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Evaluation of Medhya Rasayana and Shirodhara in the Management of Essential Hypertension

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Abstract

A sedentary lifestyle combined with an increase in the consumption of fatty food and alcohol is blamed as important causes of many life style disorders like obesity, diabetes, hypertension etc. before their time. One of the commonest effects of the current life style on the cardiac system is Hypertension. The blood vessel shows the inherent muscle tone that can be altered moment to moment by both Central Nervous System (CNS) and adrenal hormones. Psychological states like fear, anger, and anxiety constrict the blood vessels resulting in increasing blood pressure. The present study is an attempt to evaluate the therapeutic efficacy of *Medhya Rasayana* and *Kshiradhara* in the management of essential hypertension. The results were assessed by decrease in both systolic and diastolic blood pressure, improvement in clinical parameters related to essential hypertension and relief in mental health observed on the basis of Brief Psychiatry Rating Scale and *Manasikabhava pariksha*. The result showed that both the therapies have highly significant reduction in both systolic and diastolic blood pressure but *Kshiradhara* reduced it in more pronounced way. *Medhya Rasayana* started decreasing blood pressure from first week of the therapy and in gradual manner whereas *Kshiradhara* started decreasing blood pressure form the very first day of the therapy but in stepladder manner. Both therapies were equally effective as marked improvement was reported in 20% and moderate improvement in 80% of the patients of Essential Hypertension.

Keywords: Essential Hypertension; *Kshiradhara; Manasika Bhavas; Medhya Rasayana;* Stress.

Introduction

Modern medical science through improved sanitation, vaccination, antibiotics and medical attention has eliminated the threat of death from most of the infectious diseases. Too many people are dying relatively young from heart disease, cancer and other lifestyle diseases in modern times. In India the situation is quite alarming. The disease profile is changing rapidly. The World Health Organization (WHO) has identified India as one of the nations that is going to have most of the lifestyle disorders in the near future.[1] Hence, the population at risk shifts from 40+ to may be 30+ or even younger. A study conducted jointly by the All India Institute of Medical Sciences and Max Hospital shows the incidence of hypertension is increasing at an alarming rate, especially in the young, urban population.[1] A sedentary lifestyle combined with an increase in the consumption of fatty food and alcohol is blamed as important causes of obesity, diabetes, hypertension etc.[2] Hypertension is known as silent killer of mankind because most sufferers (85%) are asymptomatic and as per available reports, in more than 95% cases of hypertension under lying cause not found. Such patients are said to have Essential hypertension. Hypertension accounts for 6% of adult deaths worldwide and is found in all human populations, except for a minority of individuals living in isolated societies.[2] In developed countries, the prevalence of hypertension rises with age and affects 25-30% of the entire adult population, reaching up to 60-70% of individuals beyond the seventh decade.[3] Elevations of systemic blood pressure play an important role in the

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pathogenesis of stroke, heart disease, and end-stage renal disease.[4] Evidence increasingly suggests that control of hypertension can prevent stroke, retard the development and progression of renal failure, reduce left ventricular hypertrophy and possibly modify the consequences of coronary artery disease.[4] It is most prevalent cause for cerebrovascular and cardiovascular disorders, causing high rate of mortality and morbidity. So, hypertension is gaining more and more attention globally.

As man has entered in 21st century with modernization in each and every walk of life, he has also paid for it by living in several stressful psychological conditions. This stressful life cycle affects one's mind and homeostasis of body by several psychosomatic mechanisms and causes many psychosomatic disorders.[5] Liability of blood pressure, with its two components of *reactivity* and *variability,* may provide the mechanisms by which stress induces hypertension.[6] This hypothesis, however, fails to account for the fact that all of us are similarly subjected to these stimulations yet only 15% to 20% of our species develop hypertension. To deal with this problem, two explanations can be offered. One of these is *quantitative,* namely the frequency and the intensity of the stimuli are the determining factors. Those individuals who are exposed to prolonged and repeated stress in their emotional life, their occupational endeavors, and their interpersonal relationships are most likely to develop hypertensive disease. The second sequence is *qualitative,* namely the sensitivity/vulnerability of the pressor mechanisms of the particular individual determines the outcome. Thus, persons with more pronounced reactions due to genetic configuration, acquired cardiovascular and renal risk factors, gender, race, and diet, are most prone to consequent hypertension.

