Efficacy of Agnikarma over the padakanistakam (little toe) and Katibasti in Gridhrasi: A comparative study

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ABSTRACT

Background and Objectives: Gridhrasi (Sciatica) is one of the Vatavyadhi which is caused by aggravated Vata dosha. This disease is characterized by ruja (pain) in the waist, back, thigh, knee and calf regions along the course of sciatic nerve. In spite of the different types of treatment modalities mentioned in ancient and modern medical sciences, they have some or the other shortcomings and drawbacks. Considering all these, the present study was taken up with the objective of evaluating the efficacy of Agnikarma (treatment done with cauterization) over the padakanistakam (little toe) in the management of Gridhrasi. To consider the significance of the method of Agnikarma, the efficacy of Katibasti in the management of Gridhrasi which has been established in the previous work was also studied. Materials and Methods: The study was performed after obtaining Ethics Committee approval and patients’ written informed consent. Forty cases presenting with classical features of Gridhrasi (Sciatica) due to lumbar intervertebral disc prolapse were selected. The management of Gridhrasi by Agnikarma and Katibasti was conducted by including the patients in two groups, namely Group A (study group) and Group B (control group). The data were collected and the observations were made before the treatment, on 8th day, 15th day and on 22nd day of the treatment. The data obtained from the results were subjected for statistical analysis and conclusions were drawn. Results: There was a significant reduction in the parameters, pain ($P < 0.01$) and straight-leg raising (SLR) test ($P < 0.01$), of the study group compared to the control group ($P < 0.01$). Pain was assessed through Numerical Pain Analogue Scale. After the treatment with Agnikarma, the pain was totally relieved in 80% of cases. It was reduced to moderate degree in 20% of cases and in 95% of cases, SLR test became negative. After the treatment with Katibasti, the pain was totally relieved in 50% of cases. It was reduced to moderate degree in 20% and to mild degree in 25% of cases. In 60% of cases, SLR test became negative. However, changes in the radiological findings were not found in both the methods of management. Analysis of overall effect of treatment in the present study reveals that Agnikarma was statistically significant compared to that of Katibasti. Conclusions: The management of Gridhrasi by Agnikarma was more efficacious as compared with Katibasti in reducing pain. However, there were no radiological changes produced by both the methods of treatment. Further studies may be conducted by future scholars by taking more samples with more number of settings.

Key words: Agnikarma, Gridhrasi, Katibasti, lumbar intervertebral disc prolapse, padakanistakam, ruja, sciatic nerve, sciatica, SLR test

INTRODUCTION

Chronic low-back pain (CLBP) is the most common cause contributing to a large number of lost work days and disability claims.[1] Backache is a global problem with 80% of the world population suffering from it.[2] Eight out of ten people are affected with backache at some stage of their life.[3] Functional disability,[4] sleep disturbances, fatigue and medication abuse[5] are seen in people suffering from CLBP. Backache is the second most common reason for people all over the world to seek a doctor.[6] According to a survey, the lifetime incidence of sciatica varies from 30 to 40% and has an annual incidence of 5% in the world.[6,7] In a study conducted on 283 patients at a Dutch hospital to determine whether there is faster recovery after early surgery for Sciatica caused due to lumbar disc herniation compared with prolonged conservative care, it was observed that the lumbar disc herniation is the commoner cause of Sciatica and early surgery provided faster recovery compared with prolonged conservative care.[8] But in another
study, it has been quoted that 40% of back surgeries fail and even in successful surgeries, pain and subsequent disability have returned after a variable period of 6 months to 20 years.\(^9\) The prolapse of the intervertebral disc in the lumbar region is most frequently found at the lowest two levels in 90% of the cases. In a series of 400 with one level disc prolapse in the lumbar region analyzed in a study, the highest incidence was found at the level of L5/S1 or 5\(^{th}\) lumbar disc prolapse. Unfortunately, many people develop backache and Sciatica because efforts are not made to keep the spine in good shape. It is believed that four out of every five people in a given urban society experience back pain some time in their lifespan.\(^10\)

