

GRIDHRASI (SCIATICA) - A LOCOMOTOR SYSTEM DISEASE AND ITS MANagements THROUGH AYURVEDA

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ABSTRACT

In present scenario the lifetime incidences of lower back pain is estimated to be 50-70% out of which more than 40% incidences are due to sciatica. As per contemporary literatures the prevalence of sciatic symptoms vary considerably ranging from 1.6% in the general population to 43% in the selected working population. Lumber disc prolapse resulting in low backache is considered as one of the prime cause of musculo-skeletal morbidity worldwide. *Gridhrasi* has been mentioned in *Ayurvedic* classics under the “80 types of *Nanatmaj Vatavyadhi*” The sign and symptomatology of *Gridhrasi* as mentioned in *Ayurvedic* classics include *Ruka* (Pain), *Toda* (Pricking sensation), *Stambha* (Stiffness) and *Muhurspandana* (Throbbing) in the *Sphika*, *Kati*, *Urah*, *Janu*, *Jangha* and *Pada* in order (Whole leg from gluteal region to the foot).^[2] *Susruta Samhita* mentions *Sakthi Utkshepana Nigrahaniyata* (Difficulty in raising leg straight) also.^[3] In

Kaphanubandha Gridhrasi, *Tandra* (Drowsiness), *Gaurava* (Heaviness), and *Aruchi* (Anorexia) are present additionally. In *Ayurveda* various treatment modalities such as *Shaman Chikitsa*, *Basti Karma*, *Shiravedha* and *Agnikarma* have been advocated in the management of *Gridhrasi*.

KEYWORDS: *Gridhrasi*, *Sciatica*, *Shaman Chikitsa*, *Basti Karma*, *Shiravedha*, *Agnikarma*.

INTRODUCTION

Gridhrasi has been mentioned in *Ayurvedic* classics under the “80 types of *Nanatmaj Vatavyadhi*”^[1] by *Acharya Charak* and is considered as *Shoola Pradhana Vatavyadhi* The

term *Gridhrasi* gets its origin from Sanskrit word *Gridhra* meaning a bird Vulture, due to the typical gait of the patient suffering from the disease.

The sign and symptomatology of *Gridhrasi* as mentioned in *Ayurvedic* classics include *Ruka* (Pain), *Toda* (Pricking sensation), *Stambha* (Stiffness) and *Muhurspandana* (Throbbing) in the *Sphika*, *Kati*, *Urah*, *Janu*, *Jangha* and *Pada* in order (Whole leg from gluteal region to the foot).^[2] *Susruta Samhita* mentions *Sakthi Utkshepana Nigrahaniyata* (Difficulty in raising leg straight) also.^[3] In *Kaphanubandha Gridhrasi*, *Tandra* (Drowsiness), *Gaurava* (Heaviness), and *Aruchi* (Anorexia) are present additionally.^[4] On the basis of these symptoms it can be equated with the disease sciatica in modern science. It occurs due to irritation or inflammation of sciatic nerve and is characterized by pain is from lumber region with its radiation along the postero-lateral aspect of the thigh and legs (Pain along the course/distribution of sciatica nerve) as a result of spinal nerve irritation.

In present scenario the lifetime incidences of lower back pain is estimated to be 50-70% out of which more than 40% incidences are due to sciatica. As per contemporary literatures the prevalence of sciatic symptoms vary considerably ranging from 1.6% in the general population to 43% in the selected working population.^[5]

Lumber disc prolapse resulting in low backache is considered as one of the prime cause of musculo-skeletal morbidity worldwide. There is often history of trauma, as twisting of the spine; other changes may be osteophytes, secondary fibrosis and tumor, lifting heavy objects or exposure to cold. Improper sitting posture, jerking movement during travelling and sports may worsen the disease condition; hence, it becomes a significant threat to working population.

As far as treatment regimen is concerned the management of Sciatica in modern medicine is usually through conservative management which includes use of analgesics and physiotherapy, epidural steroid injections and in extreme cases intervention of surgical procedures at the cost of their own limitations and complications.

In *Ayurveda* various treatment modalities such as *Shaman Chikitsa*, *Basti Karma*, *Shiravedha* and *Agnikarma* have been advocated in the management of *Gridhrasi*.

Whereas contemporary conservative management may provide temporary symptomatic relief, however use of *Vata Shamak Dravya* and *Basti karma* is supposed to provide better

relief since *Gridhrasi* is a *Vata* predominant disease and *Basti karma* is considered as the main line of treatment in all *Vata* dominant disorders.