Now a days, relaxation and stress management are considered as ultimate answer for psychosomatic disorders like Hypertension. In Ayurvedic classics, *Medhya Rasayana* has been described as molecular nutrient for brain to relieve mental fatigue, anxiety, stress etc. by virtue of promoting the functions of *Buddhi* (intellect) and *Manas* (psyche) by correcting the disturbance of *Rajas* and *Tamas*. *Shirodhara* - one of the allied *panchakarma* procedures can be applied to rejuvenate body and mind by alleviating *Chintadi Manasika Bhavas* (negative mental attitude) – the cause for many psychosomatic disorders. *Shirodhara* calms the mind through relaxation and alleviates stress, strain, anxiety etc. The objective of the present study is to evaluate the therapeutic efficacy of Medhya Rasayana and Kshiradhara in the management of Essential Hypertension and to see how far these treatment modalities are capable in taking care of disturbed psychological factors.

Material and Methods

Twenty patients of Essential Hypertension diagnosed as per Joint National Committee (JNC) (Table 1), whose blood pressure (BP) was found high and those who were already taking allopathic medicine, however their BP was not well under control were selected from OPD and IPD of Kayachikitsa Department of IPGT and RA Hosptital, Gujarat Ayurved University, Jamnagar and randomly divided in two groups. These patients were subjected for further detailed clinical examination and investigations. A specific proforma was prepared incorporating all signs and symptoms of disease, *Manasika bhava pariksha* assessment of psychological factors) supported by Brief Psychiatry Rating Scale. These features

Table 1: Diagnostic Criteria based on Joint National Committee (JNC), WHO / International society of Hypertension

	Systolic BP (mm Hg)	Diastolic BP (mm Hg)
Normal	<140	<90
Stage I (Mild)	140-159	90-99
Stage II (Moderate)	160-179	100-109
Stage III (Severe)	180-209	110-119
Stage IV (Very severe)	³210	³120

were assigned score depending upon their severity to assess the effect of therapy, objectively before and after the treatment. Patients suffering from Arteriosclerosis, Aortic regurgitation, Arterio-venous fistula, Renal and Adrenal pathologies, Prostate enlargement, Toxemia of pregnancy, Neurogenic and iatrogenic conditions were excluded.

Grouping

Group A – *Medhya Rasayana* Group

Drug: *Medhya Rasayana Vati* [*Brahmi* (Bacopa monnieri (Linn.) Wettst), *Shankhapushpi* (Convolvulous pluricaulis Chois.), *Ashwagandha* (Withania somnifera Dunal), *Jatamansi* (Nardostachys Jatamansi DC.), *Parasika Yavani* (Hyoscyamus niger Linn.)]

Dose: 9 gm / day in three divided doses

Duration: 2 months

Group B: *Kshiradhara* Group

Drug: Milk (Amul milk pouch from local market)

Dose: 2 liter / day

Duration: 45 minutes daily for 21 days

Criteria for overall effect of therapy

The overall effect was decided on the basis of decrease in blood pressure, relief in clinical symptoms including Manasika Bhavas (33%), and improvement in Brief Psychiatry Rating Scale (33%). The obtained results were analyzed statistically and accordingly grades were given as: complete remission à 100% relief; marked improvement à 75% and above but <100%, moderate improvement à 50 % to < 75 % relief, mild improvement à 25 % to <

Table 2: Effect of therapy on blood pressure

Blood Pressure (mmHg)	*Medhya Rasayana* (n=10)					*Kshiradhara* (n=10)				
	Mean ± S.E.		% Relief	t	p	Mean ± S.E.		% Relief	t	p
	B.T.	A.T.				B.T.	A.T.			
Systolic B.P.	160.20± 4.27	133.60± 4.27	16.60	6.23	<0.001	173.80± 2.88	132.40± 2.88	23.82	14.40	<0.001
Diastolic B.P.	98.00± 1.45	86.40± 1.45	11.84	7.98	<0.001	104.20± 1.45	89.80± 1.45	13.82	9.90	<0.001