Several studies point to the role of a sedentary lifestyle that includes 1) mechanical factors such as prolonged wrong postures leading to wasting and weakness of postural muscles and 2) chronic muscle spasm resulting from psychologic stress in the etiology of CLBP. Increased paraspinal electromyographic (EMG) activity has been observed in subjects with CLBP, which may be the result of both voluntary and non-voluntary changes in motor control in response to perceived stress.\(^11\)

Unexpected failures and recurrences after physical and surgical therapies have been documented. One of the three patients operated for herniated lumbar discs presented with failed disc surgery associated with persistent pain, fatigue, exhaustion and emotional problems that interfered with their jobs and only two of three patients, who were active before the operations, returned to work.\(^12\)

"Gridhrasi" is one of the Vatavyadhi. It starts from hip and gradually comes down to waist, back, thigh, knee, shank and foot and affects these parts with stiffness, distress, piercing pain and with frequent quivering.\(^13\) As per the modern medical science, "Gridhrasi" can be correlated with Sciatica due to its similarity in the symptom of pain radiating along the course of sciatic nerve and is felt in the back, buttock, posterior aspect of the thigh, leg and foot.\(^2\)

The commonest symptoms of the lumbar disc prolapse are backache and Sciatica. An important feature of this pain is intermittent exacerbation and remission.\(^10\) When conservative treatment fails, surgeries such as Laminectomy, Fenestration surgery, Microscopic lumbar discectomy is an indication due to its nature of pain.\(^2\) But due to fear, high cost or complications of surgical treatment, patients avoid surgeries and continue with analgesics for timely pain relief, which produce gastrointestinal side effects.

In Ayurvedic science, various modalities of treatment are explained for the management of "Gridhrasi. Agnikarma chikitisa" (treatment done with the use of cauternization) is said to be superior and the diseases treated effectively by Agnikarma do not recur.\(^14\) In Chakradatta and Yogarathnakara, we find direct reference of Agnikarma indicated for Gridhrasi which is to be done over the padakanistakam (little toe).\(^15,16\) Several researches have shown that Agnikarma chikitisa is more effective compared to the other treatments (such as drugs, siravyadha, etc.) taken in the study.\(^17,18\) In the present study, Katibasti, one of the Panchakarma procedures which has been established as effective treatment in the management of Gridhrasi in earlier unpublished research works, has been studied\(^19,20\) in comparison with Agnikarma. The procedure of Agnikarma does not have side effects; it is cost effective, can be managed with patients as ambulatory and can be done in OPD itself. Considering the above facts, the present research was 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 recur was also studied.

### MATERIALS AND METHODS

#### Subjects

A sample size of 40 was derived by calculating the effective sizes based on the mean and standard deviation of a published interventional study by Tekur \textit{et al.}\(^21\) Patients were recruited by advertisements and referrals by the medical practitioners. Among 57 patients who attended the out-patient and in-patient departments of an Ayurvedic hospital, Bangalore, Karnataka, 40 who satisfied the selection criteria were included.

#### Inclusion criteria

Patients with classical features of Gridhrasi, namely pain over the sphik (waist), kati (back), prishta (thigh), uru (hip), janu (knee), jangha (calf region) extending up to pada (foot) and with no features of stambha (stiffness), toda (pricking pain), tanda (drowsiness), gaurava (heaviness) and arochaka (anorexia) were included. Patients with straight-leg raising (SLR) test positive between 30° and 70°, patients with chronic disease over 1 year, patients with the features of lumbar disc prolapse confirmed by X-ray investigation with reduction in intervertebral disc space, loss of lordosis and presence of lumbar scoliosis were recruited for the study.

#### Exclusion criteria

X-rays were taken and expert opinion from an Orthopedic Surgeon were obtained to rule out any organic cause of Gridhrasi such as spondylolisthesis, sacroiliac joint arthritis, affliction of the nerve root by herpex simplex virus causing radicular pain, tuberculoma causing cord compression, lymphomas, pelvic malignancy, incured thickened ligamentum flavum, cysts of the sacral nerve root, intraspinal neurofibromas and other tumors, hemorrhage in the ependymoma which can cause sudden and gross neurological deficit mimicking acute disc prolapse, diabetic neuropathy, etc., and these patients were not included in the study.
excluded. Patients suffering from systemic diseases, Sciatica with neurological damage, contraindications to Agnikarma such as people of paitika constitution, internal hemorrhage, ruptured viscera, unextracted foreign body, debilitated patients, child patients, old patients, timid patients, patients affected with multiple wounds and those contraindicated for sudation, sciatica with SLR test positive less than 30° and more than 70°, and cases with destruction of vertebral bodies and fracture of the vertebra were excluded from the study.

