24: Showing the effect of Agnikarma on Stambha

DAY OF ASSESSMENT	SUMMARY STATISTICS					TEST OF SIGNIFICANCE	
	Mean	B.T-A.T	%	S.D of diff b/w means	S.E of diff b/w means	Paired 't' test value	P value
BT	2.916	-	-	-	-	-	-
AT1	1.916	1.00	34.29	0.4068	0.0742	10.77	0
AT2	1.33	1.586	54.38	0.8022	0.1464	9.079	<0.001
AT3	0.75	2.166	74.27	0.9444	0.1724	10.033	<0.001

Graph No.3: Showing the effect of Agnikarma on Stambha



Showing the effect of Agnikarma on Spandana

The mean score observed in Spandana before the treatment was 2, after 7days of Agni karma the Mean difference was1±.3051 and percentage improvement was 50%.

'Paired t' test value was 1.795 which is statistically highly significant (P< 0.001).

After 14days of Agnikarma the Mean difference was1±.3051 and percentage improvement was 50%.

'Paired t' test value was 1.795 which is statistically highly significant (P< 0.001).

After 21days of Agnikarma the Mean difference was1±.3051 and percentage improvement was 50%.

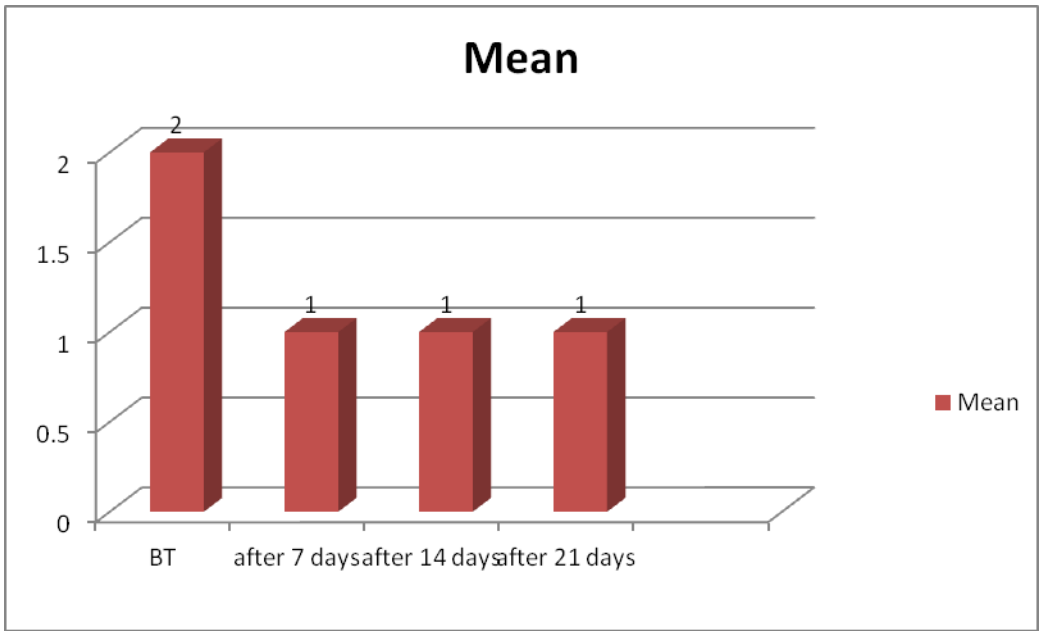
'Paired t' test value was 1.795 which is statistically highly significant (P< 0.001).

Table no 25: Showing the effect of Agnikarma on Spandana

DAY OF	SUMMARY STATISTICS	TEST OF SIGNIFICANCE

ASSESSMENT	Mean	B.T-A.T	%	S.D of diff b/w means	S.E of diff b/w means	Paired 't' test value	P value
BT	2	-	-	-	-	-	-
AT1	1.00	1.00	50	0.3051	0.055	1.795	<0.001
AT2	1.00	1.00	50	0.3051	0.055	1.795	<0.001
AT3	1.00	1.00	50	0.3051	0.055	1.795	<0.001

Graph No.4: Showing the effect of Agnikarma on Spandana



Effect of Agnikarma on Tenderness

The mean score observed in Tenderness before the treatment was 2.12, after 7days of Agnikarma the Mean difference was 1.04±0.379 and percentage improvement was 49.05%.

'Paired t' test value was 11.99 which is statistically highly significant (P< 0.001).

After 14 days of Agnikarma the Mean difference was1.52±.0.729 and percentage improvement was 71.69%.

'Paired t' test value was 9.25 which is statistically highly significant (P< 0.001).

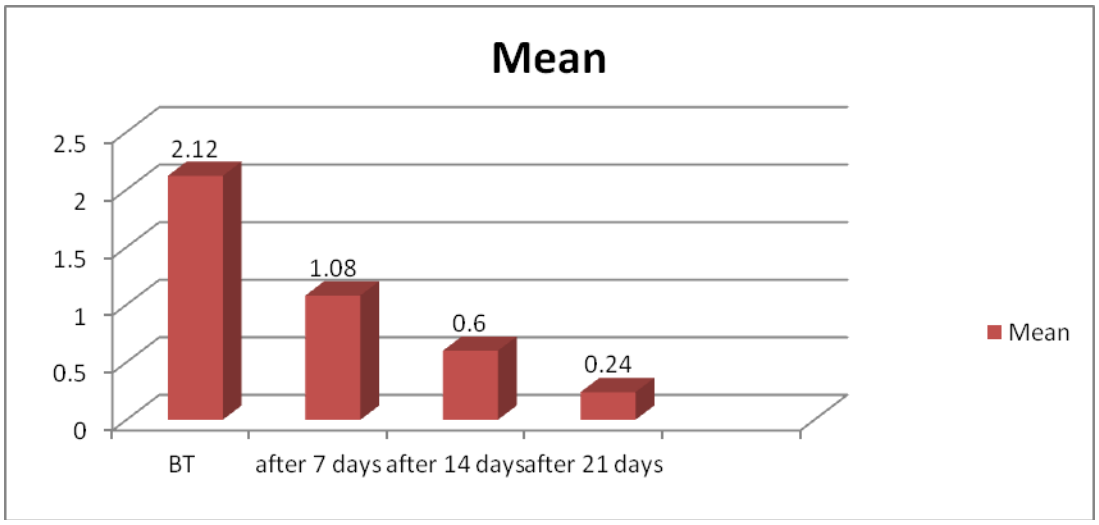
After 21days of Agnikarma the Mean difference was1.88±.0.776 and percentage improvement was 88.67%.

