

A CONCEPTUAL ANALYSIS IN PATHOPHYSIOLOGY OF GRIDHRASI W.S.R TO SCIATICA

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ABSTRACT

Background: Backache which was known as an ancient curse is now a modern international epidemic. Impairments of the back and spine are ranked as the most frequent cause of limitation of activity in middle-aged individuals. Lower backache is a very common problem and has a ubiquitous distribution. Sciatica is currently a common burning health issue among labourers and in the middle-aged group. In 2 percentage of the population, backache is the presenting complaint in general practitioner's clinics. **Aim and Objectives:** It was hypothesized to description about the pathophysiology of *Gridhrasi* compared with Sciatica **Discussion:** Sciatica is mainly caused by inflammation or compression of the lumbosacral(L4-S1) nerve roots of the sciatic nerve. In Ayurveda, *Gridhrasi* is one among the *Vataja Nanatmaja vyadhi* mentioned in ayurvedic classics where the course of sciatic nerve corresponds to *the pratyatma lakshana* of the *Gridhrasi*. **Conclusion:** The characteristic features of *Gridhrasi* mentioned in Ayurvedic classics can be correlated with Sciatica in modern science.

Keywords: *Gridhrasi*, Sciatica, Pathophysiology

INTRODUCTION

The term *Gridra* indicates a bird, eagle. The gait in *Gridhrasi* individual is transformed to the gait of *gridhra* i.e., the eagle which walks with a limp, without lifting a leg. Hence, the term *gridhrasi*. There is also another reasoning where the *Gridhrasi Nadi* is curved similar to the nose of *Gridra* i.e eagle since the disease involves the *Nadi* it is also named as *Gridhrasi*. *Ringhini* this term is used by *Vachaspati Misra* while commenting on *Gridhrasi* in *Madhava nidana*. This term indicates the prolapse of the lumbar intervertebral disc material. *Radhina*, this term is used by *Kashiram* in his *Gudarthadhadeepika* commentary on *Sarangadhara Samhita*. It indicates pressing, compressing or destroying; hence the use of these synonyms indicates the pathophysiology of *Gridhrasi*.

Back pain is common in the second decade, disc disease and disc herniation are in the third or fourth decade. The usual history of lumbar disc herniation is of repetitive low back pain, radiating to the buttocks and decreased by rest. Radiculopathy refers to pain in the distribution of the sciatic nerve and is caused due to disc herniation, called sciatica. Degenerative changes make the disc susceptible to trauma. Any trauma suddenly increases the pressure that results in rupture of posterior fibres of the annulus due to weightlifting, fall on the buttocks, direct trauma to the back, twisting movements and occupation involving flexion and lifting motion.

AIM AND OBJECTIVES:

1. To collect various references from the ayurvedic classical text on *Gridhrasi* and modern textbooks on Sciatica.
2. To compile the pathophysiology of *Gridhrasi* concerning Sciatica.

Ayurvedic classical texts of *Brihatrayi*, *Laghutrayi* and modern textbooks are referred to and gathered about the pathophysiology of *Gridhrasi* with reference to Sciatica.

Disease review on Gridhrasi

Acharya Charaka

Charaka in *Chikitsa sthanam*, mentioned *Gridhrasi* where initially pain arises from *Sphik* and radiates along with *Kati*, *Prista*, *uru*, *Janu*, *jangha*, *padam*

along with stiffness and pain¹. The two types of *Gridhrasi* mentioned are,

- i) *Vataja gridhrasi* is characterized by *ruk*, *toda*, *stambha*, *muhuspandanam*
- ii) *Vata-kaphaja*, characterized by *tandra*, *gaurava*, *arochaka*

Acharya Sushruta

In *Gridhrasi* when the ligaments of heels and toes are afflicted with *vata*, causes difficulty in lifting the leg².

Acharya Vagbhata

Vagbhata has mentioned that tendons in the heel and greater toe are afflicted with vitiated *vata*, thereby makes the difficulty to lift the leg is known as *Gridhrasi*³.

Vridhha Vagbhata also opines the same as above.

Bhavaprakasha

Bhavamishra has explained *gridhrasi* as, the pain initially starts in *Sphik* and gradually radiates to *Kati*, *uru*, *prishtha*, *Janu*, *jangha* and *padam*. He also mentioned rigidity or stiffness of lower limb, throbbing pain, dragging pain and repeated twitches⁴ are the symptoms of *Gridhrasi*.