**Ethical clearance and consent**
The study was approved by the institutional ethical committee, and signed informed consent was obtained from all the patients.

**Study design**
In this randomized control study, 40 subjects who satisfied the study criteria were divided into two groups: Group A (study group) and Group B (control group) using a computer generated random number table (obtained from www.randomizer.com). The patients in Group A were treated by Agnikarma and patients in Group B were treated by Katibasti with ksheerabala taila (an Ayurvedic oil). Numbered containers were used to implement the random allocation to conceal the sequence until interventions were assigned. A semi-structured interview was used to obtain demographic details such as vital clinical data, personal and family histories.

Outcome variables were recorded before the treatment, and on the 8th day, 15th day and 22nd day after the treatment. The study group received the Agnikarma chikitsa, whereas the control group received the Katibasti. As this was an interventional study involving therapeutic procedures, there was no possibility of blinding. The Pain Analog Scale (PAS) sheets were not opened and analysed until the completion of both pre and post data.

Assessments done through the clinical examination by the Orthopedic Surgeon before recruitment included (a) examination for assessment of the degree and type of backache, (b) neurological examination to look for any motor or sensory deficit, (c) X-rays of the lumbar spine in antero-posterior and lateral views.

**Assessment criteria**
**Subjective parameter**

Pain (Numeric rating scale)[22]

| No | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|---|---|---|---|---|---|---|---|---|---|----|

**Scale**

0 = No pain, which is represented as “0”
1–3 = Mild, which is represented as “I”
4–6 = Moderate, which is represented as “II”
7–10 = Severe, which is represented as “III”

**Objective parameters**

- SLR test (between 30° and 70° is positive)[23]

**Scale**

Positive – P, Negative – N (the cases with positive sign are represented as “P” and the cases with negative sign are represented as “N”).

Radiological parameters

- Normal X-ray findings: Grade 0 which is represented as “n”
- Loss of lordosis and presence of lumbar scoliosis: Grade 1 which is represented as “1”
- Reduction in intervertebral disc space: Grade 3 which is represented as “2”
- Sclerosis of vertebral margins and narrowing of intervertebral foramen: Grade 4 which is represented as “3”

The results obtained were statistically analyzed and conclusions were drawn.

**Data extraction**
PAS: The distance of the point marked by the patient on the PAS line was measured by using a measuring scale and expressed in centimeters. SLR test was expressed in degrees and only the patients with SLR test positive between 30° and 70° were included.

**Blinding and masking**
The statistician who carried out the randomization, analysis of data and the researcher who enrolled the subjects, assigned them to groups, and carried out the assessments were blinded to the subject’s treatment status. Double blinding was not practically implementable. Hence, the observer was kept blinded to the therapeutic intervention the patient received. Case sheets with the parameters were analyzed only after completion of the study.

**Intervention**

**Materials**

Both the procedures were conducted in the Minor OT of Department of Shalya Tantra (Surgery Department) of the hospital. The materials used were: Pancha loha shalaka, (a metal rod having length of 7 cm, diameter of 1 mm, weighing 150 g, and made up of tamra (copper)-40%, loha (iron)-30%, yashada (zinc)-10%, rajatha (silver)-10% and vanga (tin)-10%;[24]) wooden spatula (Darvi); black gram flour- 0.5 kg, and ksheerabala taila (an Ayurvedic oil)- 250 ml [Figures 1-2].

