CLINICAL EVALUATION OF PARIJATA (NYCTANTHENSE ARBORTRISTIS) IN THE MANAGEMENT OF GRIDHRASI (SCIATICA)

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ABSTRACT
Sciatica or sciatic syndrome is a neuralgic pain which begins from lumbar region and radiates downwards to buttock, posterior aspect of thigh, calf and to the outer boarder of foot. In about 90% of cases sciatica is caused by a herniated disc with nerve root compression. Conservative treatment for sciatica is primarily aimed at pain reduction, either by analgesics or by reducing pressure on the nerve root. In Ayurveda, the symptoms, etiopathogenesis resembles with Gridhrasi. Treatment includes administration of Snehana, Swedana, Basti, Sira vyadha, Agni karma and certain Shamman yogas. The fresh leaves of Parijata (Nyctanthese arbortristis) prepared in the form of decoctions or in combination with other herbs are found to be useful in treating inflammations, as the active principals contained within them are found to have anti-inflammatory, digestive and laxative properties. Total 20 patients diagnosed as Gridhrasi (Sciatica) of any socio-economic status, age group of 20-60 years and irrespective of sex were randomly divided in two groups. The drugs Parijata kwath and Parijata Guggulu were orally given for one month of duration. Parijata Kwath and Parijata Guggulu both are very effective, safe and good result yielding drugs for treatment of Gridhrasi (Sciatica) as they are – Vedanasthapana, Vatakaphahara, Nadibalya, Rasayana, easily available, cheaper and with no side and adverse effect. The outcome revealed a better therapeutic efficacy of Parijata Guggulu than Parijata kwath in Gridhrasi (Sciatica).

KEYWORDS: Ayurveda, Gridhrasi, Parijata Guggulu, Parijata Kwath, Sciatica.
INTRODUCTION
In modern era, the low back pain is common problem seen due to changing life style and nature of work. Out of which most of the persons have low backache with radiating pain to the foot and with restricted movements of the spine. Sciatica is a neuralgic pain referred to the muscles supplied by the sciatic nerve.\(^1\) It is a more common cause of pain and disability. Pain is the distribution of the lumber or sacral root is often due to disc protrusion.\(^2\) Pain and limitation on SLR is a feature of prolapsed inter vertebral disc, when there is irritation or compression of one of the root of sciatic nerve.\(^3\) A symptomatic lumber disc herniation occur during the lifetime of approximately 2% of population. Risk factor includes male gender, middle-old age, heavy lifting or twisting, stressful occupation, smoking and mental stress.\(^4\) Symptoms typically commences with a period of back pain followed by radiating down to buttock, thigh, calf and antero-lateral aspects of foot. There may be parasthesia, motor weakness, loss of reflexes and reduction in SLR.\(^5\) Sciatica hampers the daily routine activity and patient has to suffer a lot. The medical treatment and management includes bed rest, maintaining mobility, analgesics or NSAID, epidural steroid injections, spinal manipulation, traction therapy, physical therapy, multidisciplinary treatment or surgery in later course of the disease.\(^6\)

In Ayurveda, the symptoms, etiopathogenesis resembles with Gridhrasi. The cardinal signs and symptoms of Gridhrasi are Ruk (pain), Sthamba (stiffness), Toda (pin prickling sensation) starting from Spik, Kati, Prista radiating down to posterior border of Uru, Janu, Jangha, Pada and impairment of lifting of thigh. In Kaphanubandha, Tandra, Gaurva, Arochaka are present. Treatment includes Snehana, Swedan, Basti, Siravyedha, Agnikarma and Shamaanaushadhi comprises Vednasthapana, Rasayana and Nadibalya drugs.\(^7\) A decoction of the Parijata (Nyctanthese arbortristis) leaves, prepared over a gentle fire is recommended for obstinate sciatica.\(^8\)

Decoctions have some disadvantages, such as the difficulties in ensuring quality control of the herbal ingredients, the time and inconvenience they required to prepare, the practical problems relating to their transportation and storage, the difficulty in ensuring adequate quality of prepared decoction, and the requirement to consume a large volume of unpleasant tasting medicine. Tablets are convenient to swallow, easier dosage forms, easy to ensure quality control, convenience in preparation, storage, and their transportation.
The aim of this clinical study was to evaluate the effectiveness of Parijata kwath in comparison with Parijata Guggulu in the cases of Gridhrasi (Sciatica).

