Clinical Research

The role of psychic factors in pathogenesis of essential hypertension and its management by Shirodhara and Sarpagandha Vati

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Abstract

This clinical trial was conducted to evaluate the efficacy of Shirodhara and that of Sarpagandha Vati in essential hypertension. A total 47 patients were selected for study, out of which 40 patients (20 in each group) completed the course of treatment. Study subjects were randomly allotted into two groups, with one group being treated with Shirodhara and the other with Sarpagandha Vati. Specialized Ayurvedic rating scales like Manasa Pariksha Bhava as well as the Hamilton Anxiety Rating Scale were adopted to assess the effect of therapy. The effects of treatment on the chief complaints and the associated complaints were also evaluated. The results in the Shirodhara group were better than that in the Sarpagandha group. Although both Sarpagandha Vati and Shirodhara helped in reducing systolic and diastolic pressures, the effect of Shirodhara was more marked.

Key words: Essential hypertension, Manasika Bhava, Psychic factors, Shirodhara, Sarpagandha Vati

Introduction

The world has entered the 21st century. A scientific and technological revolution has occurred over the last three decades. Due to the rapid modernization, people are leading more stressful lives. Many of them are not able to adapt to the stresses of day to day life and these people are prone to develop psychosomatic illnesses. There are several psychosomatic diseases, with essential hypertension (EHT) being an important one.

The modern world in which there have been so many amazing achievements is also a world full of stress. We find stress everywhere: within the family, in business organizations or enterprises, and in every social or economic activity. Right from the time of birth till the last breath drawn, an individual is exposed to various stressful situations. Thus, it is not surprising that interest in this issue has been increasing. The present era is exposed to various stressful situations. Thus, it is not surprising that interest in this issue has been increasing. The present era can be appropriately called the ‘era of anxiety and stress.’

There is a close connection between our body and our mind. If there is a psychological factor affecting a medical condition, it is important to treat the psychological problem as well as the medical problem. According to Ayurveda, Vata and Mana (mind) are mainly vitiated in the psychic diseases.

There is no direct reference to EHT in the classical texts of Ayurveda. Many scholars have studied the texts in great detail. These relevant references as indicated in those texts, hence have been classified by those scholars. They have come to the conclusion that Hridaya and processes of Rasa Vikshepa or Anudhavana by Vyana Vayu has become helpful to understand the disease. Though the exact nomenclature of the disease is to some extent controversial, the signs and symptoms of the disease can be understood in terms of Dosha, Dushya, Dhatu, etc. Looking at EHT from this perspective, we can assume that vitiated Vata Dosha is the main cause of the disease, as the Dhatus Gati is achieved by Vayu itself. Pitta and Kapha complement the effect of vitiated Vata and support the progress of the disease with Rasa, Rakta (whole blood) being the main mediator of vitiation. This suggests the involvement of Tridosha in disease.

In the Ayurveda system of medicine, Sarpagandha Vati has been described as Nidra Janak and a molecular nutrient for the brain, which can be used to relieve anxiety, stress, and mental fatigue. Shirodhara, on the other hand, is used to induce relaxation of the mind and the entire physiology. Thus, both help alleviate stress and anxiety. Shirodhara is suitable for patients suffering from Shirodagra, metabolic disorders, and the different kinds of mental diseases described in Ayurveda. The study was aimed to examine the effects of Shirodhara in patients suffering...
from Uccha Rakta Chapa (EHT). Some of our senior colleagues have previously studied the effects of Shirodhara. They used Chandana Bala Taila Jala Takra Dhara for Shirodhara. In 1983, Shukla\(^3\) conducted a study on the effect of Shirodhara by Takra in patients suffering from Abhivirudhha Rakta Chapa. We have chosen Shirodhara by Bala Taila, which is known to have a beneficial effect on all the sensory organs and to make the patient quiet and calm. The effect on the mind is such that the patient is said to become free from anxiety and stress. Bala Taila Shirodhara also modifies the energy condition of the mind.

Therefore, this project was undertaken to find a safe and effective Ayurvedic method of treatment for hypertension that would be free of any adverse effect and would maintain blood pressure within normal limits, i.e., below 140/90 mmHg as recommended by the World Health Organization (WHO).