B.T. – Before Treatment, A.T. – After Treatment

Table 3: Effect of therapy on decrease in blood pressure

Medhya Rasayana (n=10)			*Kshiradhara* (n=10)				
Week	Mean Systolic BP (mmHg)	Mean Diastolic BP (mmHg)	Day of Shiarodhara	Mean Systolic B.P. (mmHg)		Mean Diastolic B.P. (mmHg)	
				B.T.	A.T.	B.T.	A.T.
1st	160.20	98	1st	173.80	159.60	104.20	98.80
2nd	147.20	94	3rd	165.40	155.80	99.40	96
3rd	136.20	89	6th	156.80	147.80	96.40	94
4th	131.80	87.20	9th	150.40	141.20	94.80	92.20
6th	120.90	85.60	12th	145.40	138.40	93.40	91.20
8th	133.60	86.40	15th	142.60	135.60	92.20	90.40
			18th	138	132.20	91.80	90
			21st	136.60	130.20	91.60	89.20

Table 4: Effect of therapy on Cardinal Symptoms

Symptom	*Medhya Rasayana* (n=10)					*Kshiradhara* (n=10)				
	Mean score ± S.E.		% Relief	T	p	Mean score ± S.E.		% Relief	t	p
	B.T.	A.T.				B.T.	A.T.			
Shirahshoola	3.80± 0.16	1.20± 0.16	68.42	15.4	<0.001	3.60± 0.22	1.20± 0.22	66.67	10.85	<0.001
Anidra	2.89± 0.20	1± 0.20	65.40	9.43	<0.001	4± 0.28	1.10± 0.28	72.50	10.47	<0.001
Klama	3± 0.15	1± 0.15	66.67	13.42	<0.001	2.90± 0.1	1± 0.1	65.52	19	<0.001
Bhrama	3.11± 0.11	1.22± 0.11	60.77	17	<0.001	3.38± 0.18	1± 0.18	70.41	12.98	<0.001
Swedadhikya	3.11± 0.11	1± 0.11	67.85	19	<0.001	2.50± 0.18	0.87± 0.18	65.20	8.88	<0.001
Akshiraga	2.57± 0.20	1± 0.20	61.09	7.78	<0.001	2.67± 1.17	1.00± 1.17	62.55	10	<0.001
Feeling of tension	3.80± 0.15	1.10± 0.15	71.05	17.68	<0.001	4.70± 0.22	1.20± 0.22	74.47	15.65	<0.001
Palpitation	3.50± 0.21	1.20± 0.21	65.71	10.78	<0.001	3.10± 0.20	1.30± 0.20	58.06	9	<0.001
Tachycardia	1.86± 0.14	1.00± 0.14	46.24	6	<0.001	1.70± 0.15	1.00± 0.15	41.18	4.38	<0.01

Table 5: Effect of therapy on Manasika bhava

Manasika bhava	*Medhya Rasayana* (n=10)					*Kshiradhara* (n=10)				
	Mean score ± S.E.		% Relief	t	p	Mean score ± S.E.		% Relief	t	p
	B.T.	A.T.				B.T.	A.T.			
Krodha	3.10± 0.18	1.20± 0.18	61.29	10.58	<0.001	3.00± 0.15	1.30± 0.15	56.67	11.13	<0.001
Shoka	3.20± 0.21	1.20± 0.21	62.50	9.49	<0.001	3.30± 0.18	1.20± 0.18	63.34	11.70	<0.001
Bhaya	2.78± 0.32	1± 0.32	64.03	5.39	<0.001	3.20± 0.26	1.20± 0.26	62.50	7.75	<0.001
Chinta	3.60± 0.16	1.20± 0.16	66.67	14.7	<0.001	4.20± 0.23	1.30± 0.23	69.08	12.43	<0.001
Dhairya	1.50± 0.22	2.10± 0.22	28.57	2.71	<0.05	1.10± 0.25	2.30± 0.25	52.57	4.81	<0.001

Table 6: Effect of therapy on Brief Psychiatry Rating Scale (BPRS)

BPRS	Medhya Rasayana (n=10)					Kshiradhara (n=10)				
	Mean score ± S.E.		% Relief	T	p	Mean score ± S.E.		% Relief	t	p
	B.T.	A.T.				B.T.	A.T.			
	55.60± 3.94	18.40± 3.94	66.91	9.44	<0.001	83.60± 3.17	33.30± 3.17	60.22	15.88	<0.001