Acharya Sushruta has mentioned diseases; those are not relieved so quickly by *Snehanadi* measures in this situation *Siravyadha* is an emergency management to achieve better results. He also mentioned *Agnikarma Chikitsa* in the management of *Sira*, *Snayu*, *Sandhi*, *Asthi Samprapti* and *Gridhrasi* is formed by all these involved structures.

Definition of *gridhrasi*

As described by *Acharya Charaka* *Gridhrasi* are a *Vatavyadhi*, characterized by *Stambha* (Stiffness), *Ruka* (Pain), *Toda* (Pricking pain) and *Spandana* (Throbbing). These symptoms initially affect *Sphik* (buttock) as well as posterior aspect of *Kati* (waist) and then gradually radiates to posterior aspects of *Uruh* (Thigh), *Janu* (Knee), *Jangha* (Calf) and *Pada* (Foot) respectively, found in *Vataja Gridhrasi*. Whereas *Tandra*, *Gaurava* and *Arochaka* in addition to that in *Vatakaphaja Gridhrasi*.

Acharya Sushruta opines that there are two *Kandara* in the leg that get 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*.^[6]

Nidana of *gridhrasi*

Since no particular causative factors of *Gridhrasi* are mentioned in *Ayurvedic* classics, that's why the general causes of *Vatavyadhi* are considered as the causes of *Gridhrasi* because *Gridhrasi* is mentioned under 80 types of *Nanatmaja Vatavyadhies*. These *Vataja* disorders are caused by almost the same *Vataprakopaka Nidanas*, but the different diseases are due to the *Samprapti Vishesha* of the vitiated *Vayu*.

According to *Acharya Charak* *Vata* gets vitiated by two ways viz. *Dhatukshaya* and *Margavarana*.^[7]

Aharaja nidana

In *Charaka Chikitsa Sthana* it is mentioned that excessive use of *Ruksha*, *Sheeta*, *Alpa*, *Laghu Ahara* causes *Vata Prakopa*.^[8] These are the inherent properties of *Vata dosh*.^[9] All the *Vataprakopa Ahara Dravyas* also produce *Asthivaha Srotodushti*.^[10] *Ahara Dravyas*

having these properties when ingested excessively cause *Vataprakopa* by the principle of “*Samanyam Vriddhikaranam*”.

Ruksha Guna causes *Shoshana* of *Sneha* form body; hence stiffness is produced in the *Kandara* of leg. Excessive *Sheeta Ahara* causes *Stambhana* in *Strotas*, *Snayu*, *Kandara* and results in restricted movements, stiffness in the lower extremities. Excessive use of *Laghu Ahara* causes vitiation of *Vata* Does *Lekhana Karma* and causes Osteoporosis, which is one of the causes of *Gridhrasi*. Excessive use of *Katu*, *Tikta*, *Kashaya Rasa* produces *Vata Prakopa*. Acharya Charak has stated that *Atiyoga* of *Katu Rasa* causes pain in limbs, *Prishtha* etc. along with *Kampa*, *Toda*, *Bheda* etc, which are the symptoms of *Gridhrasi*. *Tiktarasa* when used excessively, by virtue of its *Ruksha*, *Khara*, *Vishada Guna* affects *Rasa*, *Rakta*, *Mamsa*, *Meda*, *Asthi* and *Majja Dhatus* and produces *Vatavyadhies*.^[11] Acharya Vagbhata has stated that *Tiktarasa* produces *Vatavyadhies* by *Dhatukshay*.^[12] *Kashayarasa* also has *Khara* and *Vishada Guna* and produces *Stambhana*, *Sphurana* when consumed excessively.^[13]

Viharaja nidana

Vihara plays an important role in the etiology of *Gridhrasi*. Some of the factors are described under. Due to *Ativiyavayata*, there is *Kshaya* of *Shukra Dhatu* and *Dhatukshaya* causes *Vata Prakopa* and in turn lead to emaciation of all dhatus in retrograde manner. Acharya Charaka has mentioned pain in thigh, knee, calf, and feet due to *Ativiyavaya*. Such symptoms are also described in *Gridhrasi*.^[14] We experience travelling jerk while travelling by tractors, bullock carts, over bad roads, as experienced by Acharya Charaka in the view of *Ashwa-Gaja-Ushtrayanapatna-Ratha Aticharya*, *Dukha Shayya-Asan*^[15] all these nidanas causes strain to *Kati Pradesha* and *Prishtha Vanksha* repeated strain may cause *Gridhrasi Lakshanas*. *Atichankramana* (Excessive walking, swimming, exercise, traveling, riding vehicles etc.) produce, pain in *Pada*, *Jangha*, *Uru*, *Janu*, *Vankshana*, *Shroni*, *Pristha*, pricking sensation in legs, lassitude in thighs are the symptoms.^[16] Different body movements in day today routines like forward bending, continuously sitting for 6-9 hours, lifting heavy weights & all *Vata Prakopaka Laskanas Adhwagamanam* may cause *Sthanchyuti/disc prolapse* in *Kati Adhoshakha*.