Sarpagandha Vati is extensively used in Ayurveda for the management of hypertension.

### Aims and Objectives

The aims of study were to evaluate the role of Manasika Bhava in the pathogenesis of EHT and to assess the efficacy of Shirodhara and Sarpagandha Vati in its management.

### Materials and Methods

#### Patients

A total of 47 patients of EHT were randomly selected from outpatients and inpatients department of Panchkarma, Institute for Post Graduate Teaching and Research in Ayurveda, Jamnagar. They were divided into two groups, with 23 patients in one group and 24 patients in the other. Seven patients discontinued treatment and so only 40 patients completed the study (20 in each group).

#### Diagnostic criteria

EHT was diagnosed as per the definition of WHO, JNC IV, i.e., systolic blood pressure of 140 mmHg or above and/or diastolic blood pressure of 90 mmHg or above.\(^3\)

#### Criteria of exclusion

Patients suffering from isolated systemic hypertension, Congestive Heart Disease (CHD), coronary artery disease, coarctation of the aorta, liver failure, endocrine disease, cerebral complications, malignant hypertension.

#### Investigations

All selected patients underwent routine investigations, including:

- Blood investigations: Hemoglobin, total leukocyte count, differential leukocyte count, erythrocyte sedimentation rate, and packed cell volume, etc.
- Urine investigations: Routine and microscopic examination
- Stool investigations: Routine and microscopic examination
- Biochemical investigations.

#### Grouping

The selected patients were randomly allotted into two groups:

- **Group A – Shirodhara by Bala Taila** - 20 patients
- **Group B – Sarpagandha Vati** - 20 patients

### Drug, dose, and duration

**Group A:** Shirodhara by Bala Taila was administered for 30 min each day for 7 days; there were three such sessions, with 3-day intervals between sessions. Thus the total period of treatment was for 21 days.

**Group B:** Sarpagandha Vati (each 250 mg), two Vati twice daily for a total duration of 30 days.

#### Follow-up study

Patients were followed up for 1 month.

**Ahara and Vihara:** Patients under study were given advice about Ahara and Vihara as indicated in the management of Vata Vridhhi.

### Criteria of assessment

- Assessment of the effect of treatment was done on the basis of the relief obtained in the subjective and objective signs and symptoms of stress.
- A specific rating scale - Manasa Pariksha Bhava - and the Hamilton Depression Rating Scale were utilized to assess the effect of therapy. The total effect of therapy in each patient was evaluated after completion of treatment.
- Student’s paired ‘t’ test was used for the statistical analysis of the data.

### Overall effect of therapy

For measuring the overall effect of the therapy we graded patients as follows:

- **Complete remission:** 100% relief on signs and symptoms
- **Marked improvement:** 75%–99% relief on signs and symptoms
- **Moderate improvement:** 50%–74% improvement on signs and symptoms
- **Mild improvement:** 25%–49% improvement on signs and symptoms
- **Unchanged:** Less than 25% reduction on signs and symptoms

### Observations and Results

In this series of the 47 patients of EHT, 23.40% of the patients were in the age-group of 51–55 years; 51.06% were females; 48.94% were housewives; 97.87% were Hindus; 95.74% were married; and 36.17% had been educated up to primary school level. A large proportion (48.94%) was from the lower-middle socioeconomic class. The majority of patients (92.48%) were Jangala Desha (Jata Desha). All the patients, i.e. 100%, were being diseased (Vyadhita Desha) from Jangala type of Desha.

Among the patients, 53.32% had family history of hypertension, and 48% had had hypertension for less than 1 year. Most of the patients (80%) were vegetarians. Vata Pittaja Prakriti was seen in 48% of the patients. With regard to Manasika Prakriti, the majority (88%) were of Rajasa Prakriti.

Of the 47 patients, 51.06% had Vishamagni and 42.55% had Mandaagni; 53.19% had Krura Koshtha; 44.68% had Madhyuma;
40.43% had Alpa Kshudha; and 72.34% were of Madhyama Bala. Sedentary lifestyle was reported by 51.91%. History of disturbed sleep was observed in 55.32% of the patients. Most of the patients (72.34%) were addicted to tea.