**Procedure**

**Study group**

Agnikarma (treatment done with cauterization) procedure was explained to the patient in detail before conducting the treatment and he/she was mentally prepared by giving assurance. As a pre-operative measure, he/she was advised to
consume *snigdha* (unctuous) and *picchila* (slimy) food before the treatment. On the day of procedure, the patient was made to lie in a supine position with legs extended on the Minor OT table. He/she was instructed to be relaxed and slowly made to change his/her leg position to the required side (either right or left). The *padakanistaka anguli* (little toe) of the affected side was washed with hot water and it was draped with sterile towel. By using a marker pen, four points were marked in linear form over the lateral surface of the little toe with a gap of 1 cm between each point. At the same time, the *shalaka* (metal rod with sharp point) was heated over the burning gas stove until it became red hot. Meanwhile, the attending nurse was advised to hold the *pada* (foot) of the affected side securely and *Agnikarma* was performed with the red hot *pancha loha shalaka* (metal rod) at the marked points in *Bindu akruti* (in the form of dot) in such a way that the *samyak dagdha lakshanas* (signs of proper burning), such as appearance of sound, foul smell, constriction of skin, skin having color like that of *tala* fruit and is evenly formed, were observed.[14] Immediately after *Agnikarma*, a mixture of cow’s ghee and honey was applied over the site of *Agnikarma* and a sterile bandage was applied to avoid outside exposure. The patient was advised to rest in the supine position for half an hour and was sent home in case of out-patient and to the ward in case of in-patient. The patient was advised to remove the bandage after 3 hours. He/she was instructed to keep the area clean and free from moisture. In case of out-patient and to the ward in case of in-patient. The procedure of *Katibasti* was repeated for the third sitting after second course (i.e. on 22nd day). In case where pain was not reduced, SLR test was positive and no changes in radiological parameters were found, the second course of *Katibasti* was conducted on 8th day, and similarly, the procedure was repeated for the third sitting after second week that is on 15th day [Figure 3].

**Control group**

Procedure of *katibasti* (the procedure of retaining oil in the prescribed area) was explained to the patient in detail. He/she was advised to consume light food before the treatment. The *ksheerabala taila* (Ayurvedic oil) was kept in a steel utensil and warmed. Meanwhile, dough of sufficient quantity of black gram flour was made by adding the required quantity of water. Patient was made to lie in a prone position on the table and *kati pradesha* (back) was exposed. The dough was made into a shape of a circular ring corresponding to the area of the lumbosacral region and fixed there in such a way that the entire area adhered to the skin properly and prevented the leakage of the *taila* (oil) from the circular ring. Then, the lukewarm *taila* (oil) was slowly poured inside the circular ring from the utensil by using *Darvi* (wooden spatula). Uniform temperature of the oil was maintained inside the circular ring by rotating the oil with a finger. Once the temperature of the oil decreased, it was replaced with lukewarm oil again. The procedure was continued till the patient attained *samyak swinna lakshanas*[25] (signs of proper sudation) like appearance of sweating, relief from pain, stiffness and heaviness of the body for up to 30 minutes. Later, the oil was completely removed from the circular ring with the help of cotton swab. The dough ring was removed and mild massage was carried over the lumbosacral region. Then, the patient was advised to take lukewarm water bath.

The procedure of *Katibasti* was done once daily for 7 days continuously. The oil used for the procedure on 1st day was reused for another 3 days, and later from 4th day, it was replaced by fresh oil till 7th day. In case where pain was not reduced, SLR test was positive and no changes in radiological parameters were found, the second course of *Katibasti* was conducted on 8th day, and similarly the third course was carried out [Figure 4].

In both the methods of treatment, observations were made before the treatment, on the 7th day after 1st course (i.e. on 8th day), on the 7th day after 2nd course (i.e. on 15th day) and on the 7th day after 3rd course (i.e. on 22nd day). Duration of 60 days was fixed to observe the possibilities of recurrence in cases which had complete relief from the treatment. The observations
made regarding the changes with the above procedure were recorded in the proforma of case sheet prepared for the study. Follow-up after 1 year was also documented.

**Results**

Forty subjects who satisfied the selection criteria were recruited. The demographic data are summarized in Table 1. There were no drop outs either in study and or in control group. Duration of Gridhrasi was less than 3 months in 37.5%, between 3 and 6 months in 27.5%, and between 6 and 12 months in 35.0% of cases.

**Effects of treatment in two groups**

Total relief from pain (80%) and negative SLR test (95%) were observed in 16 cases of the study group, and pain (50%) and negative SLR test (60%) were observed in 10 cases of the control group. Significant improvement was seen in the study group in pain ($P<0.01$) [Table 2] and SLR test ($P<0.01$) [Table 3], but no changes were seen with radiological parameters [Table 4] compared with the control group. Within 3 months of follow-up, one case in the study group and three cases in the control group had recurrence of pain and positive SLR test.