**Objectives**
2. To evaluate the therapeutic efficacy of herbal formulations of Parijata in Gridhrasi.

**Methodology of the research work**
The research study entitled “Clinical evaluation of Parijata (Nyctanthes arbortristis) in the management of Gridhrasi (Sciatica)” was an observational clinical trial done with herbal formulations of Parijata (Nyctanthes arbortristis).

**Methods of collection of Data**
1. A clinical study of patients attending the OPD was made and patients fulfilling the criteria of diagnosis as per the research paper were selected for the study.
2. A clinical evaluation of patients was done by collection of data through information obtained by history, physical examination, and laboratory tests including radiological investigations.
3. Review of literature was conducted from books, Authentic Research Journals, Websites and Digital Publications etc.
4. The data which were obtained by the clinical trial will be summarized and analyzed through statistical measures.

**Inclusion Criteria**
1. Patients with classical features of Gridhrasi (Sciatica) explained in classical texts.
2. Patients of any socio-economic status, both sexes and all ethnic origins.
3. Patients with age group of 20-60 years.
4. Acute and chronic but non-traumatic in nature.
5. No other neurological deficit.
6. Both fresh and treated cases were selected.

**Exclusion Criteria**
1. Patients with uncontrolled metabolic and other systemic disorders.
2. Psychiatric illness and pregnant women.
3. Patients having Ca. of spine, Tumor of cauda equina, Fibrositis of sacral ligaments, Tuberculosis of spine.

4. Patients having surgical intervention were excluded.

Criteria for Selection of Drug

Parijata kwath has been mentioned in the treatment of Gridhrasi Vata. A decoction of the leaves, prepared over a gentle fire is recommended for obstinate sciatica. The fresh leaves of the plant prepared in the form of infusions, decoctions or in combination with other herbs are found to be useful in treating inflammations, sciatica, fever, bronchitis, asthma, cough, dyspepsia, constipation as the active principals contained within them are found to have antibacterial, anti-inflammatory, digestive, expectorant, diuretic and laxative properties.

Guggulu was selected due to its Tridoshagna, Vedanasthapana, Nadibalya, Lekhana and Rasayana properties.\(^9\)

Also, the raw drugs are easily available and low cost compared to other therapy. Hence, these drugs were selected for research study.

Method of preparation

Parijata Kwath- The fresh Parijata leaves were collected, washed, crushed and added water in proportion of 1:4, boiled until ¼ remaining.

Parijata Guggulu – The decoction of Parijata leaves was made, added Sudha Guggulu and heated until bolus formation, and then Castor oil is added to it; tablet was prepared.

Dose -

Parijata kwath - 20 ml BD

Parijata Guggulu - 2 tabs. t.i.d. (each tablet approximately 500 mg)


Route of Administration - Oral

Diagnostic Criteria

An elaborate case paper incorporating the points of history taking and physical examination was prepared. It mainly emphasized on signs and symptoms of Gridhrasi (Sciatica). Routine laboratory investigation like CBC, RBS, Lipid profile, RFT, LFT, Urine test and radiological investigation like X-ray, CT scan, MRI was made to rule out other pathological conditions.
Diet Regimen
While prescribing the diet of the patients, concept of Pathya-Apathya related to Vata Vyadhi was kept in mind; light diet was advised as per the status of Agni.

Research Design
Selected patients were randomly divided into two groups consisting of 10 patients in each group excluding dropouts with pre, mid and post test study design.
1. Group A treated with Parijata kwath
2. Group B treated with Parijata Guggulu
Duration – 1 month

Criteria for Assessment
The assessment was made before, during and after the treatment on scoring of cardinal signs and symptoms of Gridhrasi. Results were analyzed statistically as per the assessment chart.

