

Clinical Evaluation of 'Chandramaradi Yoga' in Patients of Essential Hypertension

AJAY KUMAR * TINA SINGHAL ** B. N. UPADHYAYA ***

Institute of Medical Sciences, Banaras Hindu University, Varanasi.

ABSTRACT : High blood pressure, termed "hypertension" is a condition that afflicts almost one billion people worldwide and is a leading cause of morbidity and mortality. It has been called the "silent killer" for this reason. The majority of blood pressure readings are close to the mean value with fewer reading towards the limit of the range. As a result it is not possible to distinguish two separate groups of people as "hypertensive" and "normotensive". Therefore the threshold that defines hypertension is rather arbitrary. It would seem more appropriate to state that hypertension is a sustained level of BP above which treatment is more beneficial than harmful. In Ayurvedic classics no disease has been found which exactly simulates with essential hypertension. Previous researchers made their effort to simulate hypertension with the disease like Siragata Vata, Raktagata, and Avrita vataroga etc. The prime object of the present study was to evaluate the efficacy of 'Chandramaradi Yoga' in the patients of Essential Hypertension. The results of treatment were assessed as excellent, good, fair & poor at the end of 28 days of drug therapy.

Keywords : Hypertension, Chandramaradi Yoga, Antihypertensive Drugs, Raktagata Vata.

INTRODUCTION

Hypertension is a major health issue affecting approximately <10% of population upto age of 34 years and more than >50% of population after the age of 65 years¹. Despite the widely recognized high prevalence of hypertension and its associated danger, hypertension remains inadequately treated in the vast majority of patients. In the early 1970's, the rule of halves² suggested that only half of people who were hypertensive were even diagnosed, and of those cases that were diagnosed, only half received appropriate treatment and only half achieved adequate control of their Blood Pressure (BP). Thus the percentage of patients with hypertension who were adequately treated hardly reached 10-15%. Variety of factors influence cardiac output and vascular resistance and therefore, contributes to blood pressure regulation. Although the exact mechanisms of essential hypertension have not yet been elucidated, several variables have been suggested to contribute to sustained blood pressure elevations in humans.

In Ayurvedic classics no disease has been found which exactly simulates with essential hypertension. It does not mean that this disease was not present in those days. Previous researchers made their efforts to simulate hypertension with the disease like *Siragata Vata*³, *Raktagata Vata*⁴, and *Avrita Vataroga*⁵ etc. But hypertension can't be correlated completely with above

mentioned diseases. So it is a great problem before us to find a disease similar to hypertension in Ayurveda and its etiology, pathogenesis and appropriate management.

MATERIAL & METHODS

In the present study, total 64 patients of uncomplicated mild to moderate essential hypertension were selected. They were randomly registered from OPD of Kayachikitsa, Sir Sunder Lal Hospital, Institute of Medical Sciences, BHU, Varanasi, during the year 2007-08. Most of the patients were allowed to have treatment as an outdoor patient, but few of them were admitted in male and female wards of Kayachikitsa for their management.

Exclusion Criteria :

The patients who have raised arterial blood pressure associated with the following situation, were excluded from the study :-

- Patients with severe/malignant hypertension.
- Patients with secondary hypertension.
- Mild/moderate hypertension with complications.

Diagnostic Criteria⁶ :

Diagnosis of hypertension is mainly objective, which is based on elevated level of sphygmomanometric readings⁷ Initially to have a diagnosis, 2 sets of readings separated by 20 to 30 minutes interval were taken; same procedure was repeated after one week of physical & mental rest. Then the patient were graded as to have mild or moderate hypertension on the basis of '7th Joint

* Junior Resident - 3, Dept. of Kayachikitsa.
Email : ajay.ayurveda@yahoo.co.in

** Junior Resident - 1, Dept. of Rachana Sharir.

*** Professor of Kayachikitsa.

National Committee Criteria(JNC) on Detection, Evaluation & Treatment of high blood pressure⁸ (2003) report.