Table 7: Effect of therapy on Sroto dushti

Sroto-dushti	*Medhya Rasayana* (n=10)					*Kshiradhara* (n=10)				
	Mean score ± S.E.		% Relief	t	p	Mean score ± S.E.		% Relief	t	p
	B.T.	A.T.				B.T.	A.T.			
Manovaha	3.40± 0.15	1.10± 0.15	68	15.1	<0.001	4.10± 0.25	1.30± 0.25	68	11.2	<0.001
Rasavaha	2.90± 0.13	1.10± 0.13	62	13.5	<0.001	2.80± 0.20	1.00± 0.20	64	9	<0.001
Raktavaha	2.40± 0.16	1.00± 0.16	58	8.57	<0.001	2.20± 0.13	1.00± 0.13	55	9	<0.001

Table 8: Effect of therapy on Bio-chemical Investigation

Investigation (mg%)	*Medhya Rasayana* (n=10)					*Kshiradhara* (n=10)				
	Mean ± S.E.		% Relief	t	p	Mean ± S.E.		% Relief	t	p
	B.T.	A.T.				B.T.	A.T.			
FBS	131± 7.76	112.4± 7.76	14.20	2.40	<0.05	111.56± 6.89	98.78± 6.89	13.25	2.15	>0.05
S.Cholesterol	192.1± 3.21	180.7± 3.21	5.93	3.55	<0.01	181.89± 5.92	161.4± 5.92	11.24	3.45	<0.01
S.Triglyceride	103.4± 3.94	89± 3.94	13.93	3.65	<0.01	153± 10.88	128.7± 10.88	15.90	2.24	>0.05

Table 9: Total effect of therapy

Improvement	Medhya Rasayana (n=10)		Kshiradhara (n=10)	
	No. of patients	%	No. of patients	%
Complete remission	0	0	0	0
Markedly improved	2	20	2	20
Moderately improved	8	80	8	80

50 % relief, unchanged à < 25 % or no relief.

Observation and Results

Discussion and Conclusion

Medhya Rasayana helped in reducing both systolic and diastolic pressure, while *Kshiradhara* reduced both systolic and diastolic pressure in more pronounced way. It is obvious from the Table no. 3 that in the *Medhya Rasayana* group, the decrease in systolic and diastolic pressure started from the first week and it was of gradual type whereas in *Kshiradhara* group, the decrease in both systolic and diastolic pressure started form the very first day but it was of stepladder type. *Kshiradhara* has immediate stress relieving effect due to which it calm down mind to help in reducing blood pressure. Both the therapies had shown excellent results, though *Medhya Rasayana* exhibited little better effect (66.91%). But while analyzing the total effect of therapy both the therapies have shown equal effect i.e., marked improvement in 20% and moderate improvement in 80% of the patients.[7] *Disturbed Manasika bhava* causes the vitiation of *Raja* and *Tama*. *Raja* and *Tama* are provoked due to their *Chala* and *Guru* properties respectively and cause the vitiation of *Sharirika doshas*. *Manasika bhava* like *kama* (lust), *bhaya* (fear), *shoka* (grief) etc. cause provocation of *vata*. The *Pitta* is provoked by *krodha* (anger).[8] These *Manasika bhava* particularly lead to vitiation of *prana vayu* which is controller of all other types of vata physiologically so *prakopa* of *prana vayu* leads to derangement of *vyana* and *apana*. *Vyana vayu* performs *rasa- rakta vikshepana karma* normally, but when it is vitiated, it may cause *dhamani sankocha* due to its *ruksha, sheeta* and *khara gunas* resulting in the reduction of *srotovivar* (lumen of the channels). Due to this narrowed pathway, obstruction occurs in *rasa-rakta vikshepana karma*, causing forceful function of *vyana vayu* with increase in *chala guna*, which makes the pressure to rise at the wall of *dhamani* (arteries). *Apana vayu* by its *pratiloma gati* causes *sanga* of *mala* after vitiated by intensified *prana vayu*. Moreover, as *hridaya* is the location of *sadhaka pitta* and *avalambaka kapha*, they are also affected on the basis of *ashrayashhrayi bhava* and due to excessive *upalepana karma* of *avalambaka kapha* in *vahinis*, they might be causing obstructed *rasa-rakta vikshepana* and thus making rise in blood pressure.