'Paired t' test value was 10.79 which is statistically highly significant (P< 0.001).

Table no 26: Showing the effect of Agnikarma on Tenderness

DAY OF ASSESSMENT	SUMMARY STATISTICS					TEST OF SIGNIFICANCE	
	Mean	B.T-A.T	%	S.D of diff b/w means	S.E of diff b/w means	Paired 't' test value	P value
BT	2.12	-	-	-	-	-	-
AT1	1.08	1.04	49.05	0.379	0.069	11.99	<0.001
AT2	0.6	1.52	71.69	0.727	0.139	9.25	<0.001
AT3	0.24	1.88	88.67	0.776	0.141	10.79	<0.001

Graph No.5: Showing the effect of Agnikarma on Tenderness



Effect of Agnikarma on SLR Test

The mean score observed in SLR Test before the treatment was 26.33, after 7days of Agnikarma the Mean difference was 4.17±3.074 and percentage improvement was 15.83%.

'Paired t' test value was 9.19 which is statistically highly significant (P< 0.001).

After 14days of Agnikarma the Mean difference was 5.67±3.79 and percentage improvement was 21.53%.

'Paired t' test value was 9.62 which is statistically highly significant (P< 0.001).

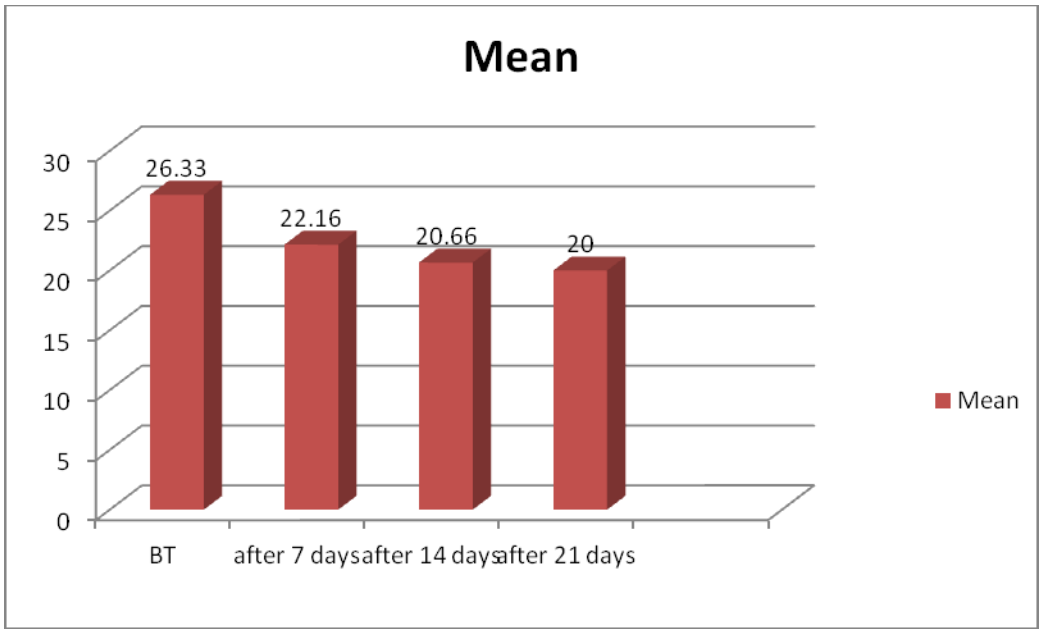
After 21days of Agnikarma the Mean difference was6.33±4.068 and percentage improvement was 24.04%.

'Paired t' test value was 9.42 which is statistically highly significant (P< 0.001).

Table no 27: Showing the effect of Agnikarma on SLR Test

DAY OF ASSESSMENT	SUMMARY STATISTICS					TEST OF SIGNIFICANCE	
	Mean	B.T-A.T	%	S.D of diff b/w means	S.E of diff b/w means	Paired 't' test value	P value
BT	26.33	-	-	-	-	-	-
AT1	22.16	4.17	15.83	3.074	0.561	9.19	<0.001
AT2	20.66	5.67	21.53	3.79	0.692	9.62	<0.001
AT3	20.00	6.33	24.04	4.068	0.742	9.42	<0.001

Graph No.6: Showing the effect of Agnikarma on SLR Test



Effect of Agnikarma on Braggard's Test

The mean score observed in Braggard's test before the treatment was 1, after 7days of Agnikarma the Mean difference was 0.8±0.40 and percentage improvement was 80%.

'Paired t' test value was 10.77 which is statistically highly significant (P< 0.001).

After 14days of Agnikarma the Mean difference was 0.8±0.40 and percentage improvement was 80%.

'Paired t' test value was 10.77 which is statistically highly significant (P< 0.001).

After 21days of Agni karma the Mean difference was 0.8±0.40 and percentage improvement was 80%.

'Paired t' test value was 10.77 which is statistically highly significant (P< 0.001).

Table no 28: Showing the effect of Agnikarma on Braggard's Test

DAY OF ASSESSMENT	SUMMARY STATISTICS					TEST OF SIGNIFICANCE	
	Mean	B.T-A.T	%	S.D of diff b/w means	S.E of diff b/w means	Paired 't' test value	P value
BT	1.00	-	-	-	-	-	-
AT1	0.2	0.8	80	0.40	0.074	10.77	<0.001
AT2	0.2	0.8	80	0.40	0.074	10.77	<0.001
AT3	0.2	0.8	80	0.40	0.074	10.77	<0.001