Instrumentation: Scoring pattern was developed according to severity of symptoms.

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

STIFFNESS
0 : No stiffness
1 : 20% limitation of normal range of mobility
2 : 50% limitation of mobility
3 : 75% or more reduction of normal range of movement

PRICKING SENSATION
0 : No pricking sensation
1 : Mild pricking sensation
2 : Moderate pricking sensation
3 : Severe pricking sensation
TWITCHING
0 : No twitching
1 : Mild twitching (sometime for 10-15 minutes)
2 : Moderate twitching (daily for 15-30 minutes)
3 : Severe twitching (daily more than 1 hour)

ANOREXIA
0 : No anorexia
1 : Mild anorexia
2 : Moderate anorexia
3 : Severe anorexia

DROWSINESS
0 : No drowsiness
1 : Mild drowsiness
2 : Moderate drowsiness
3 : Severe drowsiness

HEAVINESS
0 : No heaviness
1 : Mild heaviness
2 : Moderate heaviness
3 : Severe heaviness

PAIN DURING COUGHING
0 : No pain
1 : Mild pain
2 : Moderate pain
3 : Severe pain

STRAIGHT LEG RAISING TEST (SLRT)
Angle below 40° – Intra spinal compression
Angle above 40° – Extra spinal compression

SCIATICA NOTCH TENDERNESS (SNT)
0 : No tenderness
1: Mild tenderness
2: Moderate tenderness
3: Severe tenderness

Assessment of total effect: The total effect of therapy was assessed as:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete cure</td>
<td>100%</td>
</tr>
<tr>
<td>Marked Relief</td>
<td>&gt; 50%</td>
</tr>
<tr>
<td>Moderate Response</td>
<td>&gt; 25 to 50%</td>
</tr>
<tr>
<td>Mild Improvement</td>
<td>&lt; 25%</td>
</tr>
<tr>
<td>No response</td>
<td>0%</td>
</tr>
</tbody>
</table>

OBSERVATION

The effect of *Parijata* was studied in 20 patients suffering from *Gridhrasi* (Sciatica), fulfilling the inclusion criteria. The observations were as follows: Maximum number of patients were obtained in the age group of 41-50 years that is 40% followed by 30% patients in the age group of 51-60 years, 20% patients in the age group of 31-40 and 10% patients in the age group of 21 to 30 years. Male patients were 55% and female patients were 45%. Most of the patients 55% were manual labors and the maximum numbers of patients 70% were from lower income group. Most of the patients 60% were vegetarian. 55% of patients gave the history of illness from 1-3 months, and 25% gave the history of above 3 months. 55% patients were of *Vataj* type and 45% having *Vatakaphaj* type of *Gridhrasi*.