Marmas which are related to *Gridhrasi* are *Kukundara Marma* and *NitambaMarma*. Injury to *Kukundara Marma* leads to the loss of sensation and power of lower extremities and may

result in pain and difficulty in walking. Injury to *Nitamba Marma* leads to atrophy of lower extremities weakness and even death may occur.^[17]

Anya nidana

Excessive loss of any element from the body leads to *Riktata* of the *Srotases* and causes *Vataprakopa*. The strength of body is sustained by the *Malas* hence excessive loss of *Mala* also vitiates *Vata*. Excessive emaciation due to other diseases leads to *Dhatukshaya* which in turn provokes *Vata*. *Ama* has inherent property of producing *Margavarodha* which leads to *Vataprakopa*. If *ama* is produced by *Agnimandya* and it combines with *Vata*, the *VataSamsrishtaAma* is capable of producing many *Vatavyadhies*. *Manasika Hetu* may also lead to production of *Ama*.

Lakshana of gridhrasi

Acharya Charak classified *Gridhrasi* into two varieties i.e.^[38] *Vataja* and *Vatakaphaja Gridhrasi*.

Acharya Charaka mentioned *Ruka* (Pain), *Toda* (Pricking sensation), *Stambha* (Stiffness), and *Muhuspandana* (Twitching) in *Sphik* and radiating towards the *Kati*, *Pristha*, *Uru*, *Janu*, *Jangha* and *Pada* respectively. These are the cardinal symptoms of *Vataja Gridhrasi*. In *Vata-Kaphaja* type of *Gridhrasi* in addition to the above symptoms, *Tandra* (drowsiness), *Gaurava* (Heaviness) and *Arochaka* (Anorexia) is also present.

Acharya Sushrut and Acharya Vagbhatta have given '*Sakthanahkshepa Nigrahayat*' i.e. restriction in lifting the leg as the cardinal sign of the *Gridhrasi*.

Hareeta has defined *Janumadhya*, *Urumadhya* and *Katimadhya Vedana* as the general symptom.^[18]

Samprapti of gridhrasi

To treat a disease, the complete knowledge of its pathogenesis is a must. The word '*Samprapti*' means '*Samyak prapti of Roga*' that is the proper understanding of the disease process.

For the disease *Gridhrasi*, the detailed *Samprapti* has not been mentioned in *Ayurvedic* classics. Since *Gridhrasi* is a *Nanatmaja Vatavyadhi*, the general *Samprapti* of *Vatavyadhi*

along with specific description available are considered here for the explanation of *Samprapti*.

There are two main reasons by which *Vata* get vitiated. They are *Dhatukshaya* and *Margavarodha*.^[19] Because of the *Samprapti Visesha*; the same *Nidanas* produce different *Vatavyadhies*.^[20] This is because the presentation of the disease changes to the *Sthana* where '*Dosha Dushya Sammurchana*' takes place. *Khavaigunya* plays an important role in the disease process.

Dhatukshaya

The aggravation of *Vata Dosha* and this vitiated *Vata* fills into empty *Srotas* resulting *Dhatukshaya*. Firstly the *Rasa Dhatukshaya* takes place and it leads to further *Dhatus* due to *Rukshadi Aharas*.

The *Agantuja* factors chiefly *Bahya Abhigata* etc are responsible for the '*Achaya Purvaka Prakopa*' of *Doshas*. *Abhigata* leads to provocation of *Vata*. The vitiated *Vata* may directly intermingle with *Asthi*, *Majja Dhatu* to produce *Gridhrasi*. Therefore *Vata Prakopa* is associated with loss of both anatomical and physiological integrity of bone. Here the intermediate steps of *Samprapti* ie. *Chaya*, *Prakopa*, *Prasara* etc are absent. Also *Abhigata* may lead to *Khavaigunya* at the site.

In the state of *Apatarpana*, all the *Dhatus* viz. *Rasa*, *Rakta*, *Mamsa* etc are subjected to *Kshaya*. This *Dhatukshaya* results in to the aggravation of *Vata* and this vitiated *Vata* fills up the empty srotases ultimately causing *Vatavyadhi*.^[21] Due to *Rukshadi Aharas*, initially the *Rasa Dhatukshaya* takes place and it leads to further *Dhatukshaya*, involving *Mamsa*, *Meda*, *Asthi*, *Majja* etc.