Graph No.7: Showing the effect of Agnikarma on Braggard's Test

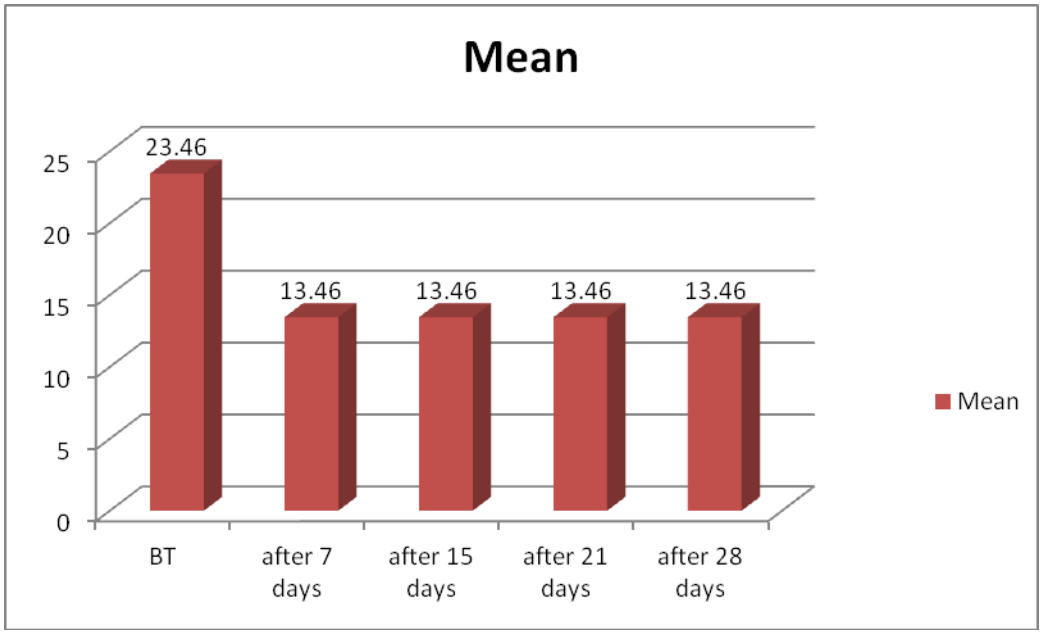


Table no. 28: Showing the effect of Agnikarma on Lasegue's SLR Test

The mean score observed in Lasegue's SLR Test before the treatment was 26.33, after 7days of Agnikarma the Mean difference was 4.17±3.074 and percentage improvement was 15.83%.

'Paired t' test value was 9.19 which is statistically highly significant (P< 0.001).

After 14days of Agnikarma the Mean difference was 5.67±3.79 and percentage improvement was 21.53%.

'Paired t' test value was 9.62 which is statistically highly significant (P< 0.001).

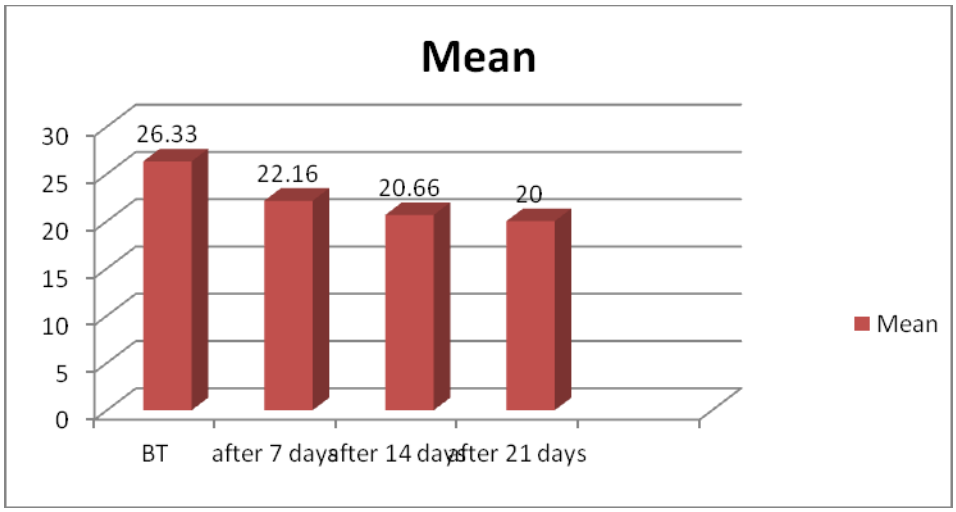
After 21days of Agnikarma the Mean difference was6.33±4.068 and percentage improvement was 24.04%.

'Paired t' test value was 9.42 which is statistically highly significant (P< 0.001).

Table no 29: Showing the effect of Agnikarma on Lasegue's SLR Test

DAY OF ASSESSMENT	SUMMARY STATISTICS					TEST OF SIGNIFICANCE	
	Mean	B.T-A.T	%	S.D of diff b/w means	S.E of diff b/w means	Paired 't' test value	P value
BT	26.33	-	-	-	-	-	-
AT1	22.16	4.17	15.83	3.074	0.561	9.19	<0.001
AT2	20.66	5.67	21.53	3.79	0.692	9.62	<0.001
AT3	20.00	6.33	24.04	4.068	0.742	9.42	<0.001

Graph No.8: Showing the effect of Agnikarma on Lasegue's SLR Test



Effect of Agnikarma on Flip Test

The mean score observed in Flip Test before the treatment was 1.00, after 7days of Agnikarma the Mean difference was 0.47±0.507 and percentage improvement was 47%.

'Paired t' test value was 5.03 which is statistically highly significant (P< 0.001).

After 7days of Agnikarma the Mean difference between B.T and AT1 was 0.47±0.507 and percentage improvement was 47%.

'Paired t' test value was 5.03 which is statistically highly significant (P< 0.001).

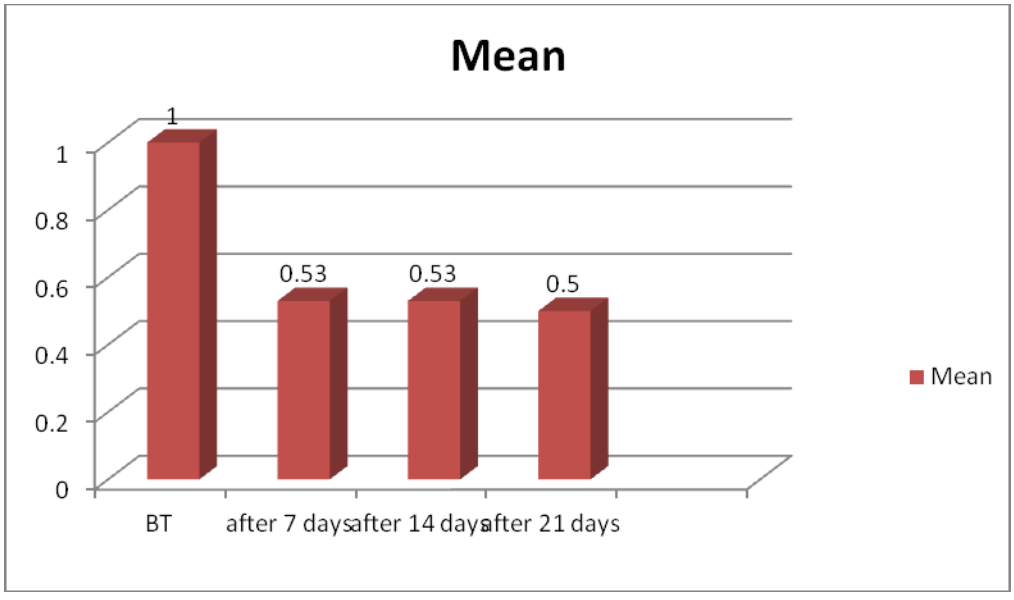
After 21 days of Agnikarma the Mean difference was 0.5±0.508 and percentage improvement was 50%.

