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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 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 *Dhatu Gati* (*Rasa Gati*) or *Vikshepa* is achieved by *Vayu* itself.[1] *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 *Shiroroga*, metabolic disorders, and the different kinds of mental diseases described in Ayurveda. The study was aimed to examine the effects of *Shriodhara* in patients suffering

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from *Uccha Raktachap* (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[2] conducted a study on the effect of *Shirodhara* by *Takra* in patients suffering from *Abhiviruddha Raktachapa*. 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 *Vaata Vriddhi*.

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 from *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 *Madhyama*;

40.43% had *Alpa Kshudha*; and 72.34% were of *Madhyama Bala*. Sedentary lifestyle was reported by 31.91%. 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 Satva*. 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 Vyayama Shakti*; 76.60% had *Madhyama Ahara Shakti* and 14.90% had *Pravara Aharashakti*. The majority (59.58%) of patients were of *Madhyama Jarana Shakti*. The dominance of *Rasa* 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 anger in 60% patients.

In the present study, most of the patients had *Vata* and *Pitta Dushti*. Maximum *Srotodushti* 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 *Shirahshoola* in 87.50%. *Agnimandhya* was seen in 74.47%, followed by *Amlodgara* in 72.35% of patients.

The effect of *Shirodhara* (group A) on chief complaints and *Manasa 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 97.30 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 *Kapha Vata Shamak*, *Nidra Karaka*, and *Uccharaktachapahara*; thus, it alleviates the *Vata*, *Pitta*, and *Kapha* and act as *Mastiska Shamak* and *Nidrajanan*. It is having *Krimighna*, *Aampachaka* and *Hridayavasaadaka* 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 *Shadvidhopakramas*. 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* (decoction), etc. When it

Table 1: Effect of *Shirodhara* on chief complaints

Symptoms	Mean score		%	SD	SE	*'t'*	*P* value
	BT	AT					
Akshiraga	1.15	0.25	78.26	0.91	0.20	4.41	<.001
Santapa	0.90	0.30	66.67	0.60	0.13	4.49	<.001
Krodhaprachurata	1.45	0.4	92	0.56	0.13	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	0.14	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	0.14	7.02	<.001
Bhrama	1.05	0.40	61.90	0.59	0.13	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
Swedadhikya	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 Ati Vriddhi	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
Dhruti	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	BT	AT	%	SD	SE	*'t'*	*P* value
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
Bhrama	0.80	0.30	62.50	0.61	0.14	3.68	<.01
Tandra	0.55	0.10	81.82	0.51	0.11	3.94	<.001
Buddhi Sammoha	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	3.58	<.01
Hrid Spandana	0.70	0.30	57.14	0.50	0.11	3.56	<.01
Hruta ati vriddhi	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 *Murdha 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
	BT	AT					
Maana	0.8	0.3	50	0.69	0.22	1.80	<.10
Dvesha	1.35	0.5	51.85	0.67	0.1	3.27	<.01
Bhaya	0.55	0.15	54.54	0.67	0.1	1.40	<.10
Vishada	0.8	0.1	55.55	0.51	0.17	2.58	<.02
Dhairya	1.05	0.4	52.91	0.52	0.1	3.16	<.01
Shraddha	1.15	0.35	48.30	0.52	0.17	3.16	<.01
Raaga	0.7	0.1	63.49	0.51	0.17	3.58	<.01
Moha	0.85	0.35	52.25	0.51	0.17	3.58	<.01
Upadhi	0.6	0.3	37.02	0.42	0.14	1.58	<.10
Harsha	1.15	0.75	52.17	0.51	0.16	3.67	<.01
Veerya	1.15	0.5	52.17	0.69	0.22	2.71	<.02
Medha	0.9	0.5	40.50	0.50	0.10	4.18	<.001
Krodha	0.85	0.35	58.82	0.51	0.11	4.35	<.001
Shoka	1.2	0.7	50	0.51	0.16	3.67	<.01
Chinta	1.35	0.4	66.66	0.31	0.1	9	<.001
Priti	0.6	0.3	50	0.48	0.15	1.96	<.10
Avasthana	1.05	0.35	57.14	0.51	0.16	3.67	<.01
Dhruti	1.1	0.4	54.54	0.51	0.16	3.67	<.01

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

Symptoms	Mean score		%	SD	SE	't'	P
	BT	AT					
Sitting							
Systolic	153.80	148.50	3.45	4.12	0.92	5.76	<.001
Diastolic	98.40	95.40	3.05	2.00	0.45	6.71	<.001
Supine							
Systolic	152.05	145.90	4.04	4.99	1.12	5.51	<.001
Diastolic	97.30	94.45	2.93	2.46	0.55	5.19	<.001

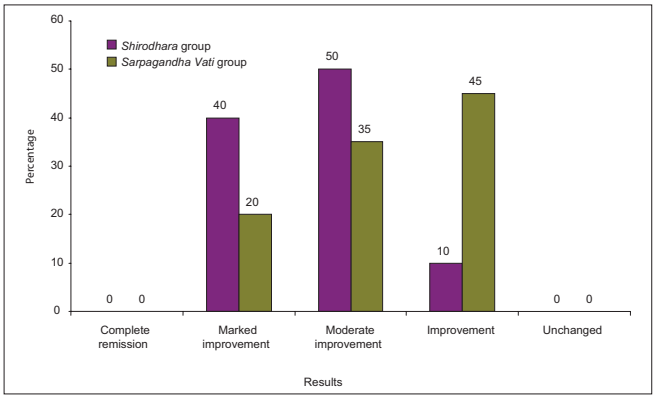

Figure 1: Overall effect on chief complaints

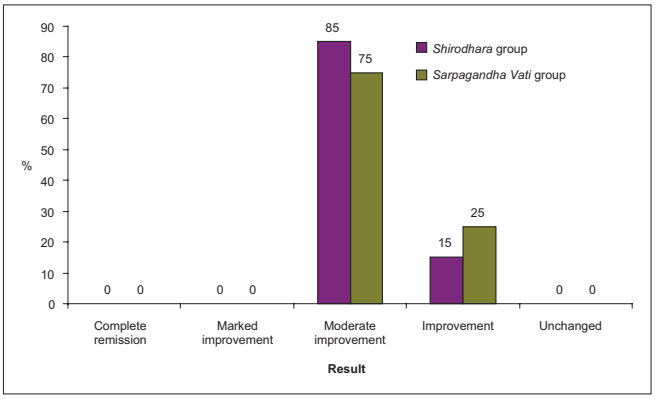

Figure 2: Overall effect on *Manasa Bhava*

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 *Prajnaparadha*.

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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