Among the patients, 53.19% had constipation. Maximum number of patients 51.07% had Avara Satya. Of the study subjects, 59.58% belonged to Madhyama Sara, while 53.32% belonged to Madhyama Samhanan and 55.32% belonged to Madhyama Satmya. The majority of the patients of this series (65.96%) showed Madhyama Vrayama Shakti; 76.60% had Madhyama Ahara Shakti and 14.90% had Pravara Aharashakti. The majority (59.58%) of patients were of Madhyama Jaraana Shakti. The dominance of Rana in the diet of the patients of this series was Lavana (72.35%).

Ratri Jagarana was reported by 53.20% of the patients. Chinta was the Manasika Nidana reported by 76.60% patients, while 60% of the patients reported personal stress. Emotional stress was observed as an aggravating factor in 75% patients, followed by anxiety and 60% patients.

In the present study, most of the patients had Vata and Pitta Dushti. Maximum Srotodushthi was seen in Manovaha Srotas (80%), followed by Raktavaha (75%) and Rasavaha srotas (60%). Feeling of tension was reported by 97.50% patients, followed by Anidra in 95%, and Shirodhshoolo in 87.50%. Agramandhyo was seen in 74.47%, followed by Amlodgara in 72.35% of patients.

The effect of Shirodhara (group A) on chief complaints and Manusa bhava is shown in Tables 1 and 2 respectively. The improvement in systolic and diastolic blood pressure is documented in Table 3. The effect of Sarpagandha vati (group B) on these parameters is presented in Tables 4-6.

In group A, before administration of drug, the mean systolic blood pressure was 155.50 mmHg in the sitting position and 153.50 mmHg in the supine position; this decreased to 147.20 mmHg and 146.10 mmHg, respectively, after treatment. This difference was statistically highly significant (P<.001). Similarly, the mean diastolic blood pressure was 99.10 mmHg and 98.20 mmHg in the sitting and the supine positions, respectively, before treatment; this decreased to 94.20 mmHg and 93.60 mmHg, respectively, after treatment. This reduction was also statistically highly significant (P<.001).

In group B, before administration of drug, the mean systolic blood pressure was found to be 153.80 mmHg in the sitting position and 152.05 mmHg in the supine position; this was brought down to 148.50 mmHg and 145.90 mmHg, respectively, after treatment. This reduction was statistically highly significant (P<.001). The mean diastolic blood pressure before treatment was 98.40 mmHg and 97.50 mmHg in the sitting and supine positions, respectively; this was brought down to 95.40 mmHg and 94.45, respectively, after administration of the drug. This decrease was statistically highly significant (P<.001).

### Discussion

The pharmacological actions of Sarpagandha may be generalized or specific. It is described in the Samhitas and Nighantu as Kapta Vata Shamak, Nidra Karaka, and Uccharaktachapahara; thus, it alleviates the Vata, Pitta, and Kapha and act as Matsika Shamak and Nidrajanan. It is having Krimighna, Aampachaka and Hridavasvaadaka properties. It is used as an antihypertensive drug, it has antiarrhythmic activity, and is useful in Anidra. Rauwolfia serpentina is the first herbal antipsychotic drug. By its action on the vasomotor center it leads to generalized vasodilatation, with a lowering of blood pressure and by its depressant action on the cerebral centers, it soothes the general nervous system.

Acharya Charaka has defined Snehana as the treatment, which produces viscosity, softness, solubility, and kleda in the body (Cha.Su.22/10). Snehana is one among the Shadhvihopakramas. Pouring of a liquid on the forehead is known as Shirodhara. It can be done using different medicaments, e.g., Taila (oil), Takra (buttermilk), Kshira (milk), Kwatha (decocction), etc. When it