'Paired t' test value was 5.38which is statistically highly significant (P< 0.001).

Table no 30: Showing the effect of Agnikarma on Flip Test

DAY OF ASSESSMENT	SUMMARY STATISTICS					TEST OF SIGNIFICANCE	
	Mean	B.T-A.T	%	S.D of diff b/w means	S.E of diff b/w means	Paired 't' test value	P value
BT	1.00	-	-	-	-	-	-
AT1	0.53	0.47	47	0.507	0.0926	5.03	<0.001
AT2	0.53	0.47	47	0.507	0.0926	5.03	<0.001
AT3	0.50	0.5	50	0.508	0.0928	5.38	<0.001

Graph No.9: Showing the effect of Agnikarma on Flip Test



DISCUSSION

Gridhrasi is a Rujapradhana Nanatmaja Vata Vyadhi, intervening with the functional ability of low back & lower limbs. It is particularly seen in most active period of life, involving working class people causing hindrance in routine life.

"Gridhrasi" is enumerated among the "Nanatmaja Vata Vyadhi" in Ayurvedic literature. It is a neuro-muscular disorder which poses a serious threat to quality of life in the most productive group of population in India today. The chances of occurrence of gridhrasi is expected to increase in the coming years due to increased tendency of computerization, hectic routines, obesity, sedentary life style, mental stress, unwholesome diet and excessive travelling .

'Sciatica' term in general indicates neuralgia along the course of sciatic nerve, most often with pain radiating into the buttock and lower limb. Low back pain is the major cause of morbidity throughout the world affecting mainly the young adults. Life time incidence of low back pain is said to be 50-70% with the incidence of sciatica more than 40%.

According to the available classical references, the indication of Agnikarma for Gridhrasi has been mentioned by Charaka and Cakradatta over the gulpha sandhi and padakanistakam. Considering this fact, in the present study, Agnikarma has been tried over the padakanistakam (little toe) to evaluate the effect of this Agnikarma in the management of Gridhrasi.

Discussion about conceptual study:

The disease Gridhrasi is one of the major problems throughout the country leading to loss of national productivity resulting in economic loss. The disease is known since Vedic period in our country and since many centuries in western world.

Gridhrasi is a disorder dominated by pain affecting the Kandara. It is caused by morbid Vaata Dosha. Kapha Dosha can also be involved in the clinical presentation. This vitiated Dosha or Doshas afflict the Kandara,snayu,Asthi and Mamsa involving the related Srotases .It manifests with pain in Sphik followed with progressive radiation to distal part of the leg. The mode of onset may be sudden or gradual depending upon the Nidaana and severity of vitiation. The involvement of

kapha along with Vaata Dosha in the pathogenesis results in symptoms like Tandra, Gaurava and Aruci and is named as Vaatakaphaja Gridhrasi.

The disease being one among the eighty types of Nanatmaja Vatavyadhis has no specific nidana and samprapti mentioned separately, therefore the nidana, samprapti, sadhyasadhyata and pathyapathya of vatavyadhi can be considered here. In the disease Gridhrasi, vata dosha is mainly involved and there is involvement of other doshas also. Onset of ruk initially in sphik region and radiating distally to kati, prishta, janu and jangha till pada is the unique feature of this disease. The initiation of pathology at the lumbosacral joints and hip joints can be estimated by the word sphik purva, kati purva and back of the thigh with the involvement of knee and leg where the sciatic nerve and its branches traverses. The lakshanas of ruk, toda, stambha, graham and spandana are indicative of pain according to Charaka

In modern science, a similar condition is named as “Sciatic Syndrome”. It is the distribution of pain along the course of sciatic nerve or its component nerves. Radiating deep seated cramping pain followed with numbness and paraesthesia in lower extremities favour the diagnosis. Positive S.L.R test and Lasegue’s sign consolidates the diagnosis clinically. The Diagnosis can be confirmed by imaging techniques. Prolapse of intervertebral disc, external mechanical pressure and degenerative changes of the lumbar spine are the common causes for this disease.

Snehana, Swedana and Mrudu Sodhana are the Principles of treatment in all Vaatavyadhi. As Snaayu and Kandara are involved as Dooshya, Agnikarma and Siravyadha are mentioned among the lines of treatments.

According to the available classical references, the indication of Agnikarma for Gridhrasi has been mentioned by Charaka and Cakradatta over the gulpha sandhi and padakanistakam. In the previous dissertation works on Gridhrasi, Agnikarma had been carried out depending on the different pain predominant sites along the course of sciatic nerve and over the gulpha sandhi. However, Agnikarma over padakanistakam mentioned in Ayurvedic classics has not been carried out. Considering this fact, in the present study, Agnikarma has been tried over the padakanistakam (little toe) to evaluate the effect of this Agnikarma in the management of Gridhrasi.

According to Sushrutha and Vagbhata, Agnikarma is contraindicated in baala and vriddha. Hence the cases in the age group of 20 to 60 have been included in the study.

In a study conducted by Dr. P.D.Gupta (Nagpur) on Agnikarma chikitsa, different types of shalaka dahanopakaranas were used in the management of various diseases. Here, the shalakas made up of metals like Tamra, Loha, Rajata, Naga and Vanga separately were made use of. But the desired results were not obtained due to the specific characteristics of the metals, such as Loha shalaka which was getting cooled immediately after making it red hot and only one samyak dagdha vrana was possible to be made with once heated shalaka. With Tamra shalaka, good numbers of cases were treated but, the samyak dagdha vrana produced by this shalaka was having the characters of atidagdha vrana which might be due to quick transfer of heat from shalaka to the diseased part. In a similar manner, the shalaka's made of Rajata, Naga and Vanga were not found useful. Hence, the panchaloha shalaka was innovated by the observer and was successful in treating various diseases. This shalaka was used in treating good number of patients and with once heated shalaka, 20 to 30samyak dagdha vranas in bindu akruti were made satisfactorily. Many Research papers were published and read in different conferences on the use of this panchaloha and its effect in treating various diseases. Based on this reference, in the present study, panchaloha shalaka was used as dahanopakarana in the management of Gridhrasi.