RESULTS

The drugs *Parijata kwath* and *Parijata Guggulu* provided a highly significant (P<0.001) effect on the symptom; pain, stiffness, pricking sensation, twitching, heaviness and pain during coughing in both the groups. In anorexia and drowsiness the treatment showed significant effect in Group A and highly significant in Group B (Table 1). Straight Leg Raising test and Sciatica notch tenderness showed highly significant (P<0.001) effect of treatment in both the groups (Table 2). The relief percentage in individual symptoms of *Gridhrasi* (Sciatica) in both the groups revealed a better therapeutic efficacy of *Parijata Guggulu* than *Parijata kwath* (Table 3). The overall assessment in Group A most of the patients, that is 08 patients (80%) were showed markedly relieved, followed by 02 patients (20%) were moderately improved and in Group B all patients (100%) were markedly improved after completion of the treatment (Table 4).
Table 1: Effect of drugs on symptoms of 20 patients of Gridhrasi (Sciatica)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Group</th>
<th>BT</th>
<th>AT</th>
<th>Diff. Mean</th>
<th>SD</th>
<th>SE</th>
<th>'t' value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Group A</td>
<td>3.000</td>
<td>0.900</td>
<td>2.100</td>
<td>0.567</td>
<td>0.1795</td>
<td>7.584</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>3.000</td>
<td>0.700</td>
<td>2.300</td>
<td>0.483</td>
<td>0.153</td>
<td>10.776</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Stiffness</td>
<td>Group A</td>
<td>2.600</td>
<td>0.800</td>
<td>1.800</td>
<td>0.789</td>
<td>0.249</td>
<td>6.037</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>2.700</td>
<td>0.600</td>
<td>2.100</td>
<td>0.567</td>
<td>0.179</td>
<td>9.391</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Pricking Sensation</td>
<td>Group A</td>
<td>2.300</td>
<td>0.800</td>
<td>1.500</td>
<td>0.527</td>
<td>0.166</td>
<td>7.398</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>2.400</td>
<td>0.400</td>
<td>2.000</td>
<td>0</td>
<td>0</td>
<td>8.660</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Twitching</td>
<td>Group A</td>
<td>2.700</td>
<td>0.900</td>
<td>1.800</td>
<td>1.033</td>
<td>0.133</td>
<td>6.454</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>2.700</td>
<td>0.500</td>
<td>2.200</td>
<td>0.632</td>
<td>0.2</td>
<td>9.731</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Anorexia</td>
<td>Group A</td>
<td>1.400</td>
<td>0.500</td>
<td>0.900</td>
<td>0.994</td>
<td>0.315</td>
<td>3.250</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>1.200</td>
<td>0.200</td>
<td>1.000</td>
<td>0.666</td>
<td>0.210</td>
<td>4.160</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>Group A</td>
<td>2.100</td>
<td>0.500</td>
<td>1.600</td>
<td>0.516</td>
<td>0.163</td>
<td>6.532</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>2.600</td>
<td>0.700</td>
<td>1.900</td>
<td>0.567</td>
<td>0.179</td>
<td>7.070</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Heaviness</td>
<td>Group A</td>
<td>2.600</td>
<td>1.100</td>
<td>1.500</td>
<td>0.849</td>
<td>0.268</td>
<td>6.181</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>2.600</td>
<td>0.700</td>
<td>1.900</td>
<td>0.567</td>
<td>0.179</td>
<td>7.070</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Pain during coughing</td>
<td>Group A</td>
<td>2.500</td>
<td>1.000</td>
<td>1.500</td>
<td>0.707</td>
<td>0.223</td>
<td>6.708</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>2.500</td>
<td>0.700</td>
<td>1.800</td>
<td>0.422</td>
<td>0.133</td>
<td>7.962</td>
<td>P&lt;0.001</td>
</tr>
</tbody>
</table>

Table 2: Effect of drugs on SLR & SNT test

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Group</th>
<th>BT</th>
<th>AT</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLR</td>
<td>Group A</td>
<td>40.00</td>
<td>63.20</td>
<td>23.20</td>
<td>8.904</td>
<td>2.816</td>
<td>6.613</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>40.10</td>
<td>76.90</td>
<td>36.80</td>
<td>5.224</td>
<td>1.652</td>
<td>13.956</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>SNT</td>
<td>Group A</td>
<td>2.500</td>
<td>0.900</td>
<td>1.600</td>
<td>0.843</td>
<td>0.268</td>
<td>5.580</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>Group B</td>
<td>2.500</td>
<td>0.600</td>
<td>1.900</td>
<td>0.567</td>
<td>0.179</td>
<td>8.143</td>
<td>P&lt;0.001</td>
</tr>
</tbody>
</table>

Table 3: Relief percentage of individual symptoms of 20 patients of Gridhrasi (Sciatica)

| Symptoms                | Total Score | Relief Percentage |
|                        | Group A BT | AT | Group B BT | AT | Group A | Group B |
| Pain                   | 30 9       | 30 7 | 70.00% | 76.66% |
| Stiffness              | 26 8       | 27 6 | 69.23% | 77.77% |
| Pricking sensation     | 23 8       | 24 4 | 65.21% | 83.33% |
| Twitching              | 27 9       | 27 5 | 66.66% | 81.48% |
| Anorexia               | 14 5       | 12 2 | 64.28% | 83.33% |
| Drowsiness             | 16 5       | 21 5 | 68.75% | 76.19% |
| Heaviness              | 26 11      | 26 7 | 57.69% | 73.07% |
| Pain during coughing   | 25 10      | 25 7 | 60.00% | 72.00% |