| Table 1: Effect of Shirodhara on chief complaints |
|-----------------------------------------------------------------------------------------|
| Symptoms         | Mean score | SD  | SE  | 't'  | P value   |
|------------------|------------|-----|-----|------|-----------|
| Akshiraga        | 1.15       | 0.25| 38.26| 0.91 | 0.20      | 4.41      | <.001      |
| Santapa          | 0.90       | 0.30| 66.67| 0.60 | 0.03      | 4.49      | <.001      |
| Krodhprachurata  | 1.45       | 0.4  | 92   | 0.56 | 0.03      | 7.96      | <.001      |
| Feeling of tension | 1.80      | 0.60| 66.67| 0.83 | 0.19      | 6.44      | <.001      |
| Arati            | 1.05       | 0.50| 52.38| 0.60 | 0.12      | 4.07      | <.001      |
| Klama            | 0.85       | 0.15| 82.35| 0.57 | 0.13      | 0.13      | <.05       |
| Shirah Shoola    | 1.05       | 0.40| 61.90| 0.67 | 0.15      | 4.33      | <.001      |
| Anidra           | 1.40       | 0.45| 67.86| 0.60 | 0.13      | 7.02      | <.001      |
| Bhrama           | 1.05       | 0.40| 61.90| 0.59 | 0.03      | 4.95      | <.001      |
| Tandra           | 0.50       | 0.10| 80.00| 0.50 | 0.11      | 3.56      | <.01       |
| Buddhi Sammoha   | 0.45       | 0.20| 55.56| 0.55 | 0.12      | 2.03      | <.05       |
| Tama Darshana    | 0.65       | 0.15| 76.92| 0.61 | 0.14      | 3.68      | <.01       |
| Svedadhikya      | 1.45       | 0.80| 44.83| 0.81 | 0.18      | 3.58      | <.01       |
| Hrid Spandana    | 0.65       | 0.30| 53.85| 0.49 | 0.11      | 3.20      | <.01       |
| Hruta At Vridhi   | 0.50       | 0.05| 48.00| 0.60 | 0.14      | 3.33      | <.001      |
| Bahumutrata      | 0.35       | 0.05| 85.71| 0.47 | 0.11      | 2.85      | <.01       |
Table 2: Effect of Shirodhara on Manasa Bhavas

| Manasa Bhavas | Mean score | %  | SD  | SE  | 't'  | P value |
|---------------|------------|----|-----|-----|------|---------|
|               | BT         | AT |     |     |      |         |
| Maana         | 1          | 0.45| 55  | 0.68| 0.15 | 3.58    | <.01   |
| Dvesha        | 0.95       | 0.4 | 55.13| 0.51| 0.11 | 4.69    | <.001  |
| Bhaya         | 0.45       | 0.15| 66.66| 0.57| 0.12 | 2.34    | <.05   |
| Vishada       | 0.9        | 0.35| 66.66| 0.50| 0.11 | 5.33    | <.001  |
| Dhairya       | 1          | 0.45| 55  | 0.51| 0.11 | 4.80    | <.001  |
| Shraddha      | 0.2        | 0.1 | 50.00| 0.30| 0.06 | 1.48    | <.10   |
| Raaga         | 1.15       | 0.3 | 69.56| 0.70| 0.15 | 5.10    | <.001  |
| Moha          | 0.35       | 0.15| 57.14| 0.40| 0.08 | 2.22    | <.05   |
| Upadhi        | 0.35       | 0.2 | 42.85| 0.35| 0.08 | 1.87    | <.10   |
| Harsha        | 0.25       | 0.1 | 60   | 0.35| 0.08 | 1.87    | <.10   |
| Veerya        | 0.25       | 0.15| 40   | 0.30| 0.06 | 1.5     | <.10   |
| Medha         | 0.75       | 0.3 | 60   | 0.68| 0.15 | 2.93    | <.01   |
| Krodha        | 1.15       | 0.4 | 65.21| 0.78| 0.17 | 4.26    | <.001  |
| Shoka         | 0.3        | 0.15| 50   | 0.36| 0.08 | 1.8     | <.05   |
| Chinta        | 0.95       | 0.25| 73.68| 0.47| 0.10 | 6.65    | <.01   |
| Priti         | 0.8        | 0.3 | 62.5 | 0.51| 0.11 | 4.35    | <.001  |
| Avasthana     | 0.6        | 0.25| 58.35| 0.4 | 0.1  | 3.1     | <.01   |
| Dhriti        | 0.9        | 0.35| 68.11| 0.68| 0.15 | 3.58    | <.01   |