All the metals are good conductors of heat, therefore any metal (lohadi dhatus), when heated, carry heat from one end to another. During conduction of the heat, some heat is stored in the metal after itl is heated to red hot. During the Agnikarma chikitsa the Agni from the flames of the gas stove is taken in the shalaka after getting red hot and then this Agni is transferred from panchaloha shalaka to dushya (skin tissue) having ushna and sukshma properties.

Discussion about Clinical study:

It is a single blind clinical study with pre-test and post-test design A special proforma was prepared with all the points of history taking, physical examination and investigations.

Agni karma was carried out in 30 Patients of Gridhrasi on first day. Data was collected from the patient on the 7^{th} day, 14^{th} and 21^{st} day of the study period.

All the 30 patients have completed the study. None of the patients in this study developed any untoward symptoms during the course of the treatment and therefore the procedure is safe and effective.

A) Discussion on observations:

Demographic profile:

Age: In this study it was found that the incidence was highest in the age group of 51-60 years constituting 30% of total numbers of patients, 27% patients were in the age group of 41-50 and 23% in 31-40 years.

It is known that the incidence of the disease is common in second, third and forth decades of life. This tendency of the incidence is seen in this sample.

Sex: Present study reveals that both sex are equally effected. It may be thought that strenuous work schedule and back position during work may be causative factors in the predominance. However the sample is too small to convey definite conclusion.

Religion: In the study undertaken, 50% patients were Hindus, 16.67% were Muslims and 33% were Christians. This shows the geographical prevalence of Hindus, Christians and Muslim in this area. No further information can be contributed on this factor from this study.

Occupation: Maximum number of patients was manual labourers and homemaker which constituted 16.66% and 50% respectively and Occupations of specific types may have an impact on the individual's disease. The study shows the fact that physical strain and head back position at work corresponds to the etiology of Gridharsi.

Socio-economic status: Majority of patients belonged to the middle income and low income group which constitute about 66.66% and 23.33% respectively, high income group were 10%. Interestingly manual labourers as well as housewives belonged to middle and low income group. Strenuous work they received during their occupation and position effect of back may have affected these patients.

Nature of work: Majority of suffers were of the profession, which requires moderate strain accounting for 70%. Whereas 16.66% the patients were of the profession of

more strenuous work. Surprisingly only 4 patients had sedentary work thus accounting for 13.33%.

The explanation mentioned in the context of occupation justifies the reason in this context too.

Dietary Habits: Maximum number of patients (73.33%) were registered in the group of mixed diet habit where as remaining 26.66% belonged to vegetarian food habits. But no definite conclusion can be drawn from this study on the nature of diet in relation to this disease.

Chronicity:

Out of total 30 cases, 50% had the chronicity of less than 3 months, 36.67% had the chronicity between 3 to 6 months and 13.33% had the chronicity between 6 to 12 months.

Even though these observations were made in the present study it is very difficult to draw a definite conclusion on these observations, as the sample size was too small. Studies done on large samples may enable to draw a definite conclusion on these observations. However an attempt is made to observe and analyze these features in the present study.

Discussion on Symptomatology:

All the patients in the study had the Lakshanā's like Ruk, positive SLR and positive breggards.

80% of the patients had lakshanas like stambha, 60% patients had toda, 10% patients had spandana.

All the patients had normal knee and ankle jerk in the present study.

The present study reveals that none of the patients suffered from Vātakaphaja type of Gridhrasi.

D) Discussion on effect of Treatment:

Assessment of the condition was done based on detailed proforma adopting standard scoring methods of subjective & objective parameters.

As the assessment parameters include a mixture of qualitative and quantitative data, the sample size is small, and a single group is compared for pre and post values the following statistical analysis is used

Qualitative Data and **Quantitative Data:**

- Average is found using **Mean and standard deviation**.
- For pre –post comparison '**Paired t' test** is used.

Effect of Agnikarma on Ruk

The mean score observed in ruk before the treatment was 2.4, after 7days of Agni karma the Mean difference between B.T and AT1 was 0.77±0.43and percentage improvement was 33.09% .

After 14 days Mean difference was 1.14±0.461 and improvement in percentage was 47.5.

'Paired t' test value was 13.85 which is statistically highly significant (P< 0.001).

After 21 days Mean difference was 1.3±0.466 and improvement in percentage was 54.17.

'Paired t' test value was 15.28 which is statistically highly significant (P< 0.001).

- **Effect of Agnikarma on Toda**

The mean score observed in toda before the treatment was 2.33, after 7days of Agnikarma the Mean difference was1.00±0.49and percentage improvement was 42.92%.

'Paired t' test value was 6.596 which is statistically highly significant (P< 0.001).

After 14 days Mean difference was1.33±0.761 and improvement in percentage was 57.08

'Paired t' test value was 5.756 which is statistically highly significant (P< 0.001).

After 21 days Mean difference was 1.78±0.944 and improvement in percentage was 76.39

'Paired t' test value was 6.147 which is statistically highly significant (P< 0.001).

- **Effect of Agnikarma on Stambha**

The mean score observed in stambha before the treatment was 2.916, after 7days of Agnikarma the Mean difference was1.00±0.4068and percentage improvement was 34.29%.

'Paired t' test value was 10.77 which is statistically highly significant (P< 0.001).

After 14 days Mean difference was 1.556±0.8022 and improvement in percentage was 54.38

'Paired t' test value was 9.079which is statistically highly significant (P< 0.001).

After 21 days Mean difference was 2.166±0.944 and improvement in percentage was 74.27

'Paired t' test value was 10.033 which is statistically highly significant (P< 0.001).

- **Effect of Agnikarma on Spandana**

The mean score observed in Spandana before the treatment was 2, after 7days of Nasya karma the Mean difference was1±.3051 and percentage improvement was 50%.

'Paired t' test value was 1.795 which is statistically highly significant (P< 0.001).

After 14days of Agnikarma the Mean difference was1±.3051 and percentage improvement was 50%.

'Paired t' test value was 1.795 which is statistically highly significant (P< 0.001).

After 21days of Agnikarma the Mean difference was1±.3051 and percentage improvement was 50%.

'Paired t' test value was 1.795 which is statistically highly significant (P< 0.001).

- **Effect of Agnikarma on Tenderness**

The mean score observed in Tenderness before the treatment was 2.12, after 7days of Agnikarma the Mean difference was 1.04±0.379 and percentage improvement was 49.05%.

'Paired t' test value was 11.99 which is statistically highly significant (P< 0.001).

After 14 days of Agnikarma the Mean difference was1.52±.0.729 and percentage improvement was 71.69%.

'Paired t' test value was 9.25 which is statistically highly significant (P< 0.001).

After 21days of Agnikarma the Mean difference was1.88±.0.776 and percentage improvement was 88.67%.