Preparation of Trial Drug :

The trial drug 'Chandramaradi Yoga' was prepared by mixing the powder of all the seven constituents. The quantity of each dry herb was taken in appropriate ratio as given below :

1. Sarpagandha (*Rauwolfia serpentina*) : 2 part
2. Ashwagandha (*Withania somnifera*) : 1 part
3. Arjuna (*Terminalia arjuna*) : 1 part
4. Punarnava (*Borrhavia diffusa*) : 1 part
5. Gokshura (*Tribulus terrestris*) : 1 part
6. Sankhpushpi (*Convolvulus pluricaulis*) : 1 part
7. Brahmi (*Bacopa monnieri*) : 1 part

Total dose of trial drug for each patient had been taken 8 gm/day which was given to the patient in two divided dose i.e. 4 gm BD with water.

Treatment Plan :

A total of 64 patients of mild to moderate hypertension were registered randomly from OPD/IPD of Kaychikitsa. After proper diagnosis of essential hypertension & performing the relevant investigations, all patients were subjected to clinical trial. After diagnosis and assessment all patients were divided into 3 groups as follow :

Group A : In this group 26 patients of hypertension were registered & advised to take Chandramaradi Yoga in a dose of 4 gm BD with water.

Group B : In this group 19 diagnosed cases of essential hypertension were registered, who were taking modern medicine Amlodipine 10 mg OD for long time & their BP was controlled. These patients were switched on 'Chandramaradi Yoga' at the place of Amlodipine in a dose of 4 gm BD with water.

Group C : In this group 19 patients were placed, who were previously diagnosed cases of essential hypertension and taking modern medicine Amlodipine 10 mg OD for long time but their BP was not controlled. All these patients were advised to take Chandramaradi Yoga 4 gm BD along with Amlodipine 10 mg OD.

The effect of drug was assessed and recorded weekly for four weeks. Patients of all groups were advised to avoid smoking, strenuous exercise and to take low salt & low fat diet. The symptoms of the patients like headache, insomnia, vertigo/dizziness, fatigue, palpitation & chest pain were also recorded before &

after treatment. Scoring of symptoms was done as mild, moderate, severe (1, 2, 3). Mean score of symptoms before & after treatment was assessed.

Scoring of Symptoms :

Severity of Headache :

- 0 = No : No Headache
 1 = Mild : Feeling of Headache without hampering routine work
 2 = Moderate : Loss of 50% daily routine works due to Headache
 3 = Severe : No routine works due to Headache

Severity of Dizziness/Vertigo :

- 0 = No : No Dizziness/Vertigo
 1 = Mild : feeling of Dizziness/Vertigo without hampering routine work
 2 = Moderate : Feeling of Dizziness/Vertigo on movement
 3 = Severe : Feeling of Dizziness/Vertigo even on rest

Severity of Insomnia :

- 0 = No : No Insomnia
 1 = Mild : Occasional feeling of Insomnia
 2 = Moderate : Regular disturbed sleep
 3 = Severe : No sleep round the clock

Severity of Easy Fatigability :

- 0 = No : No Easy Fatigability
 1 = Mild : Feeling of Easy Fatigability on heavy work
 2 = Moderate : Feeling of Easy Fatigability on professional outdoor work
 3 = Severe : Feeling of Easy Fatigability on routine work

Severity of palpitation :

- 0 = No : No palpitation
 1 = Mild : Occasional feeling of palpitation
 2 = Moderate : Feeling of palpitation on exertion
 3 = Severe : Regular feeling of palpitation even on rest

Severity of Chest pain :

- 0 = No : No Chest pain
 1 = Mild : Occasional feeling of Chest pain
 2 = Moderate : Feeling of Chest pain on exertion
 3 = Severe : Regular feeling of Chest pain even on rest

Assessment of the effect of Chandramaradi Yoga on Blood Pressure in terms of excellent, good, fair & poor :

Assessment of results has been done on the basis of reduction in SBP & DBP after treatment in comparison to their initial B.P. levels. The results have been classified as Excellent, Good, Fair & Poor. (In Group B, this evaluation was not possible because it was a group of controlled blood pressure patients).

Excellent response : patient is said to have an excellent response to therapy when the fall in S.B.P. is = 30 mm Hg and fall in D.B.P. is = 15 mm Hg.

Good response : patient is said to have a good response to therapy when the fall in S.B.P. is 20-29 mm Hg and fall in D.B.P. is 10-14 mm Hg.

Fair response : patient is said to have a fair response to therapy when the fall in S.B.P. is 10-19 mm Hg and fall in D.B.P. is 5-9 Hg.