Table 3: Effect of Shirodhara on systolic and diastolic blood pressures

| BP            | Mean score | %  | SD  | SE  | 't'  | P value |
|---------------|------------|----|-----|-----|------|---------|
|               | BT         | AT |     |     |      |         |
| Sitting       |            |    |     |     |      |         |
| Systolic      | 155.50     | 147.20| 5.34| 3.96| 0.89 | 9.37    | <.001  |
| Diastolic     | 99.10      | 94.20| 4.94| 3.21| 0.72 | 6.83    | <.001  |
| Supine        |            |    |     |     |      |         |
| Systolic      | 153.50     | 146.10| 4.82| 3.50| 0.78 | 9.45    | <.001  |
| Diastolic     | 98.20      | 93.60| 4.68| 3.25| 0.73 | 6.33    | <.001  |

Table 4: Effect of Sarpagandha Vati on the chief complaints

| Symptoms      | Mean score | %  | SD  | SE  | 't'  | P value |
|---------------|------------|----|-----|-----|------|---------|
|               | BT         | AT |     |     |      |         |
| Akshiraga     | 1.25       | 0.68| 48.00| 0.75| 0.17 | 3.47    | <.01   |
| Santapa       | 0.65       | 0.21| 69.23| 0.51| 0.12 | 3.84    | <.01   |
| Krodhaprachurata | 1.15     | 0.70| 64.29| 0.60| 0.14 | 3.33    | <.01   |
| Feeling of tension | 2.20   | 1.25| 43.18| 0.89| 0.20 | 4.79    | <.001  |
| Arati         | 1.00       | 0.60| 40.00| 0.50| 0.11 | 3.56    | <.01   |
| Klama         | 0.42       | 0.26| 35.63| 0.37| 0.08 | 0.08    | <.05   |
| Shirah Shoola | 1.30       | 0.95| 26.92| 0.49| 0.11 | 3.20    | <.01   |
| Anidra        | 1.80       | 0.65| 63.89| 0.67| 0.15 | 7.67    | <.001  |
| Bharma        | 0.80       | 0.30| 62.50| 0.61| 0.14 | 3.68    | <.01   |
| Tanda         | 0.55       | 0.10| 81.82| 0.51| 0.11 | 3.94    | <.001  |
| Buddha Sammohas | 0.25    | 0.05| 80.00| 0.41| 0.09 | 2.18    | <.02   |
| Tama Darshana | 0.90       | 0.35| 61.11| 0.51| 0.11 | 4.82    | <.001  |
| Swedadhikya   | 1.95       | 1.30| 33.33| 0.81| 0.18 | 5.38    | <.01   |
| Hrid Spandana | 0.70       | 0.30| 57.14| 0.50| 0.11 | 3.56    | <.01   |
| Hruta ati vridhi | 0.55    | 0.35| 48.00| 0.52| 0.12 | 1.71    | <.01   |
| Bahumutrata   | 0.20       | 0.05| 75.00| 0.37| 0.08 | 1.83    | <.01   |

is done with medicated ghee or Taila, it is called Tailadhara. This Tailadhara is included among the different varieties of Murtha Taila, which are Abhyanga, Seka, Pichu, and Basti. They are called 'Uttarottar Gunaprada.' Dhara can be used not only in psychic diseases but also in psychosomatic illnesses like IBS (irritable bowel syndrome), psoriasis, EHT, etc.
Table 5: Effect of *Sarpagandha Vati* on *Manasa Bhavas*