'Paired t' test value was 10.79 which is statistically highly significant (P< 0.001).

- **Effect of Agnikarma on SLR Test**

The mean score observed in SLR Test before the treatment was 26.33, after 7days of Agnikarma the Mean difference was 4.17±3.074 and percentage improvement was 15.83%.

'Paired t' test value was 9.19 which is statistically highly significant (P< 0.001).

After 14days of Agnikarma the Mean difference was 5.67±3.79 and percentage improvement was 21.53%.

'Paired t' test value was 9.62 which is statistically highly significant (P< 0.001).

After 21days of Agnikarma the Mean difference was6.33±4.068 and percentage improvement was 24.04%.

'Paired t' test value was 9.42 which is statistically highly significant (P< 0.001).

- **Effect of Agnikarma on Braggard's Test**

The mean score observed in Braggard's Test before the treatment was 1, after 7days of Agnikarma the Mean difference was 0.8±0.40 and percentage improvement was 80%.

'Paired t' test value was 10.77 which is statistically highly significant (P< 0.001).

After 14days of Agnikarma the Mean difference was 0.8±0.40 and percentage improvement was 80%.

'Paired t' test value was 10.77 which is statistically highly significant (P< 0.001).

After 21days of Agni karma the Mean difference was 0.8±0.40 and percentage improvement was 80%.

'Paired t' test value was 10.77 which is statistically highly significant (P< 0.001).

- **Effect of Agnikarma on Lasegue's SLR Test**

The mean score observed in Lasegue's SLR Test before the treatment was 26.33, after 7days of Agnikarma the Mean difference was 4.17±3.074 and percentage improvement was 15.83%.
'Paired t' test value was 9.19 which is statistically highly significant (P< 0.001).

After 14days of Agnikarma the Mean difference was 5.67±3.79 and percentage improvement was 21.53%.

'Paired t' test value was 9.62 which is statistically highly significant (P< 0.001).

After 21days of Agnikarma the Mean difference was6.33±4.068 and percentage improvement was 24.04%.

'Paired t' test value was 9.42 which is statistically highly significant (P< 0.001).

- **Effect of Agnikarma on Flip Test**

The mean score observed in Flip test before the treatment was 1.00, after 7days of Agnikarma the Mean difference was 0.47±0.507 and percentage improvement was 47%.

'Paired t' test value was 5.03 which is statistically highly significant (P< 0.001).

After 7days of Agnikarma the Mean difference between B.T and AT1 was 0.47±0.507 and percentage improvement was 47%.

'Paired t' test value was 5.03 which is statistically highly significant (P< 0.001).

After 21 days of Agnikarma the Mean difference was 0.5±0.508 and percentage improvement was 50%.

'Paired t' test value was 5.38which is statistically highly significant (P< 0.001).

Discussion on mode of action of Agnikarma:

Gridhrasi as discussed in the literary review is one of the disorders effecting the Snayu, Snayu is having main relation with vayu. Agnikarma is one of the procedure pertaining to Tejo mahabhutha. Teja being too much hot is capable of burning immediately like fire burns the forest. Putting an eye on these sequence probably the terminals of the snayu effecting the Gridhrasi is to be burnt.

By burning the said area, i.e the little toe, Tejo mahabhutha by the virtue of its Ushna, Tikshna, Sukshma and Laghu properties which travelling entire snayu effecting Gridhrasi may get clarified, the srotosanga may thus abolished. Where if Kapha dosha is associated may also get destroyed. Moreover as Vata is having the main stream in the pada, may get associated properties of Tejobhutha Agni to alleviate pains like toda, ruk etc. Hence Vata and Kapha may get treated simultaneously, besides as the powerful Agni is made affected at the least dangerous area, protection of snayu marga is best maintained.

By all the views above we may conclude here by that Agnikarma in Gridhrasi may have synergism towards the cure of the disease and hence along with other modalities

if we add Agnikarma not only fast recovery but also prevention from the relapse may be anticipated.

Moreover the present study is carried under limitations; I would like to state that, the same study along with other modalities if carried out may show the result of advantage to maximum extent.

Hence forth scholars are hereby required to go ahead with the study which I have carried out upon Gridhrasi at present, to establish the facts further.

CONCLUSION

The dissertation entitled 'Role of Agnikarma in the management of Gridhrasi W.S.R to Sciatica"- A clinical study' consists of the following parts.

The Review of literature comprises of the following fragments:

A) **Disease review:** In this fragment a brief description of the historical aspect of the illness from Vedic era to the present time is dealt and is entitled as Historical review. It elaborates the general description of Gridhrasi which includes the etymological derivation, anatomy, physiology etiology, pathogenesis, clinical manifestations, prognosis and general principles of treatment of Gridhrasi.

B) **Treatment Review:** Comprises of general description of Agnikarma and a brief description of property and procedure.

Methodology:

a) Materials and Methods:

The materials and methods of the present work with description of 30 patients treated with Agnikarma along with various criteria including assessment criteria are presented here.

b) Observations The observations made during the clinical study are presented methodically with suitable tables and graphs.

Result: Statistical analysis of the findings and the results obtained are methodically presented in this section with appropriate tables and graphs.

Discussion:

In this section, the observations and results obtained are critically analyzed and interpreted on the basis of facts established in various literatures to unravel the truth of efficacy of the treatment taken for the study.

Conclusions drawn from this study are listed below.

Demographic profile:

- In the present sample taken for the study the patients belonged to the age group of 20-60 years. Maximum number of patients belonged to the age group of 51-60 years.
- Patients belonging to Hindu religion comprised the majority in the study.
- Most of the males in the study were manual workers and a maximum of females were home makers.
- Out of those who had registered for the study, 73.33% of patients had mixed dietary habits.

Clinical presentation:

- Maximum number of patients had duration of illness less than 3 months. Therefore the incidence of acute sufferers was more.

. All the patients in the study had the Lakshanā's like Ruk, positive SLR, and positive braggard's test.

80% of the patients had lakshanas like stambha, 60% patients had toda and 10% patients had spandana.

All the patients had normal knee and ankle jerk in the present study.

The present study reveals that none of the patients suffered from Vātakaphaja type of Gridhrasi.

Results:

- The mean score of severity of Ruk showed a reduction. The results obtained were statistically highly significant (P<0.001) as assessed by the paired t. test
- The severity of Stambha was markedly decreased after Agnikarma and the results were statistically highly significant (P<0.001).