Poor response : patient is said to have a poor response to therapy when the fall in S.B.P. is < 10 mm Hg and fall in D.B.P. is < 5 mm Hg.

OBSERVATIONS & RESULTS

In the present study maximum number of cases i.e. 32 cases (55%) had been registered from the age group of 51-70 which reflects the global incidence of this disease in older peoples. The 55 cases (85.9 %) were following mixed diet. Total 45 cases (70.31%) were reported having addiction, whereas only 19 cases (29.68%) were non addictives. In this study 26 patients (40.6%) were newly diagnosed and 38 patients (59.3%) had history of hypertension for more than 1 year. Out of 64 cases 9, 17 and 11 cases were associated with Dyslipidemia, Obesity and Diabetes Mellitus respectively.

1) Effect of 'Chandramaradi Yoga' on Systolic Blood Pressure (SBP) in mild to moderate hypertensives in Group A, B & C (Table No. 1) :

In group A, the initial mean SBP was 156.38 ± 10.05 mm of Hg & After 4 week treatment, the mean SBP was reduced to 129.38 ± 4.75 mm Hg. In group B, Amlodipine is replaced by Chandramaradi Yoga in that patient whose B.P. was controlled. The initial SBP was 129.05 ± 4.91 . After 4 week treatment SBP was reduced to 125.26 ± 3.84 mm Hg. This observation reveals that the effect of Chandramaradi Yoga is as similar to Amlodipine. In group C, Chandramaradi Yoga is given along with Amlodipine in whom B.P. was not controlled. The initial SBP was 147.36 ± 3.59 which was reduced to 129.26 ± 2.02 mm Hg on 4th follow up. Hence observation revealed that effect of Chandramaradi yoga was synergistic with Amlodipine for better control of high blood pressure.

2) Effect of 'Chandramaradi Yoga' on Diastolic Blood Pressure (DBP) in mild to moderate hypertensives in Group A, B & C (Table No. 2) :

In group A, the initial mean DBP was 102.23 ± 4.35 mm Hg, which was reduced to 84.08 ± 3.12 mm Hg after 4 week treatment. In group B, the initial DBP was 85.78 ± 2.65 & after 4 week treatment it was reduced to 84.32 ± 2.65 mm Hg. In group C, Chandramaradi Yoga was given along with Amlodipine in patients whose B.P. was not in control. The initial DBP was 99.36 ± 2.49 , which was reduced to 85.05 ± 2.69 mm Hg on 4th follow up.

The Results of treatment on Systolic and Diastolic blood pressure in Group A & Group C are shown in Table No.3.

TABLE NO. 1 : STATISTICAL ANALYSIS OF THE EFFECTS OF CHANDRAMARADI YOGA ON SBP :

Groups	The effect of drug on Systolic Blood Pressure (in mm of Hg)				
	BT (Mean±SD)	AT (Mean±SD)	AT-BT (Mean±SD)	t Value	p Value
Group A (n=26)	156.38 ± 10.05	129.38 ± 4.75	27.00 ± 6.48	21.24	$p < 0.001$ (H.S.)
Group B (n=19)	129.05 ± 4.91	125.26 ± 3.84	3.78 ± 4.66	3.54	$p < 0.01$ (H.S.)
Group C (n=19)	147.36 ± 3.59	129.26 ± 2.02	18.10 ± 4.18	18.84	$p < 0.001$ (H.S.)

TABLE NO. 2 : STATISTICAL ANALYSIS OF THE EFFECTS OF CHANDRAMARADI YOGA ON DBP :

Groups	The effect of drug on Diastolic Blood Pressure (in mm of Hg)				
	BT (Mean±SD)	AT (Mean±SD)	AT-BT (Mean±SD)	t Value	p Value
Group A (n=26)	102.23 ± 4.35	84.08 ± 3.12	18.15 ± 3.14	29.42	$p < 0.001$ (H.S.)
Group B (n=19)	85.78 ± 2.65	84.32 ± 2.65	1.26 ± 2.32	2.36	$p < 0.05$ (Sig)
Group C (n=19)	99.36 ± 2.49	85.05 ± 2.69	14.315 ± 2.926	21.32	$p < 0.001$ (H.S.)