With 1 year of follow-up, out of 20 cases, data of 16 cases in the study group and 17 cases in the control group were available. In the study group, among 16 cases, 9 had complete relief from pain, 5 had pain of moderate severity and 2 had recurrence. In control group, out of 17 cases, 5 had complete relief from pain, 7 had pain of moderate severity and 5 had recurrence [Table 5].

**Discussion**

Gridhrasi is a painful disease which makes the affected person unable to walk and also hampers his/her daily normal activities. The disease being one among the eighty types of Nanatmajja Vatavyadhis (various types of diseases caused due to vata dosha) has no specific nidana and samprapti mentioned separately; therefore, the nidana (cause), samprapti (pathogenesis), sadhyasadyata (prognosis) and pathyapathy (do’s and don’ts) of vatavyadhi can be considered here. In Gridhrasi, vata dosha is mainly involved with involvement of other doshas like pitta and kapha. Onset of ruk (pain) initially in sphik (waist) region and radiating distally to kati (back), prishta (thigh), jana (knee) and jangha (calf) till pada (foot) is the unique feature of this disease. The lakshanas (symptoms) of ruk (pain), toda (pricking pain), stambha (stiffness), graham (catching sensation) and spandana (throbbing sensation) are indicative of pain and these symptoms are of vata, but when the disorder is caused by vata and kapha, it is associated with tantra (drowsiness), gaurava (heaviness), mukhapraseka (excessive salivation) and arochaka (anorexia). [13] Madhavakara adds dehapravakrata (improper posture of the body) as an additional symptom along with the features given by Bhavamisra[27] and Yogarathnakara[16] such as mukhapraseka (excessive salivation), agrinimandya (indigestion) and bhaktadvesha (aversion to food). Sushrutha while describing Gridhrasi has given more emphasis on the involvement of the ligaments of heel and toes afflicted with vata which obstructs the movements of leg.[28]

It is difficult to totally correlate the disease Gridhrasi with Sciatica. Considering the different etiological factors and clinical features mentioned in Ayurveda and modern medical science, in this study, the relationship of Gridhrasi with Sciatica is made on the following grounds only [Table 6].

Sciatica is the distribution of pain along the course of sciatic nerve. Positive SLR test between 30° and 70° and radiological investigation confirm the diagnosis of Sciatica which is caused due to lumbar intervertebral disc prolapse. Since Sciatica is commonly caused due to lumbar intervertebral disc prolapse...
with SLR test between 30° and 70°,[13] the same cause has been taken for the present study, and other pathologies mentioned in exclusion criteria were not included for the study because most of them require surgical intervention and, in some cases, certain specific antibiotics.[12]

Table 1: Demographic data

| Demographic parameters | Number (total 40) |
|------------------------|------------------|
| **Age (years)**        |                  |
| <30                    | 5                |
| 31–40                  | 11               |
| 41–50                  | 9                |
| 51–60                  | 6                |
| 61–70                  | 9                |
| **Sex**                |                  |
| M                      | 20               |
| F                      | 20               |
| **Occupation**         |                  |
| Farmers                | 6                |
| Laborers               | 6                |
| Business persons       | 4                |
| Govt. employees        | 8                |
| Housewives             | 9                |
| Retired persons        | 3                |
| Students               | 2                |
| **Limb affected**      |                  |
| R                      | 14               |
| L                      | 16               |
| **Chronicity (months)**|                  |
| <30                    | 15               |
| 3–6                    | 11               |
| 6–12                   | 14               |

Table 2: Pattern of changes in pain with the treatment

| Group                  | Pain rating scale | Before treatment | 8th day | 15th day | 22nd day |
|------------------------|-------------------|------------------|---------|----------|----------|
| A (n = 20) Agnikarma   | Severe pain       | 18               | 5       | 2        | 0        |
|                        | Moderate pain     | 2                | 4       | 5        | 4        |
|                        | Mild pain         | 0                | 5       | 1        | 0        |
|                        | No pain           | 0                | 6       | 12       | 16       |
| B (n = 20) Katibasti   | Severe pain       | 13               | 6       | 3        | 1        |
|                        | Moderate pain     | 7                | 12      | 8        | 4        |
|                        | Mild pain         | 0                | 1       | 7        | 5        |
|                        | No pain           | 0                | 1       | 2        | 10       |

