Qualitative and Quantitative Assessment of Vata Dosha in a Case of Gridhrasi (Sciatica) by Nadi Tarangini Device – A Case Study

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Authors’ contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: To evaluate the qualitative and quantitative assessment of vata dosha in a case of gridhrasi by nadi tarangini device.

Introduction: Ayurveda has an unique method of patient examination by ashtavidha pareeksha. i.e. nadi, mutra, mala, jivha, shabda, sparsha, drik and akriti. Amongst which examination of nadi becomes prominent examination which helps in better diagnosis of a disease/vyadhi. Gridhrasi is shoola pradhana vataja nanatmaja vatavyadhi, affecting the back involving lower limb which hampers patient’s daily routine activity. Line of Management of gridhrasi includes siravyadha, bastikarma and agnikarma. Siravyadha and agnikarma are considered as instant pain relieving

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methods. Raktamokshana by siravyadha is considered to be ardha chikitsa according to Sushruta. Siravyadha is specially indicated in case of gridhrasi. It is a simple OPD level procedure affordable/economical to all categories of patients and time saving.

As siravyadha gives instant relief and gridhrasi is vataja nanatmaja vyadhi, it is easy for the assessment and understanding of reduction in symptoms by nadi tarangini device. Hence, in this case study an attempt is made to assess the quantitative and qualitative analysis of vata dosha before and after the procedure of siravyadha.

Case Study: A patient, 45 years old; he showed the main clinical signs and symptoms of gridhrasi came to our OPD, had a history of 2 years, and had worsened in the past two days. He underwent a careful examination and we recorded a detailed medical history. With all purva, pradhana and paschat karma, siravyadha procedure was done and nadi tarangini readings were taken before, after and on 10th day of siravyadha procedure.

Place and Duration of the Study: Study was conducted in ‘Sri Jain AGM Ayurved Medical College & Hospital, Varur-Hubballi (Karnatak). Study duration was 10 days.

Results: Patient got marked relief in subjective criteria i.e. stambha, toda, ruk, toda, spandana, gaurava and also in objective parameters i.e. straight leg raise test, lassegue’s test and Oswestry low back pain score. It was seen that, there was visible difference in the analysis of nadi tarangini report.

Conclusion: It can be concluded that, siravyadha gives better relief in gridhrasi. And it was found that nadi tarangini can be used to assess the dosha dushti and many other parameters.

Keywords: Nadi tarangini; gridhrasi; sciatica; siravyadha.

1. INTRODUCTION

Ayurveda has an unique method of patient examination by ashtavidha pareeksha. i.e. nadi, mutra, mala, jiva, shabda, sparsha, drik and akruti [1]. Amongst which examination of nadi becomes prominent examination which helps in better diagnosis of a disease/ vyadhi.

It is said that, nadi should be examined in left hand in females and right hand in male patients. Nadi gives us specific information or knowledge about sadhya – asadhya roga, predominance of dosha or avastha.

While examination, the use of tip of index finger denotes vata nadi, middle finger denotes pitta nadi and ring finger denotes kapha nadi [1].

Nadi tarangini is a modern scientific instrument which records nadi / Pulse on basis of heart rate variability. This is Invented and Patented by Dr. Aniruddha Joshi. The nadi tarangini contains a diaphragm element with strain gauge, a transmitter and an amplifier, a digitizer for quantifying analogue signal. The system acquires 16-bit accuracy data with practically no external electronic or interfering noise. Prior systems for obtaining the nadi pulses have been few and far between, when compared to systems such as ECG. The pulse waveform is also shown to have the desirable variations with respect to age of patients, and the pressure applied at the sensing element [2].

The system of the present invention is intended to eliminate all the human errors in the nadi diagnosis performed manually by different practitioner and the diagnostics could be performed based on accurate and quantitative information.

Nadi tarangini is a tool to detect and analyze information about your inner health. Nadi tarangini is a perfect combination of hardware and artificial intelligence-based, intuitive software that makes the first move in the new age nadi pariksha system. Nadi tarangini is one of its kinds of invention which can accurately diagnose physical, mental and emotional imbalances in the body. It is based on the non-invasive science of traditional alternative medicine that helps reach the root cause of disease and not just the symptoms. Using three pressure sensors to record the pulse on wrist at vata, pitta and kapha locations, it mimics the way a vaidya takes nadi manually [3].