- The magnitude of Toda showed marked improvement the improvement observed after the treatment is also statistically highly significant (P<0.001).
- The effect of Agnikarma on the magnitude of tenderness found to be encouraging. The improvement observed after the treatment is also statistically significant (P<0.001).

- Highly significant improvement in mean score of SLR, Braggard's test, Lasegue's SLR Test was found (P<0.001).

- It is important to mention here that all the 30 patients registered in this study responded to the treatment, because data shows no patients in unchanged category. But no patient showed complete cure from the illness.

- The above said observations indicate that patients have shown improvement in most of the criteria of assessment for Gridhrasi. The therapeutic effects like reduction in Ruk, Stamba, Toda, Tenderness and improvement in degree of Range of movements were achieved. Reduction in pain and improvement in functions suggests reduction in the severity of illness after the Agnikarma.

In this study the size of the sample was small, the study was conducted without a control and randomization was not possible as the study was carried out in a hospital setup. If these limitations are overcome, the level of evidence of the study will be increased. However the present dissertation work is presented with the hope that the observations and results will widen the scope for further research and advancement in this aspect of Āyurvedic Medicine, for the betterment of mankind.

SUMMARY

The present work entitled *"ROLE OF AGNIKARMA IN THE MANAGEMENT OF GRIDHRASI W.S.R TO SCIATICA* "comprises of following sections.

- **Introduction**
- **Review of literature**
    - Disease review
    - Agnikarma review
- **Methodology**
- **Discussion**
- **Conclusion**

- I**ntroduction**: Deals with importance of selection of Gridhrasi in present era, need of Ayurvedic management and importance of present study. It includes plan of study in brief. .

- **Review of literature:**

The Review of literature comprises of the following fragments:

A) **Disease review:** In this fragment a brief description of the historical aspect of the illness from Vedic era to the present time is dealt and is entitled as Historical review. It elaborates the general description of Gridhrasi which includes the etymological derivation, anatomy, physiology etiology, pathogenesis, clinical manifestations, prognosis and general principles of treatment of Gridhrasi.

B) **Treatment Review:** Comprises of general description of Agnikarma and a brief description of the properties of Agni karma and the procedure followed.

- **Methodology:**

  a) Materials and Methods:

  The materials and methods of the present work with complete description of 30 patients treated with Agni karma along with their various criteria including assessment criteria are presented here.

  b) Observations The observations made during the clinical study are presented in order with tables and graphs.

- **Result:** Statistical analysis of the findings and the results obtained are methodically presented in this section with suitable tables and graphs.

- **Discussion:**

In this section, the observations and results obtained are critically analyzed and interpreted on the basis of facts established in various literatures to unrevel the truth of efficacy of the treatment taken for the study.

- **Conclusion:**

The final conclusions drawn from the present clinical research work are presented in this fragment.

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39) C.Chi.Chak.Vya.9/20.

40) C.Chi.Chak.Vya.16/4.
41) M.Ni.M.K.Vya.Vri.Bhoja14/4.
42) A.S.Su.Indu Vya.9/39.
43) C.Su.10/7.
44) A.H.Ni.1/8.
45) A.S.Ni.2/3.
46) C. Chi. 15/17.
47) C. Su. 11/48.
48) C. VI. 5/10 & Ch. Chi. 15/17.
49) C. Chi. 28/57
50) A. H. Ni.15/46
51) A. H. Ni.15/45
52) A. H. Ni.15/46
53) C. Chi.22/11
54) Su. Ci.5/31-32
55) M. N. 22/61
56) A. H. Ni.15/53
57) Su. Ni.1/81
58) M. N.22/63
59) A. H. Ni.15/55
60) C. Chi.28/26
61) C. Chi.28/35
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63) Su. Sa.6/26
64) C. Su. 10/7
65) Su. Su. 33/7
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67) A. H. Ni. 8/2/30.
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69) Su.Su.33/6-7.
70) Su. Chi.24/30
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73) C. Chi.28/83
74) A. S. Chi.28/6
75) C. Ci.1/40
76) V. S.574-576
77) C. Chi.28/101
78) Su. Sa.8/17
79) A. H. Su.27/15
80) A. H. Su.27/4-5
81) C. Chi.28/101
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22) Su. Su. 7/14.
23) Su. Su.12/9-10.
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26) Su. Chi. 6/3.
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CASE PROFORMA TO EVALUATE THE ROLE OF AGNI KARMA IN THE MANAGEMENT OF GRIDHRASI W.S.R TO SCIATICA.

DEPARTMENT OF PG STUDIES IN SHALYA TANTRA

ALVA'S AYURVEDA MEDICAL COLLEGE &HOSPITAL, MOODBIDRI.

Guide : Dr. SURESH NEGALGULI M.S. (Ayu)

P.G. Scholar : DHANANJAYA ALVA M.

Name :

Age : years Case No:

Sex : M/F

Religion : H/M/C/O Date:

Marital Status : UM/M/W O.P.D/ I.P.D. no. :

Occupation :

Socio-economic Status : Poor/Middle/Higher Bed No: Ward/Bed no. :

Education : Illiterate/Primary /Educated D.O.A. :

Habitat : Urban/Rural D.O.D. :

Diagnosis:

Postal Address:

Phone No:

Result:

Consent: I hereby agree that, I have been fully educated with the disease and treatment. Hereby satisfied whole heartedly, and accept the medical trial over me.

Investigator's Signature. Patient's Signature.

Main complaint:

Ruk in Buttock / Lumbar / Post.thigh / Post.ankle / Foot / Fingers of Rt.leg/Lt leg

Duration: days weeks months yrs.

Toda in Buttock / Lumbar / Post.thigh / Post.ankle / Foot / Fingers of Rt.leg/Lt leg

Duration: days weeks months yrs.

Associated Complaints:

1. Stambha(Stiffness)
2. Spandana(Twiching)
3. Aruchi(Anorexia)
4. Tandra(Stupor)
5. Gourava(Heaviness)
6. Supthi(numbness)

Others.

History of present illness:

a) Mode of onset: Sudden / gradual.

b) Nature : Dragging / shooting / stabbing / dull.

c) Course : Episodic / continuous.

d) Radiation : Rt.leg / Lt.leg From ……..To…….

Aggravating factor:

Diurnal: M / A / E / EN / MN / LN.

Seasonal: Sheeta / Varsha /Ushna.

Movements: FB / BB / Lat.Rot / Walking /Folding legs

Activities: Standing for long, Bending, Climbing, Walking, Sitting, and Sleeping.

Relieving factor:

Diurnal: M / A / E / EN / MN / LN.

Seasonal: Sheeta / Varsha /Ushna.