TABLE NO. 3 : THE RESULTS OF TREATMENT ON SBP & DBP IN GROUP A & GROUP C :

Category	Group A (n=26)		Group C (n=19)	
	S.B.P.	D.B.P.	S.B.P.	D.B.P.
Excellent	4	7	3	4
Good	17	13	10	9
Fair	3	4	5	3
Poor	2	2	1	3

3) Effect of Chandramaradi Yoga on Headache in Group A, B & C :

In group A, 19 patients of headache had a mean score of 1.65 ± 0.93 . Initially there was less significant reduction in headache but from second follow up it became very significant & after 4th follow up it was 0.30 ± 0.47 with a mean difference of 1.34 ± 0.74 , ($t=9.21$, $p<0.001$ (H.S.)). In group B, initial mean score of headache in 11 patients, was 0.63 ± 0.59 which became 0.10 ± 0.31 after 4th follow up. In group C, mean score of headache in 12 patients was 1.73 ± 0.80 & after 4th follow up very much significant improvement was seen in all patients with mean score of 0.26 ± 0.45 .

4) Effect of Chandramaradi Yoga on Vertigo/ Dizziness in Group A, B & C :

In group A, 23 patients of vertigo/dizziness had a mean score of 1.88 ± 0.76 . & after 4th follow up it was 0.42 ± 0.50 with a mean difference of 1.46 ± 0.76 ($t=9.79$ with $p<0.001$ (H.S.)). In group B, initial mean score of vertigo/dizziness in 7 patients was 0.36 ± 0.49 , which became 0.10 ± 0.31 after 4th follow up ($t=2.53$ & $p<0.05$). In group C, mean score of vertigo/dizziness in 14 patients was 1.94 ± 0.77 . After 4th follow up very much significant improvement was seen in all patients with mean score of 0.47 ± 0.51 ($t=8.31$ & $p<0.001$).

5) Effect of Chandramaradi Yoga on Insomnia in Group A, B & C :

In group A, 22 patients of Insomnia had a mean score of 1.65 ± 0.79 . & after 4th follow up it was 0.27 ± 0.45 with a mean difference of 1.38 ± 0.69 ($t=10.12$ & $p<0.001$ (H.S.)). In group B, initial mean score of Insomnia in 6 patients was 0.31 ± 0.47 , which became 0.10 ± 0.31 after 4th follow up. In group C, mean score of Insomnia in 11 patients was 1.63 ± 0.83 . After 4th follow up very much significant improvement was seen in all patients with mean score of 0.31 ± 0.47 ($t=7.65$ & $p<0.001$).

6) Effect of Chandramaradi Yoga on Easy Fatigability in Group A, B & C :

In group A, 16 patients of fatigability had a mean score of 1.73 ± 0.77 . There was very significant reduction

in fatigability from beginning to last follow up. It became very significant & after 4th follow up it was 0.31 ± 0.47 with a mean difference of 1.42 ± 0.64 ($t=11.28$ & $p<0.001$ (H.S.)). In group B, initial mean score of fatigability in 6 patients was 0.42 ± 0.69 , which became 0.10 ± 0.31 after 4th follow up ($t=2.36$ & $p < 0.05$). In group C, mean score of fatigability in 12 patients was 1.57 ± 0.83 . After 4th follow up much significant improvement was seen in all patients with mean score of 0.31 ± 0.47 ($t=9.79$ & $p<0.001$).

7) Effect of 'Chandramaradi Yoga' on Palpitation in Group A, B & C :

In group A, 15 patients of Palpitation had a mean score of 1.69 ± 0.68 . & after 4th follow up it was 0.34 ± 0.56 with a mean difference of 1.34 ± 0.62 ($t=10.91$ & $p<0.00$ (H.S.)). In group B, initial mean score of Palpitation in 7 patients was 0.36 ± 0.49 which became 0.10 ± 0.31 after 4th follow up ($t=2.53$ & $p<0.05$). In group C, mean score of Palpitation in 14 patients was 1.78 ± 0.71 . After 4th follow up mean score was 0.31 ± 0.58 ($t=8.31$ & $p<0.001$).