The two types mentioned by him are *vataja* and *vata-kaphaja*

1. In the case of *vataja* type, there is pricking pain, deformity of the body, twitching at *Janu*, *jangha*, *uru sandhi's* associated with stiffness
2. In the case of *vata kapha* disease, heaviness of the limb is felt followed by loss of digestive fire, drowsiness, excess salivation and loss of taste perception.

Yogaratanakara

Yogaratanakara explained that initially, it affects the *Sphik* and then radiates to *Kati*, *Prista*, *Janu*, *jangha* and *padam* causing stiffness, pricking pain and repeated twitching in the affected parts in *vata vyadhi adhyaya*⁵.

It is of two types *vata* and *vata-kapha*.

1. In the case of *vataja* type, there is pricking pain, bending of the body, severe twitching, numbness of the knee, waist and thigh joints.
2. In the case of *vata-kapha* type, there is a feeling of being covered with a wet cloth, depletion of

digestive fire, drowsiness, excessive salivation and aversion to food⁶.

Basavarajeeyam

The author *Basavaraju* had mentioned *Gridhravata lakshana* as *shopha, karapada vidaha, sweda, murcha, bhrama, trshna*⁷. The author had specifically described an exclusive feature known as “*skalanam*”.

PATHOPHYSIOLOGY OF GRIDRASI

In relation with Dosha:

Gridhrasi is considered to be one among the 80 *Nanatmaja vata vyadhis*. Among all the *tridosha Vata* possesses the quality of movement. *Sushruta* describes the word *Vata* as derived from ‘VA’ which signifies *Gati* (motion or movement). The word *prasandana* i.e movements of the body is governed by the function of *vata*, here this function specifically implies the *vyana vata*. The *vyana vata* is responsible for *prasa-rana* (extension) and *akunchana* (flexion). *Sushruta* made the fundamental observation as in the process of disease in *kriya kala* had observed that *vata* which plays a major role in the *prasara* stage of *kriya kala*. In the pathogenesis of *Gridhrasi* there is derangement of *vata* leading to difficulty in lifting the legs which are mentioned by *Sushruta* and *Vagbhata* as *sakthi utkshepa*.⁸

In relation with samprapthi:

The disease in view of *shatkriyakala*, there are stages of *vyadhi* which are *sanchaya, prapropa, prasara, sthanasamshraya, vyaktha* and *bheda*. When we see *gridhrasi* mentioned under *vata vyadhi* the predominant *dosha* involved here is *vata* and *anubandha* is *kapha*. There are two main reasons by which *vata* gets vitiated which are *dhatukshaya* and *margavarodha*. In *Gridhrasi*. Depending on the *nidana* whether it is *dhatukshayajanya nidana* like *ativyavaya* (excess sexual activity), *atiprajagara* (staying awake at night), *ativyayama* (excessive exercise), *ativicheshta* (working excessively), *dukkha shayya* or *asana* (uncomfortable posture while sleeping) would lead to *dhatukshaya* and *margavarodhajanya vikara* like *vi-shamashana* (untimely diet), *adhyashana* (overeating), *viruddhabhojana* (incompatible food), *bhuktam-jeerna* (eating immediately after meals) would lead to obstruction of movement of *vata* by *kapha* producing

symptoms of *vata kapha gridhrasi* as *tandra, aruchi* and *gaurava*.

In relation with rogamarga:

The *vyadhi* occurs and progress in a certain pathway which is called to be as *rogamarga*. Depending upon the organ involved, based on anatomical and physiological aspects it is classified as *bahya, madyama* and *abhyantara*. These signify the origin of the *vyadhi*. The *madyama rogamarga* involves anatomical structures like *marma, asthi, sandhi, sanyu, kandara* which is involved in the *vyadhi* of *Gridhrasi*.

In relation with marma:

Sushruta mentions that trauma on *kukundara marma* (lumbar area of the vertebral column) leads to sensory and motor loss of lower limbs and leads to *vaikalyata* (disability) which is observed as numbness and difficulty in lifting the leg⁹.

Kukundara marma is located on either side of *prushta vamsha* (lower back of the spine) positioned over the outer part of *jaghana parshwa* (lateral part of ilium bone or gluteal muscle). *Kukundra marma* is classified into one as *prushta Gata marma* and second as *sandhi marma* which is predominantly made of *sandhi* i.e. bony joints. *The snayu, sira, ashti, mamsa* are also present but in lesser proportion. It is a *Vaikalyakara marma*, therefore injury to this *marma* leads to *kaya cheshta upaghata* (dysfunction in the movement of the body) and *sparsha ajanam* (loss of sensation) which is observed in the disease of *Gridhrasi*.