Among the many disorders described in the Samhita, gridhrasi (sciatica) is one of nanatmaja vyadhi. gridhrasi is a well known vata vikara with pain as a predominant symptom which starts from sphik (Hip), kati, prushta and radiates to uru (Thigh), janu (Knee), jangha (Calf) and padatala.
(Foot) predesh (Region) posterior side. Gridhrasi is said to be of 2 types namely, Vataja and vatakaphaja [4]. As per modern science, the pain of sciatica radiates from lumbar region to down the toes of affected side. Hence, it is co-related to sciatica [5]. Sushruta has described the treatment by raktamokshana in general for all vatavyadhi including gridhrasi.

The raktamokshana is the half treatment as for as the surgical diseases are concerned.

Raktamokshana by siravyadha is the choice of treatment for gridhrasi as per the Sushruta.

Here is an attempt made to assess Quantitative and Qualitative analysis of vata dosha before and after the procedure of siravyadha in cases of gridhrasi (Sciatica) as a case study.

2. CASE REPORT

A Case study was done to assess the qualitative and quantitative analysis of vata dosha in a 45 (forty five) Years male patient.

2.1 Chief Complaints

He was complaining of pain in lower back region which is radiating to right leg since 2 years. Got worsen since 2 days. He was complaining of twitching type of pain, difficulty in sitting, standing since 1 month. Stiffness (stambha), aruchi (Tastelessness) and gouravata (Heaviness) since 1 month.

Investigations

Blood Parameters:

1. Hb% - 13.7gm/dl
2. WBC Total Count - 6100/cmm
3. ESR - 14 mm/1st Hr
4. RBS - 132 mg/dl
5. BLEEDING TIME - 1min 45sec
6. CLOTTING TIME - 4min 15sec
7. HIV I & II - NEGATIVE
8. HBsAg - NEGATIVE
9. URINE
   a. ALBUMIN - NIL
   b. SUGAR - NIL
   c. MICROSCOPY - NAD
   d. BILE SALTS - ABSENT
   e. BILE PIGMENTS - ABSENT

2.2 History of Present Illness

A male patient aged 45 years presented with above said complaints one month. The patient consulted a physician in Hubli and was being treated with NSAIDs and other supplements for more than 15 days and patient felt little relief; but since last two days there is regression of symptoms severe than previous episode. Now the patient came to our hospital “Sri Jain AGM Ayurved Medical College and Hospital, Varur - Hubballi (Karnataka)” for further treatment.

Past History:

Not a k/c/o Diabetes Mellitus/ Hypertension/ any other systemic illness.

General Examination:

Blood Pressure – 136/81 mm/Hg.
Pulse – 78 bpm
Astadhana pariksha
Nadi= Manda
Mala= Once/ day, prakruta
Mutra= 4-5 times/day, prakruta
Jiwha= lipta
Shabda= prakruta
Sparsha= mild tenderness/ altered sensation in back region
Druk= Prakruta
Akruti= Madhyama

Local Examination: Straight leg raise test - positive at 50° right leg
Lasseuge’s test – positive
Gait: Antalgic gait present
Clinical Study:

Materials:
1. 18 No. Needle
2. Gloves
3. Kidney Tray
4. Torniquet
5. Sterile Gauze
6. Sterilium & Betadine
7. Roller Bandage
8. Haridra Churna
9. Nadi tarangini Device

Methodology:

With prior informed consent obtained by the patient, following procedure was conducted.

Purva karma:
1. Drava snigdha yavagu was administered On the day of Siravyadha, sthanika abhyanga was done below knee using pinda taila followed by nadi swedana.

Pradhana karma:
Patient was made to sit in a jaanu sama aasana (on a chair of his knee height), facing east in a warm room, devoid of breeze and dust. The area round right ankle joint (antara khandara gulpha sandhi) was slowly tapped with fingers to find the veins; a 18 no. needle was inserted into vein. Blood flowing out was collected in kidney tray till it stops by itself. There was total 120ml blood was collected in 13 minutes.

Paschat karma:
1. The needle was removed and proper bandaging was done using haridra churna and a guaze piece. Patient was advised to take laghu, drava, ushna ahara.
2. A reading with the help of nadi tarangini was taken immediately.

