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Case Study

# EFFECT OF *AGNIKARMA* WITH *KSHOUDRA* OVER ANKLE AND FOOT IN SCIATICA DUE TO L4-L5 INTERVERTEBRAL DISC PROLAPSE

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## ABSTRACT

Sciatica is a syndrome characterized by pain radiating from the low back into the buttock and into the lower extremities along its posterior or lateral aspect and most commonly caused by prolapse of lumbar intervertebral disc. The term is also used to refer the pain anywhere along the course of sciatic nerve. Modern medical practice for sciatica includes oral NSAIDs, opioid and non-opioid analgesics, muscle relaxants, localized corticosteroid injections, physiotherapy and if the above measures fail finally surgery. Sciatica can be correlated with *Gridhrasi* mentioned under *Vata vyadhi* in Ayurvedic classics. Various treatment modalities like *Snehana*, *Swedana, Vasthi* etc are indicated in *Gridharsi*. These are very effective treatment procedures but take relatively a more time for pain relief. *Agnikarma* is very beneficial in painful conditions caused by *Vata* as it gives immediate relief of pain. Here the patient was treated with *Agnikarma* using *Kshoudra* over the tender spots of ankle and foot of affected lower limb. Outcome measures like pain, numbness, tenderness, SLR and ODI were assessed before treatment, after treatment, 7th day and on 14th day. The result showed that *Agnikarma* with *Kshoudra* done over ankle and foot gives immediate relief of pain and numbness of sciatica due to L4-L5 intervertebral disc prolapse.

## INTRODUCTION

Sciatic nerve is the largest branch of sacral plexus formed by the union of 5 nerve roots (L4 to S 3). Irritation or compression of any of these nerve roots can cause pain, paraesthesia, and or weakness along the distribution of the nerve. In an average, it is expected that 5%–10% of persons with low back pain have sciatica[1]. It mainly affects the young adults and elderly persons who indulge in strenuous jobs and occupational predisposition has been shown in machine operators, truck drivers and jobs where workers are subject to physically awkward positions. It is typically caused by a herniated disc, degenerative disc disease, lumbar canal stenosis, neuritis, spinal tumours etc. Intervertebral disc prolapse in the lumbar region is one of the most frequent causes.

The lower lumbar spine i.e., L4-L5, L5-S1 levels are where disc prolapse happens more frequently.

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Conservative therapy is recommended for a large percentage of sciatica patients. Since the pain of sciatica is very severe it should be addressed at first. The main goal of conservative treatment is pain reduction, either with analgesics or localized corticosteroid injections. Transient pain reduction is one of the advantages of epidural steroid injections. However, the risks connected with these injections (meningitis, epidural abscess, osteomyelitis, discitis, paralysis etc) outweigh the advantages. In this circumstance for relieving acute pain of sciatica gore sign was proposed.

In Gore sign an attempt is made to block the proximal pain with distal injection. Prolapsed intervertebral disc produce variety of inflammatory mediators which will also produce inflammation in the dorsal root ganglion and nerve root[2]. Majority of peripheral nerve fibers are sensitive to mechanical pressure. According to Gore sign most sensitized nerve of L4-L5 IVDP is deep peroneal nerve and L5-S1 IVDP is sural nerve. The axons of these nerves are pseudo unipolar in nature, it means central and peripheral ends of these neurons behave in a comparable way. Local anaesthetic lignocaine 2% plain 3 cc (without

adrenaline and preservative) is injecting in the most sensitized nerve roots. There by reducing the excitability of the nerve and thereby pain.

The similarity of symptoms and radiation of pain from back to foot describes the correlation of *Gridhrasi* with sciatica. It is a *Snayugatha* disease characterized by stiffness, pricking pain and tingling sensation starting from low back and radiating downwards to buttocks, posterior aspect of knee, calf, foot and restricting the lifting of the leg General treatment modalities like *Snehana*, *Swedana*, *Vasthi* etc take may take more time for pain relief. Under these circumstances there is a need to develop an intervention for immediate relief of pain.