In Relation with Upadhathu:

Asthi Samyogah tatra upanibaddha ca snayuh, due to the support of *snayu* all the joints sustain the body weight.¹⁰ In *Gridhrasi* the *kandaras* are vitiated by the *doshas*. *Charaka* explains that *kandaras* are *updhathu* of *raktha dhathu*¹¹. *Chakrapani* mentions that *kandara* may also be taken as *sthula snayu*. *Snayu* is *mula sthana* of *mamsa* and *updhathu* of *meda*

Pathogenesis of Sciatica

In the pathogenesis of *Sciatica* acute lumbar disc herniation is often precipitated by trauma, usually by lifting heavyweight or a fall. The nucleus pulposus may bulge or rupture the annulus fibrosa, giving rise to pressure on the nerve exiting from the lower vertebral column and in spinal ligaments. The altered mechanics

of the lumbar spine results in loss of lumbar lordosis and spasm of the paraspinal musculatures. The root pressure on the nerve limits the flexion of the thigh on

the affected side where the straight Leg raised test is positive which is mentioned as a feature of *sakthi utk-shepa*.

Table 1: *Upadhatu* in *Gridhrasi*

<i>Upadhatu</i>	Discussion
Relation of <i>upadhatu</i> with <i>dosha</i>	<i>Vata roga – kandara</i> ¹²
Relation of <i>upadhatu</i> and disease	<i>Gridhrasi</i> as <i>vataja nanatmaja vyadhi</i> ¹³
Relation of <i>upadhatu</i> with <i>rogamarga</i>	<i>Madhyama – Marma asthi sandhi</i> ¹⁴

Table 2: Comparison of low backache

Comparison	Description	References
Katigraha	<i>Sama vata</i> or <i>suddha vata</i> gets lodged in the region Kati producing pain and stiffness	<i>Gadanigraha vatavyadhi</i> 19/160
Trikashoola	<i>Vata dosha</i> causing <i>pidana</i> in Kati pradesha	<i>Bhavaprakasha vatavyadhi</i> , 24/115
Gridhrasi	Pain initially in <i>Sphik purva, Kati, prushta, Janu, jangha</i> and <i>pada</i> either unilateral or bilateral.	<i>Charaka Samhita Vatavyadhi</i> , 28/56

Acharya *Charaka* mentions the *pratyatmika lakshana* of *Gridhrasi* where pain arises from *Sphik* and travels along with *Kati, Prista, uru, Janu, jangha, padam* which is clinically noticed along the course of sciatic nerve where it takes its root from L4 to S3, leaving the pelvis and enters the gluteal region via greater sciatic foramen. It emerges inferiorly to piriformis muscle and descends in an inferolateral direction innervating the muscles of the posterior thigh, hamstring portion and indirectly innervating its terminal branches to all muscles of the leg and foot. Thus, mentioned in classical texts.

DISCUSSION

Gridhrasi is mentioned under the *vata vyadhi* in *brhatrayi* and *laghutrayi*. It may be compared best with *sciatica* in modern terms. In *Ayurveda*, the pathophysiology of this disease involves *vata* as *pradhana dosha*. The development of the spine starts from the third week of intrauterine life and continues till the third decade of life. The area between the Lumbar vertebral bodies and sacral vertebral bodies is a transitional zone at increased risk of injury due to the biomechanics that occurs between these regions. Separating each vertebral body of the spine are pads of fibro cartilage-based structures that provide support,

flexibility and minor load. A healthy intervertebral disc maintains a certain level of pressure which is called intra-discal pressure above this the nucleus pulposus prolapse and compresses the exiting nerves from the adjacent sides causing the features of *sciatica* which can be compared with *pratyatmika lakshana* of *Gridhrasi*.

CONCLUSION

All the ayurvedic classics have mentioned describing the *vyadhi gridrasi*. The description of this *vyadhi* is missing in *Bhela Samhita* and *Kashyapa Samhita*. There has always been a struggle in comparing the pathophysiology in view of modern books and with ayurvedic classical text. *Gridhrasi* being a *nanatmaja vikara* of *vata dosha* which is responsible for *gati* is hampered. In *sciatica* the functional movement of Lumbar is restricted and the clinical features and pathogenesis of *Gridhrasi* can be correlated with the modern view of *sciatica*.

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