In *Gridhrasi*, exposure to mild but continuous trauma to *Kati*, *Sphik* region because of improper posture, travelling in jerky vehicles, carrying heavy loads, digging etc or sometimes spinal cord injury, improperly treated pelvic diseases are responsible for producing *Khavaigunya* at *Kati*, *Sphik*, *Prishta* etc. They may not be able to produce the disease at the instance, but after acquiring some *Vyanjaka Hetu* (Exciting cause), the disease may be produced.

Margavarodha

The second type of *Samprapti* takes place by *Santarpana* causing *Margavarodha*. Here *Kapha* is found as *Anubandhi Dosha* along with *Vata*. *Atibhojana*, *Divaswapna* etc are the factors responsible for this kind of *Samprapti*. Sluggishness of the *Jataragni*, leads to formation of *Ama*. *Ama* produces obstruction to the normal *Gati* of *Vata*. To overcome the resistance, *Vata* attempt to functions hyper dynamically. This leads to *VataPrakopa*. Also when *Ama Samsrishta Vayu* resides at *kati*, *prishta* etc may produce *Gridhrasi*. *Lakshanas* like *Tandra*, *Gaurava*, *Agnimandhya* etc are observed due to involvement of *Kapha* and *Ama*. Impaired *Dhatvagni* may lead to the production of *Adhyasthi*, *Arbuda*, *Granthi* etc ie. *Apachita Dhatus*. If they cause *Avarodha* in the *Vata Vaha Nadi* of the lower limb, *Gridhrasi* may be produced.

Chikitsa of gridhrasi

Chikitsa is aimed in the rehabilitation and equilibrium of the body to its normal state. It is the process of breaking down the pathophysiology(*Samprapti Vighatana Chikitsa*) of the disease.^[22]

Gridhrasi being a *Vatavyadhi*, the general line of treatment for *Vatavyadhi* is indicated for *Gridhrasi* also *Gridhrasi* is an identified *VatajaNanatmajavyadhi*. There are also specific lines of management explained for *Gridhrasi*, which are target oriented and help in relieving the cardinal signs and symptoms of the disease. In the literature, authors have mentioned various types of treatment.

While treating any disease, the first and foremost principle to be followed is to avoid *Nidana*.^[23] For *Gridhrasi*, all the *Vataprakopaka Nidana* including external factors such as excessive walking, riding etc. should be avoided. *Gridhrasi*, being a *Vatavyadhi*, the general line of treatment of *Vatavyadhi* can be applied to it.

The specific treatment measures given by *Acharyas* are enumerated below

- *Acharya Charak* has advised *Bastikarma*, *Siravedha* and *Agnikarma* (between *Kandara* and *Gulpha*).^[24]
- *Acharya Sushrut* Specifies *Siravedha* at *Janu* after *Sankochana* (Flexion).^[25] *Ashtang Samgraha*^[26] and *Ashtang Hridaya*^[27] have also advised *Siravedha* four *Angula* above and below the *Janu*. They mentioned *Agnikarma* and *Anuvasan Basti* also.

- *Chakradutta*^[28] has elaborated the line of treatment of *Gridhrasi*. He points that *Basti* should be administered only after proper *Agnideepana*, *Pachana* and *Urdhvashodana*. He has mentioned the site of *Siravedha* as four *Angula* of *Indrabasti Marma*. To remove the *Granthi* in *Gridhrasi* a small operation with prior *Snehana* and *Swedana* is described. He suggests *Agnikarma* at *Kanishthika Anguli* of *Pada* if the disease is not relieving by the above treatment, numerous *Shaman* drugs have been given like *Churna* of *Dashmoola*, *Bala*, *Rasna*, *Guduchi*, *Shunthi* along with errand tail. Decoction of *Saiphhalika* or decoction of *Panchamoola* with *Eranda Taila* and *Trivrita Grita*, *Rasna Guggulu*, *Trayodhasng Guggulu*, *Chhagaladya Ghrita*, *Saidhavadya Taila*, *Kubjaprasarini Taila*, also recipes like *Eranda Phala Payash* and *Vartuka Prayoga* (vegetable of bringle in castor oil). *Bhaishajya Ratnavali* has narrated similar line of treatment.
- *Bhavprakas*^[29] also advises *Vamana* and *Virechana* before administration of *Basti*. For chronic cases the decoction of *Erandamool*, *Bilwa*, *Vrihati* and *Kantakari* is prescribed. Decoction of *Sinhasya*, *Danti*, *Kritamala* along with *Erandataila* is advised for the *Gridhrasi* patients who cannot walk. For *Vatakaphaja Gridhrasi* he has prescribed *Pippali Churna* along with *Gomutra* and *Erandataila*.
- *Yogaratanakar* has advised *Siravedha* in the area of four *Angula* around *Basti* and *Mutrendriya*, if this fails *Agnikarma* in the little finger of the leg is advised. He has mentioned *Mahavishgarbhataila*, *Vajigandhadi taila*, *Rasona* etc.^[30]
- *Sharandhara* has described decoction of the *Dashmoola* or *Nirgundi* with *Pushkarmoola* and *Hingu*, decoction of *Rasnasaptak*, *Mahanimba* and *Rasnakalka*, *Prasarani*, *Mashadi Taila* and *Narayana Taila*.^[31]
- *Harita* has advised *Snehana*, *Swedana* and *Raktamokshana* and if there is no response, then *Agnikarma* four *Angula* above the *Gulpha* with iron rod is advised. He also suggests different preparations for oral and local applications.^[32]
- *Bhela* has mentioned *SnehaUnmardana* and *Snehadibasti*, *Raktamokshana* and *Mulaka Taila*, *Sahacharadi Taila* etc. for local application.^[33]
- *Vangasena* has similar opinion regarding the necessity of *Urdhvasodhana* before *Basti*.^[34]