Assessment Criteria:

Objective criteria:

1. Sthambha (Stiffness)
   a. No Stiffness - 0
   b. Mild Stiffness - 1
   c. Moderate Stiffness - 2
   d. Severe Stiffness - 3

2. Ruk (Pain)
   a. No Pain - 0
   b. Painful, walks without limping - 1
   c. Painful, walks with limping but without support - 2
   d. Painful, walks only with support - 3
   e. Painful, Unable to walk - 4

3. Toda (Pricking Pain)
   a. No Pricking sensation - 0
   b. Mild Pricking sensation - 1
   c. Moderate Pricking sensation - 2
   d. Severe Pricking sensation - 3

4. Spandana (Twitchings)
   a. No Twitching - 0
   b. Mild Twitching - 1
   c. Moderate Twitching - 2
   d. Severe Twitching - 3

5. Gaurava (Heaviness)
   a. No Heaviness - 0
   b. Mild Heaviness - 1
   c. Moderate Heaviness - 2
   d. Severe Heaviness - 3
Objective criteria:

1. Straight Leg Raise Test
   a. Negative - 0
   b. 60 Degree and above - 1
   c. In between 30 degree to 60 degree - 2
   d. Less than 30 degree - 3

2. Lasegue’s Sign
   a. Absent - 0
   b. Present - 1

3. Oswestry Low Back Pain Disability Questionnaire [6]

Interpretation of scores:

| Percentage Range       | Description                                                                 |
|------------------------|-----------------------------------------------------------------------------|
| 0% to 20%: minimal disability | The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting, sitting and exercise. |
| 21%-40%: moderate disability | The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected and the patient can usually be managed by conservative means. |
| 41%-60%: severe disability | Pain remains the main problem in this group but activities of daily living are affected. These patients require a detailed investigation. |
| 61%-80%: crippled | Back pain impinges on all aspects of the patient's life. Positive intervention is required. |
| 81%-100%: | These patients are either bed-bound or exaggerating their symptoms. |

3. OBSERVATIONS AND RESULTS

The observations were tabulated as below:

There was significant reduction in subjective and objective parameters. There was 67% relief in *stambha*, 50% relief in *toda*, 67% relief in *spandana*, there was no relief in *ruk* and 50% relief in *gaurava* immediately after *siravyadha* procedure.

There was 100% relief in *stambha*, *toda*, *spandana*, *ruk* and *gaurava* on 10th day of *siravyadha* procedure.

In objective criteria, 100% relief was found in Oswestry low back pain score, 67% relief in SLR test, 100% relief in Lassegue’s test and there was reduction from 11033 to 1443 in pressure amplitude in *vata nadi* immediately after *siravyadha* procedure.

There was 100% relief in Oswestry low back pain score, SLR test, Lassegue’s test. 1792 was found as pressure amplitude in *vata nadi* on 10th day of *siravyadha* procedure.

| Sl. no. | Criteria  | BT | AT | Result in % | 10TH DAY | Result in % |
|---------|-----------|----|----|-------------|----------|-------------|
| 1       | Sthambha  | 3  | 1  | 67          | 0        | 100         |
| 2       | Toda      | 2  | 1  | 50          | 0        | 100         |
| 3       | Spandana  | 3  | 1  | 67          | 0        | 100         |
| 4       | Ruk       | 2  | 2  | 0           | 0        | 100         |
| 5       | Gaurava   | 2  | 1  | 50          | 0        | 100         |
| Sl. no. | Criteria                                | BT | AT | Result in % | 10TH DAY Result in % |
|--------|-----------------------------------------|----|----|-------------|----------------------|
| 1      | Oswestry low back pain score            | 3  | 0  | 100         | 0                    |
| 2      | SLR test                                | 3  | 1  | 67          | 0                    |
| 3      | Lassegue’s test                         | 1  | 0  | 100         | 0                    |
| 4      | Device interpretation (Quantitative observation) | 11033 | 1443 | 1792 | Fig. 1 | Fig. 2 | Fig. 3 |

With the help of *nadi tarangini*, changes in *vata dosha guna* were found and they are tabulated as below;

**Qualitative observation of Nadi for vata dosha (nadi guna)**

| Sl. no. | Criteria                      | BT Fig. 4 | AT Fig. 5 | 10TH day Fig. 6 |
|---------|-------------------------------|------------|-----------|-----------------|
| 1       | Laghu                         | 50%        | 70%       | 70%             |
|         | Guru                          | 50%        | 30%       | 30%             |
| 2       | Kathina                       | 40%        | 0%        | 30%             |
|         | Mrudu                         | 60%        | 100%      | 70%             |
| 3       | Sthula                        | 90%        | 10%       | 40%             |
|         | Sukshma                       | 10%        | 90%       | 60%             |
| 4       | Teekshna                      | 50%        | 40%       | 60%             |
|         | Manda                         | 50%        | 60%       | 40%             |
| 5       | Snigdha                       | 80%        | 60%       | 60%             |
|         | Ruksa                         | 20%        | 40%       | 40%             |

It was seen that, there was reduction in *vata dosha* values in *nadi tarangini* report even on 10th day of follow up. That means, *siravyadh* gives relief in cases of *gridhrasi* for a minimum period of 10 days.
Fig. 3.