*Agnikarma* is beneficial in very painful conditions caused by *Vata*. It is a minimal invasive procedure by which heat is applied to different structures like *Twak*, *Mamsa*, *Sira*, *Snayu*, *Sandhi* using heated *Panchaloha salaka, Kshoudra, Guda* etc. According to Susrutha, *Agnikarma* with *Kshoudra*, *Guda* and *Sneha* are indicated in *Snayugatavikaram*[3]. *Gridhras*i being a *Snyaugatha vata vikara agnikarma* can be done with *Kshoudra, Guda* and *Sneha*. Due to the high penetration capacity and less heat dissipation rate, *Kshoudra* can transfer more amount of heat into the deeper structures like tendons, ligaments and nerves. According to Charaka, the site of *Agnikarma* in *Gridhrasi* is *Anatharakandara gulpham* (between achilles tendon and ankle joint)[4]. In the light of Charaka and dermatome distribution in L4-L5 IVDP *Agnikarma* can done in between medial malleolus and Achilles tendon and in L5-S1 IVDP in between lateral malleolus and Achilles tendon.

Considering all the above facts, the site of *Agnikarma* is

- In sciatica due to L4-L5 IVDP - Between medial malleolus and Achilles tendon and on foot in between 1st and 2nd digit dorsally (which is the course of deep peroneal nerve).
- In sciatica due to L5 -S1 IVDP - Between lateral malleolus and Achilles tendon a on the lateral aspect of foot (which is the distribution of sural nerve).

**Patient Information**

A 45-year-old male patient, who is a manual labour by profession came to OPD with complaints of severe low back pain radiating to left lower limb associated with numbness and difficulty in walking. He had a history of fall 2 years back, after which the pain developed. Initially the pain was restricted to low back only and he took allopathic treatment. Got only a symptomatic relief and but later intensity of pain increased. Since the past 3 months he was unable to perform even routine activities. On worsening of symptoms, he consulted an orthopedic surgeon, took MRI and medication. As the pain not subsided, he consulted at GAVC, TVPM, Salyathantra OPD, for Ayurvedic management. *Agnikarma* was explained in detail and consent was taken for doing the procedure. Surgical investigations were carried out.

**Clinical Findings**

**Palpation:** Grade II tenderness in between 1st and 2nd digit of left foot and in between medial malleolus and Achilles tendon.

**ROM:** All movements of lumbar spine are painful and restricted

**SLR:** Positive (left) at 20°

**Lasegue's test:** Positive - left leg

**Treatment Given**

**Pre-operative Procedure**

- Detailed clinical examination, laboratory investigations (CBC, FBS, PPBS, RA, ASO, CRP, BT, CT, HIV, HCV, VDRL, HBsAg) and MRI were done. The data was recorded.
- Patients were informed in detail about the treatment procedure and informed consent was obtained.
- TT immunization done. The patient was allowed to lie in supine position with hip and knee flexed.
- The part was cleaned and made aseptic using surgical spirit. Tender points in between 1st and 2nd digit of left foot (dorsally) and in between Achilles tendon and medial malleolus were marked.

**Materials Required**

Surgical spirit, artery forceps, sterile cotton, Borosil pipette, probe thermometer, kidney tray, sterile bowl, gas stove, *Madhu*, *Ghrita*, sterile gloves, surgical drape.


**Fig 1: Materials required for *Agnikarma***

**Operative Procedure**

- Sufficient amount of honey was taken in a sterile dish and heated over the stove up to 110°C.[5]
- Then it was taken in a borosil pipette and dropped in predetermined sites drop by drop (*Bindhu* variety).
- Approximately minimum of 4 to 5mm gaping is maintained between each drop and wiped off after cooling.

**Post-operative Procedure**

- Dressing done with *Madhu* and *Ghritham*.
- Patient was observed for 30 minutes for any blister formation or increase of pain.
- Pt advised to continue the application of honey and ghee till the wound healing.
- Follow up done on 7th and 14th day.