Table 3: Pattern of changes in SLR test with the treatment

| Group | SLR test | Before treatment number of cases | 8th day number of cases | 15th day number of cases | 22nd day number of cases |
|-------|----------|---------------------------------|-------------------------|--------------------------|--------------------------|
| A     | Positive | 20                              | 9                       | 7                        | 1                        |
|       | Negative | 0                               | 11                      | 13                       | 19                       |
| B     | Positive | 20                              | 17                      | 7                        | 8                        |
|       | Negative | 0                               | 3                       | 13                       | 12                       |

According to the available classical references of Ayurveda, the indication of Agnikarma for Gridhrasi has been mentioned by Charaka and Cakradatta over the gulpha sandhi (ankle joint) [13] and padakanistakam (little toe).[15] In the early unpublished research works on Gridhrasi, Agnikarma had been carried out on different pain predominant sites along the course of sciatic nerve and over the gulpha sandhi (ankle joint). However, Agnikarma over padakanistakam mentioned by Cakradatta had not been carried out. Considering this fact, in the present study, Agnikarma was conducted over the padakanistakam (little toe) to evaluate the effect of this Agnikarma in the management of Gridhrasi. Katibasti, an established method of treatment for Gridhrasi in earlier unpublished research works, is the other method of the management in this study.[19,20] Here, an effort has been made to compare the effects of treatment of Agnikarma over the padakanistakam and Katibasti in the management of Gridhrasi and also to evaluate the authenticity of the references.

This study was limited to the facilities that were available in this institution. Details of the patient were recorded in the proforma of case sheet. Subjective parameters such as pain, and objective parameters such as SLR test and radiological parameters were used to assess the results of the study.

In the observations made before the treatment, higher incidence of Gridhrasi was found in the age group of 31–40 years (27.5%). 50% incidence was found among both the sexes. Higher incidences among Hindus (92.5%) and housewives (22.5%) were observed. Left lower limb was affected in 65% of the cases. Maximum number of patients (37.5%) had chronicity of less than 3 months. The above data are only the observations made before the treatment. In maximum number of cases, it was observed that Gridhrasi was caused due to heavy weight lifting and traveling. These causes coincide with the etiological factors mentioned in our classics, such as bharaharana (weight lifting) and yaana (traveling).[14]

After the treatment with Agnikarma, the pain was totally relieved in 80% of cases. It was reduced to moderate degree in 20% of cases. In 95% of cases, SLR test was negative. After the treatment with Katibasti, the pain was totally relieved in 50% of cases. It was reduced to moderate degree in 20% and to mild degree in 25% of cases. In 60% of cases, SLR test was negative. However, changes in the radiological parameters were not found in both the methods of management. From...
these observations, it can be understood that the management of Gridhrasi by Agnikarma is comparatively more efficacious compared to the management by Katibasti as regards Pain and SLR tests. The statistical analysis also showed significant improvement in pain \( (P < 0.01) \) and SLR test \( (P < 0.01) \) in Agnikarma group compared to the Katibasti group. Though total relief from Pain and negative SLR test with treatment were observed in many cases (as mentioned above) before the fixed duration of treatment, further treatment was continued to observe the possibilities of changes in the radiological parameters. However, in all the cases, the lumbar intervertebral disc prolapse confirmed by radiology was not altered.

**Mechanisms**

In studies conducted on Agnikarma chikitsa, different types of shalaka dahanopakaranas (metal rods for cauterization) were used in the management of various diseases. Here, the shalakas made up of metals like tamra (copper), loha (iron), rajata (silver), naga (lead) and vanga (tin) separately were made use of. But the desired results were not obtained due to the specific characteristics of the metals. Hence, the panchaloha shalaka, an innovation of by the observer, which was successful in treating various diseases, was used in treating good number of patients, and with once heated shalaka, 20–30 samvak dagdha vranas (proper cauterization) in bindu akruti were made satisfactorily. Many research papers have been published and read in different conferences on the use of this panchaloha and its effect in treating various diseases.[24] Based on this reference, in the present study, panchaloha shalaka was used as dahanopakaranas (material used for Agnikarma) in the management of Gridhrasi.