Sapeksha nidana of gridhrasi

Diagnosis of *Gridhrasi* can be made easily by typical clinical presentation of radicular pain with restricted leg raising reveals the vitiation of *Vata* and occasionally in association with *Kapha Dosha*, afflicting the *Asthi Dhatu*, *Snayu* and *Kandara* as *Upadhatu* involving the *Asthivaha Srotas*, but sometimes it may be a difficult task to differentiate the similar conditions like *Urustambha*, *Khalli*, *Khanja*, *Panguta* etc.

Even then the differentiation may be made easy by analyzing the course of pain, character of pain, severity, associated phenomena and functional disability in patients of *Gridhrasi*. *Vyavachhedaka Nidana* of *Gridhrasi*, in this context with other diseases having alike symptoms is described as below –

- In *Gridhrasi*, a distinct radiating pain which emerges from buttock and radiating towards the feet along the course of sciatic nerve is found which is absent in other diseases like *Urustambha*, *Khalli* etc.
- In *Gridhrasi*, *Sakthikshepa* is being restricted, where as in *Urustambha* patients feel heaviness in their thigh (*Avideha Parispanda*) and difficulty in walking associated with *Jwara*, *Chhardi*, *Aruchi*, *Agnimandya* etc. which are not usually found in *Gridhrasi*.
- In *Khalli*, the severity of pain is more than that of *Gridhrasi* and is general proximal in nature.
- In *Khanja* and *Pangu*, first and foremost symptom is paralysis which is absent in *Gridhrasi* and no history of pain.
- In *Gudagata Vata*, in addition to pain in foot, symptoms like *Shosha*, *Mala*, *Mutra*, *Vata Graha*, *Shoola*, *Adhmana* and *Mootrashmari* is present.^[71] In *Gridhrasi*, pain in *Sphik*, *Kati*, *Uru* emerges in respective order; however in *Gudagata Vata* there is no such respective order.
- In the *Poorvaroopas* of *Vatarakta*, *Toda*, *Sphurana*, *Supti at Janu*, *Jangha*, *Uru*, *Kati* are Smentioned^[72] but these symptoms may be found in hands and are accompanied by other symptoms such as excessive sweating or complete loss of sweating, itching, discolouration etc. which are not found in *Gridhrasi*.
- In *Pravridha Amavata*, pain at *Gulfa*, *Trika*, *Janu*, *Uru* is found.^[73] But again it can be in hands and other joints of the body. It is associated with *Shotha* and other *Amajanita* symptoms which are absent in *Gridhrasi*.

Sciatica

According to the similarity in sign and symptoms, *Gridhrasi* can be compared to sciatica of modern medical science and number of *Ayurvedic* authors also recently has compared *Gridhrasi* as sciatica.

The term sciatica is derived from the neo-latin word ischalgia. Ischalgia composed from the attic Greek words. (That means pain + buttock or hip). Sciatica literally means pain in the lower buttock and upper part of thigh.

Hence the disease sciatica will be discussed in detail. In sciatica there is pain weakness numbness and other discomfort along the path of sciatic nerve. A herniated disc in the back, spinal stenosis and piriformis syndrome are medical conditions that can cause sciatica.