**Fig 2: Sites of *Agnikarma***

**Outcome Measurements**

**Pain**- Assessed by visual analogue scale

0 : Nil
1-3: Mild
4-6: Moderate
7 and above: Severe

**Numbness**

Grade 0: No numbness
Grade 1: Mild numbness
Grade 2: Moderate numbness
Grade 3: Severe numbness
(Mild- Daily once in a day for few minutes
Moderate - Daily for 2 or more times/30-60 minutes
Severe - Daily more than 1 hour/many times a day)[6]

**3. Tenderness**

No tenderness: Grade 0
Pain on deep palpation: Grade 1
Winces with pain: Grade 2
Winces and withdraws the affected part: Grade 3
Does not allow the part to be touched: Grade 4

**4. SLR**

>40: GR 0
> 30 - < 40: Gr 1
>20 - <30: Gr 2
>10 -<20: Gr 3

**5. Oswestry Disability Index (ODI)**

The Oswestry Disability Index is a participant completed questionnaire which gives a subjective percentage score of level of function (disability) in activities of daily living.

Score is calculated as, Total scored X 100/Total possible score

**Interpretation of scores**

0%- 20%: Minimal disability
21%-40%: Moderate disability
41%- 60%: Severe disability
61%- 80%: Crippled
81%-100%: Either bed ridden or exaggerating symptoms.

**OBSERVATION AND RESULT**

**Table 1: Assessment Details**

| Assessment criteria | Before treatment | After treatment | 7th day | 14th day |
|---|---|---|---|---|
| Pain | 8 | 2 | 3 | 4 |
| Numbness | GR 2 | GR O | GR O | GR O |
| Tenderness | GR 1 | GR 0 | GR O | GR 0 |
| SLR | GR 2 | GR 0 | GR O | GR 1 |
| ODI | Moderate | Minimal | Minimal | Moderate |

**DISCUSSION**

According to Susrutha, *Agnikarma* is the chief para surgical procedure which is very effective in treating conditions of severe pain in skin, muscles, veins, tendons and joints.

Before the treatment pain score was 8 and after the treatment pain score reduced to 2, and by the 7th and 14th day pain score was 3, 4 respectively. That means pain was significantly reduced after treatment. But in the follow up days there is tendency of pain to increase. Numbness was one among the main complaint of the patient and after treatment and in follow up period there was no numbness at all. Same in the case tenderness. SLR was about 20 degree before the treatment and after the treatment it was about 65 degree which sustained in the first follow up day. In the second follow up day it became 35 degree. The ODI changed from moderate disability to minimal disability till first follow up day. In the 14th day, patient developed moderate disability.

**Probable Action of *Agnikarma***

Pain is the *Athmarupam* of *Vata*. *Sangam* or obstruction of normal *Gathi* of *Vata* results in pain along the nerve root. By the *Ushna, Sookshma, Aashukari gunam* of *Agni*, the *Sangam* is released. Thereby pacifies *Vata* which quickly relieves pain. According to gate control theory of pain, a non-painful stimulus can block the transmission of a noxious stimulus or painful input which prevents transmission of pain traveling to brain[7]. That means stimulation of non-noxious stimuli is able to suppress the pain. Here by the application of heat, pain got suppressed.

Prolapsed intervertebral disc produce a number of pro-inflammatory mediators and cytokines which causes inflammation thereby sensitization of nerve roots. *Agnikarma* done on the tender spots of the sensitized nerve roots might produce an acute inflammation in the course of the nerves. The pro-inflammatory concept states that by generating an acute inflammation will bring more lymphocytes, neutrophils, histamines, and prostaglandins to the site leading to end chronic inflammation. Since the pain producing substances are removed from the site resulting reduction of pain and tenderness.

Cause of reduction in pain can also be explained in the terms of excitability of nerve roots. *Agnikarma* may reduce the excitability of nerves, thus pain threshold gets increased. Even though the heat is applied at the most sensitized nerve roots, it seemed to have effect on whole of the sciatica nerve. So, it can be inferred that it reduces the excitability of whole of the nerve and its branches. May be through *Agnikarma* desensitization of the nerve fibers occurred resulting in reduction of pain. As the prolapse of the intervertebral disc is persisting, after the resolution of the induced acute inflammation (which is created through *Agnikarma*) inflammatory mediators from the prolapsed disc again gradually got accumulated producing neuritis (inflammation of the nerve roots) or in other words chemical radiculitis. So, it may be the reason of rise of pain on the follow up days.

*Seetha guna* of *Kapha* and *Vata dosha* are the main culprit of *Supthi* in *Gridhrasi*. By *Agnikarma*, *Seetha gunam* of both *Doshas* might be get pacified, resulted in reduction of numbness after treatment. The thermal nociceptors might be got activated by the noxious stimuli (heat) causing relief of numbness.