| Manasa Bhavas | Mean score | % | SD  | SE  | ‘t’ | P   |
|---------------|------------|---|-----|-----|-----|-----|
| Maana         | 0.8        | 50| 0.69| 0.22| 1.80| <.10|
| Dvesha        | 1.35       | 51.85| 0.67| 0.1 | 3.27| <.01|
| Bhaya         | 0.55       | 54.54| 0.67| 0.1 | 1.40| <.10|
| Vishada       | 0.8        | 55.55| 0.51| 0.17| 2.58| <.02|
| Dhairya       | 1.05       | 52.91| 0.52| 0.1 | 3.16| <.10|
| Shradha       | 1.15       | 48.30| 0.52| 0.17| 3.16| <.01|
| Raaga         | 0.7        | 63.49| 0.51| 0.17| 3.58| <.01|
| Moha          | 0.85       | 52.25| 0.51| 0.17| 3.58| <.01|
| Upadhi        | 0.6        | 50.21| 0.51| 0.17| 3.58| <.01|
| Harsha        | 1.15       | 52.17| 0.51| 0.17| 3.58| <.01|
| Veerya        | 1.15       | 52.17| 0.51| 0.17| 3.58| <.01|
| Medha         | 0.9        | 50.21| 0.51| 0.17| 3.58| <.01|
| Krodha        | 0.85       | 50.21| 0.51| 0.17| 3.58| <.01|
| Shoka         | 1.2        | 50.21| 0.51| 0.17| 3.58| <.01|
| Chinta        | 1.35       | 66.66| 0.51| 0.17| 3.58| <.01|
| Priti         | 0.6        | 50.21| 0.51| 0.17| 3.58| <.01|
| Avasthana     | 1.05       | 57.14| 0.51| 0.17| 3.58| <.01|
| Dhruti        | 1.1        | 54.54| 0.51| 0.17| 3.58| <.01|

Table 6: Effect of *Sarpagandha Vati* on systolic and diastolic blood pressures

| Symptoms      | Mean score | %  | SD  | SE  | ‘t’  | P   |
|---------------|------------|----|-----|-----|------|-----|
| Sitting       |            |    |     |     |      |     |
| Systolic      | 153.80     | 148.50| 3.45| 4.12| 5.76| <.001|
| Diastolic     | 98.40      | 95.40| 3.05| 2.00| 6.71| <.001|
| Supine        |            |    |     |     |      |     |
| Systolic      | 152.05     | 145.90| 4.04| 4.99| 5.51| <.001|
| Diastolic     | 97.30      | 94.45| 2.93| 2.46| 5.19| <.001|

Continuous pouring of *Bala Taila* on the forehead for a specific period has a tranquilizing effect and induces sleep. Modern science accepts that after local application as an ointment a drug may pass through the stratum corneum and into the blood vessels to produce desirable effects at a remote target organ. The continuous pouring of *Bala* oil with the patient in a relaxed and comfortable position has an additional effect, which can be compared to that which a baby feels when being cradled by the mother. This has a sedative and soothing effect for the brain and produces sleep.

*Bala Taila* poured on the forehead may be absorbed and produce a tranquilizing effect by reaching the brain cortex. It might be possible that the medicaments in the oil have neurotransmitter-like actions and when these reach the brain cortex they correct deficiencies of certain neurotransmitters. In *Bala Taila*, *Tila Taila* is anti-Vata, and its Snigdhatva properties help TarpaKa Kapha in
properly facilitating the connection of the Indriyas and Vishaya, which may have been deranged by aggravated Vata. The active ingredients of Bala oil penetrate into the circulation via the forehead and produces a Vatahara effect. However, Bala Taila produces lubrication and nutrition. Hence, Shirodhara facilitates for better working by its Medhya effect. However, Atibala has Medhya effect by which it re-establishes Dhee, Dhriti, and Smriti, thus preventing Prajaaparadha.

The overall effect of therapy in group A and in group B on chief complaints and manasa bhava are shown in Figures 1 and 2.

**Conclusion**

Manasa Bhavas like Chinta, Krodha, Bhaya, etc., play an important role in the pathogenesis, progression, and prognosis of diseases, and also have effects on the response to treatment – Uccharaktachapa. Hence, the type of drug/therapy that should be recommended is one that can pacify these disturbed Manasika Bhavas, calming the mind and relaxing the entire physiology. This can be accomplished by combining a mental health-promoting therapy like Shirodhara along with Sarpagandha Vati to relieve anxiety, stress, etc. In this study, Sarpagandha Vati helped in reducing both systolic and diastolic pressure. Shirodhara reduced both systolic and diastolic pressure in a more pronounced way.

On the basis of this study, it appears that patients with EHT can be managed better if a stress-relieving procedure like Shirodhara is given along with Ayurvedic antihypertensive drugs like Sarpagandha Vati. During the follow-up study we observed that though a minimal rise in blood pressure took place over the 1-month period, both the groups showed good control of both systolic and diastolic blood pressures. This study was done on a small sample. Studies with larger samples and long-term follow-up should be done to confirm our findings.

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