- Laghu guna is light in feel, fast moving and which indicates no any doshavridhi (increased vitiated doshas) or no presence of aam (toxins). It is Vata and Pitta guna.
- Opposite to Laghu is Guru guna which is heavy, slow and dull which indicates doshavridhi (increased vitiated doshas) or presence of aam (toxins). It is property of kaptha dosha.
- Balanced Laghu guna is fast moving as compared to guru guna and preliminarily indicates proper actions of all motor and sensory organs, healthy digestion, assimilation, excretion, steady mind, steady dhie, steady dhiru, steady smriti.
- There is no previous visit available for the comparison.

Fig. 4.

- Laghu guna is light in feel, fast moving and which indicates no any doshavridhi (increased vitiated doshas) or no presence of aam (toxins). It is Vata and Pitta guna.
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- Balanced Laghu guna is fast moving as compared to guru guna and preliminarily indicates proper actions of all motor and sensory organs, healthy digestion, assimilation, excretion, steady mind, steady dhie, steady dhiru, steady smriti.
- There is no previous visit available for the comparison.

- Kathina guna is the hard touch of nadi. It is preliminary found in the vitation of rakta / mansa / asthi.
- Opposite to Kathina is Mrudu guna, which a soft in touch. i.e. When we press Mrudu nadi, it easily gets pressed. Mrudu guna is typically found in healthy and young person.
- Balanced kathina guna preliminarily indicates - ajjna, piles, dysentery, skin diseases, rakta dushri, constipation.
- There is no previous visit available for the comparison.

- Sthula nadi is thick in the feeling. This is because the nadi is filled with aam (toxins), rakta, mansa.
- Opposite to Sthula, Sukshma nadi is thin and not easily found. It is usually empty and with less bala. It is preliminarily found in vitation of asthi / dhatu.
- High Sthula guna preliminarily indicates - fever, hypertension, kidney disorders, hyperacidity, migrane, anger, pitavrut vata, rakapitta.
- There is no previous visit available for the comparison.

- Tikshna indicates sharpness, has piercing penetrating action. Typically, it is the guna of Pitta.
- Opposite to Tikshna is Manda guna, which decreases the fire. Typical manda nadi has low energy.
- Balanced Tikshna preliminarily indicates balanced pitta function of digestion and absorption. It also indicates proper functioning of pachak pitta and ranjaka pitta. Further : proper hunger, digestion, assimilation, sound sleep, regular and healthy menstruation, complexion, intellect.
- There is no previous visit available for the comparison.

- Snigdhna guna forms the oiliness, softness of dosha, dhatu and mala.
- Opposite to Snigdhna is Ruksha guna, which is dryness and property of Vata dosha.
- High Snigdhna is soft in touch and preliminary indicates kapha predominant disorders like: cold, cough, asthma, diabetes, obesity, kidney disorders, laziness, heaviness, ajjna, ascimandya.
- There is no previous visit available for the comparison.
Fig. 5.
4. DISCUSSION

Gridhrasi is included under the 80 types of nanatmaja vata vyadhi. Acharya Charaka has described siravyadha, basti karma and agnikarma in the management of gridhrasi. Acharya Sushruta has mentioned diseases; those are not relieved so quickly by snehana, lepanadi
therapeutic measures in these situations. Siravyadha is an emergency management to achieve better results.

The symptoms of samyak siravyadha are laghavam (Body and painful area) and vedanashanti (pain reduction). Siravyadha reduces pain of gridhrasi diseases immediately and also reduces other symptoms of gridhrasi like pricking sensation, stiffness, tingling sensation, heaviness and increases the SLR angle in a single sitting procedure. This procedure Siravyadha may help in this disease gridhrasi by correcting the dosha-vyana vata and dushya kandara which is upadhatu of rakta. Siravyadha expels out vitiated rakta and vyana vata and facilitates normalcy of vayu. The entire treatment as accepted easily by the patients. There were no side effects noticed in the patients. There is no need to be hospitalization of the patient in the procedure.

5. CONCLUSION

This case study of effect of “Qualitative and quantitative analysis of Vata Dosha by nadi tarangini in case of gridhrasi – A Case Study, it was found that Nadi tarangini device gives best reports based on Heart Rate Variability. It was found that there is reduction in values recorded by device after the siravyadha procedure when compared to before procedure reports. Siravyadha in the pain management of gridhrasi gave promising result. Siravyadha shows immediate pain relief in gridhrasi. It can be concluded that, Nadi tarangini Device can be used to assess various parameters in various diseases and it helps clinicians to decide on treatment modalities and also easy explanation to beneficiaries.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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