Definition of sciatica

Neuralgia along the course of the sciatic nerve, most often with pain radiating into the buttock and lower limb, most commonly due to herniation of a lumbar disc.^[35]

Pain in the distribution of the sciatic nerve or its component nerve root, caused by lumbar disc prolapse. However, sciatic nerve lesions can occur due to pressure in the buttock or upper part of thigh.^[36]

Sciatic neuralgia is defined as 'pain in the distribution of the sciatic nerve due to pathology of the nerve itself. Radicular pain is defined as 'pain perceived as arising in a limb or the trunk caused by ectopic activation of nociceptive afferent fibers in a spinal nerve or its roots or other neuropathic mechanisms'. According to these definitions, sciatic neuralgia is clearly a form of radicular pain, and is described as a disease of the peripheral nervous system. The term 'sciatica' may cause confusion as it has been used to describe any pain, including referred, felt in the leg along the distribution of the sciatic nerve.^[37]

Sciatic nerve Anatomy and Physiology^[38]

The sciatic nerve is the largest and longest single nerve in the human body that originates from the distal spinal cord and extends along nearly the entire length of the hind limb. In most vertebrates, it's the major branch of the sacral plexus, a complex mass comprised of neurons that exit the spinal column via spinal nerves L4 through S3. The sciatic nerve innervates most of the hind limb. As is the case with many of the large nerves of the vertebrate nervous system, the sciatic nerve is a mixed-function nerve, meaning it is made up

of the axons of sensory and motor neurons. It is formed on the right and left side of the lower spine by the combination of the fourth and fifth lumbar nerves and the first three nerves in the sacral spine. Each nerve exits the spine between two vertebral segments and is named for the segment above it. The nerve that exits between lumbar segment 4 and lumbar segment 5 (L4 and L5) is called the L4 nerve root, and the nerve that exits between the L5 and Sacral segment 1 is called the L5. The nerves that emerge from the sacral foramen are called the S1, S2 and S3 nerves. The five nerves group together on the front surface of the piriformis muscle and become one large nerve- the sciatic nerve, and then it travels down the back of each leg.

It begins in the pelvis and terminates at the superior angle of the popliteal fossa by dividing into the tibial and common peroneal nerves. As the nerve is longer and thicker, incomplete injury is much more common. The lateral popliteal portion is affected nine times more commonly than the medial popliteal portion.

The sciatic nerve gives rise to branches as it progresses distally along the hind limb. Some of these branches contain motor & sensory neurons involved in control of the muscle groups of the upper leg (particularly the 'hamstring' group, which flexes the upper leg), and the lower leg (both flexors and extensors). In addition, sensory receptors in the skin of the entire lower leg and the posteriolateral surface of the upper leg transmit information to the brain via sciatic nerve neurons.

Causes of sciatica

Sciatica is characterized by pain in the course of sciatic nerve. Any condition resulting in sciatic nerve root irritation can result in the pain along the distribution of sciatic nerve. In majority of the cases, this is caused due to prolapse of lumbar disc.

The etiology can be broadly classified into two headings.

I. Compressive causes

Any external injury to the lumbar spine or in the nearby structures can precipitate pain. Injury may be caused due to various causes- either fall from height, lifting heavy weight, blow or injury to the lumbar spine, travelling in uneven roads with jerky movements, unexpected postures, twisting of trunk etc. These injuries can result in strain, sprain, ligamentous or muscular injuries, fractures, dislocations etc. Defect in the vertebrae and soft tissue allies as in the case of spina bifida, sacralization of the 5th vertebra, scoliosis, spondylosis,

spondylolisthesis etc. Either due to increased turgidity or herniation of the nucleus pulposus, the intervertebral disc can become a potent cause for sciatica.

Other conditions which may result in nerve root irritation are

Lumbar spondylosis, Spondylolisthesis, Lumbar spinal stenosis, Ankylosing spondylitis or Rheumatoid spondylitis, Rheumatoid arthritis, Lumbar spondylitis, Osteoarthritis of lumbar spine, Tuberculosis of vertebral column and spine, Several metabolic diseases such as osteomalacia, osteoporosis etc result in vertebral body weakness which is easily prone to fractures, protrusion, herniation etc.