In chronic stages of disc prolapse, sometimes leg pain is more severe than the low back. The specific characteristic of pain of neural origin is local tenderness over nerve trunks and pain in response to limb movement that lengthen the nerve (neural tissue mechano sensitivity). As the temperature rises, tightened fasciae and muscles begin to relax, which reduces muscle spasm, inflammation and pain. Heated tissues allow muscles to relax more readily which in turn lessens spasm and inflammation. As a result, SLR is improved after treatment. Since the signs and symptoms of the participant got reduced, it increased the quality of life of the participants thereby ODI.

*Kshoudra* being *Sookshma margaanusari*, the heated *Kshoudra* can enter *Sookshma*, *Sira, Snayu* and can act on deeper structures. Honey due to its higher specific heat can produce a greater variation of temperature in the tissue surface and subsequent layers. Sticky substance like honey has high heat retention capability so that heat dissipation time will be reduced. As a result, heat will be able to penetrate deeper structures.

Although on the second follow up i.e., on the 14th day after intervention there is tendency of the outcome variable to touch the baseline especially "pain". If we take an assessment of pain on 21st day it may probably come to baseline. This reveals that actual *Samprapthi vighatanam* of *Pradhana vyadhi* (*Gridhrasi*) was not accomplished fully, only a localized *Amapachanam*, increase of *Dhathuwagni* and removal of *Srothorodham* had taken place locally which resulted in relief of sign and symptoms. Continuation of the same *Aahara vihara nidanas* by the participant might also be hindered the *Samprapthi vighatanam.*

**CONCLUSION**

- *Agnikarma* is a better alternative in intractable type of *Vata kaphaja vyadhis* affecting musculoskeletal system.
- *Agnikarma* is simple, safe, economical and minimally invasive.
- *Agnikarma* done over ankle and foot is found to be effective in sciatica due to L4-L5, L5-S1

Intervertebral disc prolapse as it reduces signs and symptoms of sciatica.

- As it gives an instant relief, it can be accepted as an immediate treatment modality for the symptomatic management of sciatica due to L4-L5, L5-S1 intervertebral disc prolapse.
- The actual *Samprapthi* of the disease is not reversed by the intervention which may be the reason for increase of signs and symptoms in the follow up periods but it never touched the baseline data within the follow up period.

**REFERENCES**


1. M.A. Stafford, P. Peng, D.A. Hill. Sciatica: a review of history, epidemiology, pathogenesis, and the role of epidural steroid injection in management. British Journal of Anaesthesia. Volume 99 Issue 4 Pages 461-473 (October 2007) https://doi.org/10.1093/bja/aem238
2. Gore S, Nadkarni S. Sciatica: detection and confirmation by new method. Int J Spine Surg. 2014 Dec 1; 8: 15. doi: 10.14444/1015. PMID: 25694916; PMCID: PMC4325484.
3. Aacharya Susrutha; Susrutha samhitha, translated by Prof Srikantha murthy, Vol I, sutrastana 12/4; reprint edition: 2017; Varanasi; Chaukambha Orientalia; 2017; p 70
4. Agnivesha; Charaka samhitha, translated by Dr ram karan sharma, Vaidya Bhagwan dash, Vol V, chikitsa stana 28/101; 1st ed; Varanasi; Chowkhamba Sanskrit series office;1999; p 51
5. Thesis by Prashnath K S; A Comparative Study of Agnikarma with Taptha Kshoudra and Panchadhathusalaka in Carpel Tunnel Syndrome; Aluva's Ayurveda Medical College; Moodbiddiri; 2017; p 52
6. Vaneet Kumar J, Dudhamal TS, Gupta SK, Mahanta V. A comparative clinical study of Siravedha and Agnikarma in management of Gridhrasi (sciatica). Ayu. 2014 Jul-Sep; 35(3): 270-6. doi: 10.4103/0974-8520.153743. PMID: 26664236; PMCID: PMC4649569.
7. Dr. Rabinarayan Tripathy, Dr. Shaithya ya Raj, Dr. Rajeshwari, P. N., Dr. Athulya and Dr. Lakshmy C. C. Senan.016. "A review on the action of Agnikarma", International Journal of Current Research, 8, (06), 32319-32322.



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