Table 4: Overall effect of Parijata in 20 patients (both groups) of Gridhrasi (Sciatica)

<table>
<thead>
<tr>
<th>Result</th>
<th>Number of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group A</td>
<td>Group B</td>
</tr>
<tr>
<td>Marked Relief</td>
<td>08</td>
<td>10</td>
</tr>
<tr>
<td>Moderate Response</td>
<td>02</td>
<td>0</td>
</tr>
</tbody>
</table>
DISCUSSION

Sciatica or sciatic syndrome, a condition described in modern medicine resembles with Gridhrasi. In sciatica, there is pain in distribution of sciatic nerve which begins in the lower back and radiates through the posterior aspect of the thigh and calf and to the outer border of foot.

Gridhrasi is a Shula pradhan vata nanatmaja vyadhi affecting locomotors system and leaving the person disable from daily routine activity. In the pathogenesis of disease, important components are Vata and Kapha. The vitiated Vata gets lodged in Katipradesh. Treatment includes Snehana, Swedan, Basti, Siravyedha, Agnikarma and Shamaanaushadhi comprises Vedanasthapana, Rasayana and Nadibalya drugs. Drugs acting on Vatadosh, Asthi, Majja dhatu and Katisthana were selected.

Parijata (Nyctanthes arboristis) is Tikta Rasa, Laghu, Ruksha, Ushna Virya, Katu Vipak, Vata Kapha Shamak and Vedanasthapana in nature. It pacifies Vata due to its Ushna virya and Kapha due to its Tikta Rasa, Katu Vipaka, Ushna Virya, Laghu and Ruksha guna.[10]

Guggulu (Commiphora mukul) is having Pichhila, Laghu, Sukshma, Ruksha, Vishada, Tikta, Katu, Kashaya, Madhur Rasa, Katu Vipaka, Ushna Virya, Tridoshagna, Vedanasthapana, Nadibalya, Lekhana and Rasayana properties.[11] Combination of above drugs causes potent anti-inflammatory, pain relieving effect.[12]

Parijata kwath is bitter having unpleasant taste, difficult to prepare daily from fresh leaves, difficult to ensure quality control and inconvenient for administration. Parijata Guggulu tablet is convenient to take, easy dosage forms, easy to ensure quality control, convenience in preparation, storage, transportation and their self life should be increased.

Parijata Kwath i.e. Group A provided marked improvement in 80% of the patients and moderate in 20% of the patients. Whereas Parijata Guggulu i.e. Group B showed 100% marked improvement in the cases of Gridhrasi.

Parijata Guggulu i.e. Group B provided best relief in comparison to Parijata Kwath i.e. Group A. The result obtained might be attributed to the properties of Guggulu.

CONCLUSION
The following conclusions can be drawn from the observations of the present study:

1. *Parijata kwath* brought out a highly significant result in symptoms of *Gridhrasi* (Sciatica).

2. The clinical study shows highly significant result with subjective and objective parameters suggesting that *Parijata Guggulu* is effective in the management of *Gridhrasi*.

3. The drugs *Parijata Kwath and Parijata Guggulu* both are very effective, safe and good result yielding drugs for treatment of *Gridhrasi* (Sciatica) as they are – *Vedanasthapana, Vatakaphahara, Nadibalya, Rasayana*, easily available, cheaper and with no side and adverse effect.

4. Comparative study revealed that *Parijata Guggulu* was much more effective than *Parijata Kwath*. *Parijata Guggulu* showed better result as compared to fresh leaves decoction of *Parijata*.

Though this study was carried out in limited patients for a limited period, the mass study programming is needed for further huge database statistical study.

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