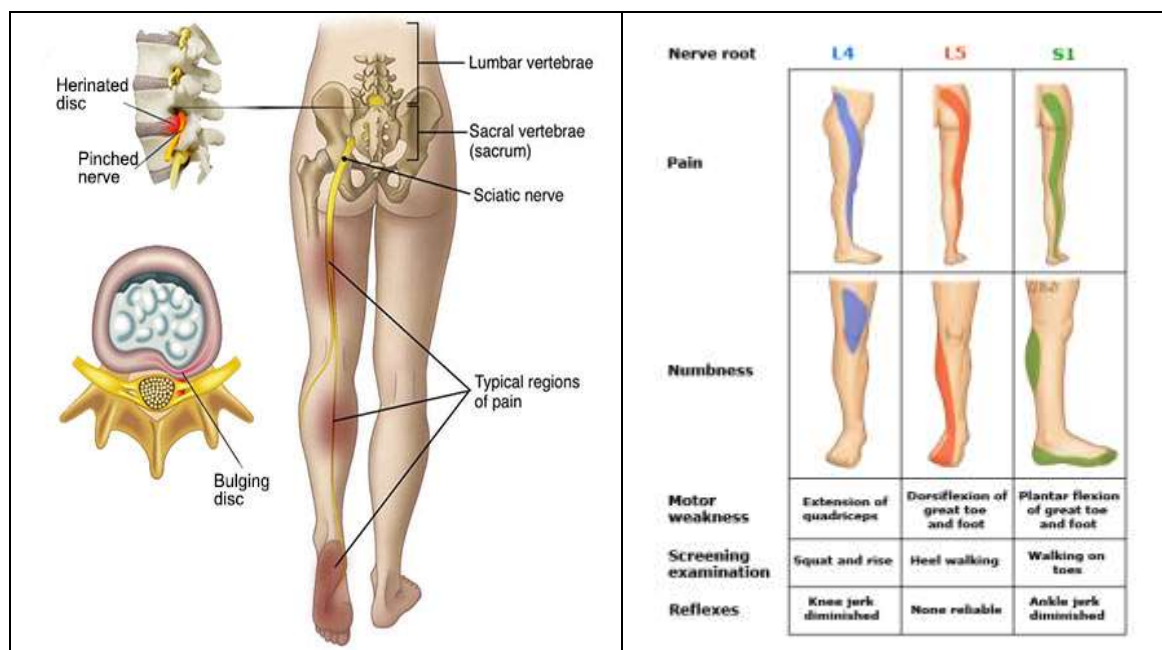
II. Non compressive causes

- True sciatic neuritis- Ischaemic necrosis in diabetes mellitus and polyarthritis nodosa, leprosy neurofibromas, direct nerve injuries due to penetrating wounds, claudication of sciatic nerve and compressive injury to sciatic nerve due to emaciation or fetal head during delivery.
- Referred pain from visceral diseases-Caused due to abdominal, visceral or pelvic pathologies. Upper abdominal conditions can cause pain in the dorsolumbar region, lower abdominal conditions in the lumbar region, genito urinary pathologies in the lumbosacral, sacral and sacroiliac regions.
- Leucorrhoea, pelvic inflammatory diseases, repeated pregnancy, uterine disorders, contraceptive device.
- Postural back pain- Due to prolonged uneven postures.
- In females during pregnancy.
- Occupational stress and strain can precipitate in sciatica.

Classical symptoms of sciatica

- Pain that travels from the low back, through the buttocks, downward into the leg and sometimes into the foot.
- Symptoms usually affect only one side of the lower body.
- Pain and other symptoms may be constant and vary from mild to severe.
- Shooting pain down your leg - sometimes described as like electricity.
- Burning and tingling sensations in your leg.
- Partial leg numbness or weakness.
- Severe symptoms can make sitting, standing and walking difficult.

- Coughing, sneezing, and other sudden movements can intensify pain.



Examinations

Musculoskeletal examination

- **Gait:** The patient of sciatica has a very typical limping gait while walking referred to as Antalgic gait.
- **Posture:** The shape of the lumbar spine is altered and the mobility is restricted. The spinal mobility is checked by the ability to bend forwards. There may be loss of normal lordosis. The muscular spasm produces list to one or other side on standing, known as sciatic scoliosis.
- **Tenderness:** Local tenderness and presence of trigger points in the back and limb should be identified.

The following signs are helpful to confirm the diagnosis of sciatica i.e. straight leg raising test (SLR), Bregard's Sign, Lasegue's Sign, Bowstring Sign Flip test.

Reflexes and Motor and Sensory Testing i.e. Knee jerk, Ankle jerk, Babinski's reflex.

Investigations^[39]

Laboratory investigations

Complete blood count (C.B.C.), Erythrocyte sedimentation rate (E.S.R.), RA factor, HLA-B27, serum calcium, phosphorus, uric acid, alkaline phosphatase, acid phosphate, Immunoglobulin electrophoresis, Cerebrospinal fluid examination.