Katibasti is one of the bahya snehana (external oleation), swedana chikitsa (fomentation therapy) and shamana chikitsa (palliative therapy). It is one among the bahirparimirjana chikitsa (external therapy), a modified and applied process of shiro basti (kind of basti treatment given for head). There is no direct reference for Katibasti in classical texts and it is one of the upakramas (supportive treatment). Even though they are not introduced inside the body, they are still called as basti because the medicated and lubricated substances are retained over the particular areas of the body for a period of prescribed time. Katibasti is useful in kati (back) and adhah shakagata vikaras (disorders of lower part of the body). This form of external basti particularly benefits muscle spasms, rigidity of the lower spine and strengthens the bone tissue in that area.

### Table 4: Pattern of changes in radiological parameters with the treatment

| Group | Radiological parameter | Before treatment Number of cases | After treatment Number of cases |
|-------|------------------------|---------------------------------|---------------------------------|
| A     | Grade 3                | 6                               | 6                               |
|       | Grade 2                | 7                               | 7                               |
|       | Grade 1                | 7                               | 7                               |
|       | Grade 0                | 0                               | 0                               |
| B     | Grade 3                | 5                               | 5                               |
|       | Grade 2                | 9                               | 9                               |
|       | Grade 1                | 6                               | 6                               |
|       | Grade 0                | 0                               | 0                               |

### Table 5: Number / percentage of patients showing improvement

| Group | Number of cases | Percentage | Negative SLR test | Number of cases | Percentage | Normal radiological findings |
|-------|----------------|------------|-------------------|----------------|------------|-----------------------------|
| A     | 16             | 80         | 19                | 95             | Nil        |
| B     | 10             | 50         | 12                | 60             | Nil        |

\( P \) value \( P < 0.01 \)

### Table 6: Correlating features of Gridhrasi and Sciatica

| Ayurvedic description | Modern description |
|-----------------------|--------------------|
| Nidanas               | Etiology           |
| Bharaharana (lifting weight): works related to weight lifting | Jobs requiring heavy and repetitive weight lifting and use of machine tools |
| Riding over gaja (elephant), ustra (camel), ashva (horse), sheegrayaana (traveling on fast moving vehicles) and Apatamansat (falling down from the seats when traveling on these animals and on vehicles) | Traveling or operation of motor vehicles, falling and other factors leading to trauma |
| Dukha shayyasanat: sleeping on uncomfortable beds and sitting on uncomfortable seats | Improper postural habits |
| Lakshanas             | Symptoms           |
| In Gridhrasi caused by aggravated vata, pain is felt in the waist, back, thigh, knee and calf regions | Sciatica is defined as a radiating pain along the course of sciatic nerve and is felt in the back, buttocks, posterior of the thigh, legs and the foot |

The lakshanas of Gridhrasi mentioned in Ayurveda like stambha (stiffness), toda (pricking pain), graham (catching type of pain), spandana (throbbing type of pain), tandra (drowsiness), gowrava (heaviness) arochaka (anorexia), etc. are not mentioned as the features of Sciatica and hence these factors are not considered here.
Limitations of the study

- As the sample size in this present study was small, high claims cannot be made as regards the total outcome.
- Follow-up of these cases for longer period is required for compliance and recurrences.

Implications and recommendations

An integrative holistic model incorporating both Agnikarma and Katibasti will strengthen the approach to treatment of Gridhrasi. We recommend this combination procedure of using Agnikarma and Katibasti for the management of Gridhrasi as it will help the patient in reducing both the pain, strengthening the lumbosacral region and also in pacifying vata dosha.

CONCLUSIONS

- No untoward effects were observed in any of the cases with both the methods of management, namely Agnikarma and Katibasti.
- The procedures in both the methods were simple, economical and required no hospitalization and could be done at the OPD itself.
- Agnikarma had a significant effect in relieving the pain and SLR test in cases of Gridhrasi when compared to Katibasti.
- Patients were cooperative and had good acceptability in both the methods of management.

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