Mehdya Rasayana due to its *medhya, tridosha shamaka, nidrajanana, rasayana, balya* properties may counteract all *samprapti ghataka* and corrects *rasa-rakta vikshepana karma* and reduce the *chala guna* of *vyana vayu* and decreases the blood pressure. Among the ingredients of *Medhya Rasayana*, *Brahmi* (*Bacopa monnieri* Linn. Wettst) possesses cardio tonic and diuretic effect. It is also known to reduce anxiety and blood pressure.[9] It is reported that the expressed juice of *shankhapushpi* (Convolvulous pluricaulis Chois.) caused a

persistent fall in the arterial blood pressure of anaesthetized dogs (Chaturvedi *et al* 1996).[10] In larger doses it produced transient inhibitory effect on both force and contraction of the heart of the rat. Moreover, different types of stress including psychological, chemical and traumatic produced in rats and rabbits and treated with active principle of *shankhapushpi*, showed marked reduction in I-131 uptake, PBI and acetylcholine etc. suggesting its mode of action through neurohumours particularly acetylcholine.[11] Further, psychotropic activity of *shankhapushpi* was reported in rats by causing reduction in the level of acetylcholine and catecholamine in the whole brain tissue.[12] Psychotropic effect of *Ashwagandha* is established on experimental models.[13] It includes a depletion of acetylcholine and catecholamine in the brain of rats and has shown significant barbiturate hypnosis potentiating effect. Anti stress activity of W. somnifera is extensively studied which may be due to a state of non – specifically increased resistance (S.N.I.R.) during stress.[14] The essential oil obtained from the rhizomes of N. Jatamansi exerted prolonged and pronounced hypotensive effect in dogs.[15]

Continuous pouring of milk over the forehead is an effective treatment for reducing stress and expanding one's consciousness. The mind, body and spirit are intimately connected, and *kshiradhara* by calming and relaxing the stressed mind, re-establishes the functional integrity between *prana, vyana vayu* and *sadhaka pitta* through its mechanical effect. *Sahasrar Chakra* is the seat of pituitary and hypothalamus. Pituitary is the master gland of the endocrine system, which responds to stress, anxiety via hypothalamus. Moreover, *kshiradhara* stimulates the pituitary gland by its penetrating effect which helps to achieve the hormonal balance. *Shirodhara* causes the patients to feel relaxation both physically and mentally, decreasing the brain cortisone and adrenaline level, synchronizes the brain wave (alpha waves), strengthens the mind and spirit which continues even after the relaxation. Kazuo Uebaba *et al* 2008 concluded that *Shirodhara* has anxiolytic and ASC (Altered State of Consciousness) - inducing effects and it promotes a decrease of noradrenaline and exhibits a sympatholytic effect, resulting in the activation of peripheral foot skin circulation and immunopotentiation.[16] *Shirodhara* relaxes the nervous system, improves function of brain, enhances metabolic system, and induces alpha wave of the brain. During the process, nervous system is deeply calmed down and brain waves slow down. The protective shell of the subconscious is broken through and stress within is gradually released and replaced with peace, calm and consciousness. *Shirodhara* allows better transport of *prana,* oxygen and other nutrients to the brain. Moreover, when brain is in a calm slow mode, the cerebral circulation is greatly enhanced and as a result the brain functions better, the mood stabilizes and there is overall improved stress handling ability. According to modern scientific view local application like ointment pass through the stratum cornium into the blood vessel and reach the appropriate organ. Thus the milk poured on forehead is absorbed and easily reaches the brain cortex. In Essential hypertension, *vata dosha* is mainly affected and the *kshira* (milk) is having *sheeta, snigdha* and *vata-pitta-rakta shamaka* properties.[17] Recent advances in transdermal packs for selective drug absorption through skin also supports efficacy of *shirodhara* on scientific lines. Thus, Essential hypertension can be managed better by *Medhya Rasayana* and unique *Panchakarma* based therapy called *Shirodhara* by counteracting the disturbed *manasika bhava.*

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