Other diagnostic techniques: Plain radiographs, Myelography, C.T. Scan, MRI etc.

Differential diagnosis^[40]

Disc degeneration, Spondylolisthesis, Benign spinal tumor, Secondary deposits in the spine, Piriformis syndrome, Sacroiliac joint arthritis, Hip joint arthritis, Major lesions in the buttock, Intermittent claudication, Dissecting aneurysm, Ankylosing spondylitis, Multiple myeloma etc.

Management

Conservative treatment

- Absolute Rest Drugs –Analgesics and Muscle relaxants
- Physiotherapy
- Lumbar traction
- Trans-Cutaneous electrical nerve stimulation

Surgical treatment

Indications: Failure of conservative management

- Central disc prolapse with neurological deficit
- Recurrent disc prolapsed
- Bladder /bowel involvement
- Acute disc prolapse with excruciating pain- not relieved by drugs.
- Operative procedures:
 - Fenestration: The ligamentum flavum bridging the two adjacent laminae is excised and the spinal cord is exposed.
 - Laminotomy: In addition to fenestration, a hole is made in the lamina.
 - Hemilaminectomy: The whole of the lamina one side is removed.
 - Laminectomy: The laminae on both sides are removed.

Complications

Most of the people with sciatica recover fully over a period of time; some may succumb to potential nerve damage. The result may be motor and sensory loss of the affected limb, dysfunction of the bowel and bladder.

Prevention

Preventive aspect plays a major role in diseases like sciatica. Prevention can be done by following:

- Posture is important. Correct sitting, standing and sleeping postures lessen the intradiscal pressure.
- One should avoid sudden strenuous activity such as lifting heavy objects etc. without conditioning.
- Spinal strength and spinal fitness should be looked for. Sporting activity and supervised weight training are good for the spine. Regular exercises such as brisk walking, swimming running are also helpful.
- Diet and nutrition also play an important role.

DISCUSSION

Gridhrasi, one of the crippling disorders commonly seen now-a-days and affecting a large group of the society. In contemporary science, a similar condition is named as sciatica. It is the distribution of pain along the course of sciatica nerve or its component nerve root is characteristic. It is one among the 80 *Nanatmaja Vata Vyadhi* is characterized by pain. It is of two types depending on the *Dosha* vitiation- *Vataja* and *Vata Kaphaja*. In this condition pain starts from *Sphik* and gradually radiates to *Kati*, *Pristha*, *Uru*, *Janu*, *Jangha* and *Pada*, and associated with *Stambha*, *Toda* and also *Spandana* frequently. These symptoms are of *Vata* but when the disorder is caused by *Vata* and *Kapha* it is associated with *Tandra*, *Gaurava* and *Arochaka*.

According to *Acharya Sushrut*, there is involvement of *Kandara* from *Parsni* to *Anguli* in producing the disease *Gridhrasi*. He also added an important sign *Sakthanah Akshepam-Nigraniyat* i.e. restriction in lifting the affected leg. Now a day, this sign can be known as Straight Leg Raising test. It plays a major role in diagnosis of the disease and assessment of effect of treatment as an objective parameter.

Any medication which soothes the magnitude of pain, improves the functional ability along with *Samprapti Vighatana* is the line of treatment in the patients of *Gridhrasi*. *Gridhrasi* is treated on the general rule of *Vata Vyadhi* with *Shamanaushadhi*, *Snehana*, *Swedana*, *Mridu Shodhana* and *Basti*. Also *Raktamokshana* and *Agni karma* are indicated.

CONCLUSION

Gridhrasi is a *Nanatmaja Vatavyadhi* and is characterized by pain primarily in the *Sphik Pradesha* which radiates upto leg through the *Prishta, Kati, Uru, Janu, Jangha* and *Pada*. The symptoms present are *Stambha, Ruka, Toda* and *Spandana* in *Vataja Gridhrasi*. In association with the above symptoms additional features like *Aruchi, Tandra* and *Gaurava* are seen in *Kaphanubandha Vataja Gridhrasi*. This condition can be correlated to Sciatica in contemporary science the causes of which may be multifold. It occurs due to irritation or inflammation of sciatic nerve and is characterized by pain is from lumber region with its radiation along the postero-lateral aspect of the thigh and legs (Pain along the course/distribution of sciatica nerve) as a result of spinal nerve irritation.

Whereas contemporary conservative management may provide temporary symptomatic relief, however use of *Vata Shamak Dravya, Basti Karma, Siravedha* and *Agnikarma* is supposed to provide better relief since *Gridhrasi* is a *Vata* predominant and *shool pradhan vyadhi*.

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