Movements: FB / BB / Lat.Rot / Walking /Folding legs

Rest Positions: Supine, Prone, Lt Lat, Rt Lat, Sitting.

History of Past illness:

Low back trauma / Spinal Anaesthesia.

Treatment History:

Family History:

Personal History:

Aahara: Veg / non veg.

Dominant Rasa: M / A / L / K / T / Ka.

Agni:

Bowel:

Micturation:

Nature of work: manual / Sedentary / Labour / Travelling / Walking / Standing / Sitting / day / night.

Vis'rama: Hours. Proper / Less / Excessive.

Vyaayaama: No / Proper / Less / Excessive / Irregular.

Nidra: Sound / Disturbed / Raatrijaagarna / Day sleep …… hours.

Habits: …….Duration: Occasional / regular.

Stopped / reduced / continued.

General examination:

Built:

Nourishment:

Gait:

Skin:

Oedema:

Pulse: ……./min

B.P._____mm/Hg.

Respiration rate: ……. /min

Temp._____0F

Lymph nodes:

Deformities:

Dasa Vidha Pareeksha

1)Prakuthi

V		P		K		VP		VK		PK		Sannipata	

2)Vikruthi: Nidana panchaka

3) Sara

4) Samhanana

Susamhata		Madhyasamhata		Asamhata	

5) Pramana Height…….cms/fts; Weigth…….Kgs

6) Satmya

Ekarasa		Sarvarasa		Vyamishra	

7) Satva

Pravara		Madhyama		Avara	

8) Aharasakthi

Abhyavahara	P		M		A	
Jaranasakti	P		M		A	

9) Vyayama Sakti

Pravara		Madhyama		Avara	

10) Vayaha

Bala		Madhyama		Vrudha	

Nidana panchaka

NIDANA:

I. Swaprakopakara Nidana							
a) Ahara			**b) Vihara**			c) Manasika	
Guna	Seeta		**Ratrijagarana**			Chinta (Worry)	
	Rooksha		Yanam (Riding)			Shoka (grief)	
	Laghu		Bharavahana (Weight lifting)				
Rasa	Katu		Vyayama				
	Tikta			Pradhavana (Running)		Bhaya (Fear)	

	Kashaya			Jumping			
Shushkanna				Pratarana (Swimming)		Krodha (Anger)	
Upavasa				Walking			
II Marmaghatakara nidana							
III. Dhatukshayakaraka nidana							

POORVAROOPA:

ROOPA:

Ruk in Buttock / Lumbar / Post.thigh / Post.ankle / Foot / Fingers of Rt.leg/Lt leg

Duration: days weeks months yrs.

Toda in Buttock / Lumbar / Post.thigh / Post.ankle / Foot / Fingers of Rt.leg/Lt leg

Duration: days weeks months yrs

Stambha(Stiffness),Spandana(Twiching) Aruchi(Anorexia), Tandra(Stupor) Gourava(Heaviness)

Supthi(numbness)

Others.

Pravara		Madhyama		Avara	

SAMPRAPTHI

1. Dosha:
2. Dushya:
3. Agni:
4. Ama:
5. Srothas:
6. Srothodushti Prakara:
7. Udbava Stana;
8. Adhistana:
9. Sanchara Stana:

10. Vyakta Stana:
11. RogaMarga:

UPASHAYA:

ANUPASHAYA:

Systemic Examination:

R.S:

C.V.S:

G.I.T:

G.U.S:

Local examination – Lumbo sacral examination:

Darshanataha:

Swelling

Muscle wasting

Deformity

Sparshanataha:

Tenderness

Temperature

Straight Leg Raising test (SLR)

Lasegue's SLR test

Braggards test

Flip test

Straight Leg Raising test (SLR)

Active	Right-Negative / Positive	At……Degrees
	Left- Negative /Positive	At……Degrees
Passive	Right-Negative / Positive	At……Degrees
	Left- Negative /Positive	At……Degrees

Motor Function:

Muscle tone	Lower limb	Rt	Lt
Muscle Power	Lower limb	Rt	Lt

Reflexes

Knee jerk	Leg	Absent	Diminished	Brisk
	Right			
	Left			
Ankle jerk	Right			
	Left			

Spinal root examination

Root involved	Pain		Sensory loss		Motor weakness		Reflex change	
2 nd Lumbar	Front of mid thigh		Front of mid thigh		Quadriceps		Diminished knee jerk	
3 rd Lumber	Front of lower thigh		Front of lower thigh		Quadriceps		Diminished knee jerk	

4 th Lumbar	Side of thigh		Side of thigh		Quadriceps		Diminished knee jerk	
	Front of inner leg		Front of inner leg		Anterior tibialis			
					Weak dorsiflexion of foot			
5 th Lumbar	Back of thigh		Back of thigh		Anterior tibialis		Absent /Diminished ankle jerk	
	Lateral leg		Lateral leg		Weak plantar flexion of big toe			
	Dorsum of foot to big toe		Dorsum of foot to big toe					
I st Sacral	Base of leg sole and side of foot		Base of leg sole and side of foot		Gastronimus weak plantar flexion of big toe and foot		Absent ankle jerk	

Srotopareeksha

SROTAS	PrakitaVaikrita
Pranavaha	
Annavaha	
Udakavaha	
Rasavaha	
Raktavaha	
Mamsavaha	

Medovaha	
Asthivaha	
Majjavaha	
Sukravaha	
Pureeshavaha	
Muthravaha	
Aarthavavaha	

Investigations:

Haematological:Hb%.....mg/dl

TLC:……...

DC: N……L…….B…….E…….M……..

Urine:Albumin…….Sugar……..

Microscopic- Epi.cells…… Casts……. Crystals…… Pus cells……..RBC……

Radiological:X-ray-Lumbo-Sacral AP & Lateral.

Impression:

Any other investigations

Diagnosis

Treatment: Agni karma (Loha salaka)

Assessment of Results

Chief and Associated Complaints	Before	7th Day	14th Day	21th Day
Ruk				

Sthambha				
Toda				
Spandana				
Tandra				
Gourava				
Aruchi				
Tenderness				
Deep tendon reflux				
Muscle tone				
Muscle power				
SLR test				
Lasegue's SLR test				
Braggard's test				
Flip test				

Result:

Comments:

Signature of Guide **Signature of scholar**

INTRODUCTION

REVIEW OF LITERATURE

- DISEASE REVIEW
- AGNIKARMA REVIEW

OBJECTIVES

METHODOLOGY

- Materials and Methods
- Observations

RESULTS

DISCUSSION

CONCLUSION

SUMMARY

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