8) Effect of Chandramaradi Yoga on Chest Pain in Group A, B & C :

In group A, 15 patients of Chest Pain had a mean score of 1.57 ± 0.85 . There was very significant reduction in Chest Pain from beginning to last follow up. It became very significant & after 4th follow up it was 0.23 ± 0.43 with a mean difference of 1.34 ± 0.68 ($t=9.95$ & $p<0.001$ (H.S.)). In group B, initial mean score of Chest Pain in 6 patients was 0.31 ± 0.47 , which became 0.10 ± 0.31 after 4th follow up. In group C, mean score of Chest Pain in 12 patients was 1.78 ± 0.85 . After 4th follow up there was much significant improvement was seen in all patients with mean score of 0.21 ± 0.41 ($t=9.93$ & $p<0.001$).

DISCUSSION

Now a days, the management guideline of hypertension⁹ is well established by B.H.S, E.H.S & W.H.O. and a lot of drugs have been discovered for its treatment. But all the drugs have definite side effects, toxicity and intolerance, therefore it needs proper dosing, caring and regular follow ups. To keep the BP under

control, none of the single drug from the formulation is designed for the complete regulation on BP. In this study it has been tried to prove some Ayurvedic drugs as constituents of 'Chandramaradi Yoga' on modern parameters in case of hypertension.

The trial drug for present research work contains 7 herbs viz. Sarpagandha¹⁰, Ashwagandha¹¹, Gokshura¹², Bramhi¹³, Arjuna¹⁴, Punarnava¹⁵ & Shankhapushpi¹⁶. These drugs were selected for the research work due to its peculiar quality which is the main line of treatment of hypertension. Sarpagandha has antiadrenergic property as well as anxiolytic property & it has been approved by various researches. Ashwagandha has anxiolytic, rejuvenating & *hridya* property. Gokshura & Punarnava have proved diuretic property & both are used for centuries as diuretic in various disorders like *Shotha*, *Jalodar* & *Mutra rogas*. Shankhapushpi & Bramhi have potent *Medhya* & anxiolytic properties¹⁷.

As this study was concerned only with the mild and moderate grades of hypertension, 29 patients (45.31%) out of 64 were from mild range & 16 patients (25.00%) were from moderate range of hypertension. In this study 45 patients were known cases of hypertension. Out of them, 26 were newly diagnosed cases and 16 patients had a short history of hypertension (less than one year). The normotensive effects of drug in terms of SBP & DBP were found in all patients with Chandramaradi yoga. In the symptomatology, Headache, Dizziness/vertigo and palpitation were the most frequent followed by easy fatigability, insomnia & chest pain were less frequent symptoms. Palpitation & Easy fatigability are not so marked as the cases were uncomplicated cases of mild to moderate hypertension. The least frequent symptoms were insomnia and chest pain probably due to the same reasons. In registered cases, no relationship could be found between hypertension and biochemical tests like blood sugar, urea, serum Creatinine etc. in the present study.

CONCLUSION

The following conclusions can be drawn keeping in view the knowledge of modern medicine and experience of the present work:

1. Compound drug 'Chandramaradi Yoga' is found as an excellent remedy for mild to moderate hypertension, so it may also be tried in all grades of the disease singly or as an adjuvant.
2. The effect of 'Chandramaradi Yoga' is very much similar to Amlodipine as observed in group B.

3. 'Chandramaradi Yoga' has synergistic effect as B.P. was better controlled after adding it with Amlodipine.
4. Excellent symptomatic relief has been seen in headache, dizziness, Insomnia and palpitation & also improvement in chest pain & fatigability have been noted.
5. The effect of 'Chandramaradi Yoga' can be further studied regarding its mode of action whether it acts as Ca⁺⁺ channel blocker, tranquillizer, diuretic or some other mechanism.

REFERENCES

1. Fauci A.S., Kasper D.L., Braunwald E., Hauser S.L., Longo D.L., Jameson J.L., 2003, Harrison's Principle of Internal Medicine, 16th Edn, The McGraw-Hill Companies, U.S.
2. D.G. Beevers et al, 2005, Hypertension in Practice. 2nd edition, Martin Dunitz, London.
3. Ashtanga Hridaya, 1975, Hindi Commentary by Gupta A.D., Vth Edn., Vatavyadhi Nidan, 15/10, Chaukhamba Sanskrit Sansthana, Varanasi.
4. Shastri K.N. & Chaturvedi G.N., 1984, Charak Samhita with Vidyotini Hindi Commentary, 12th edition, Vatavyadhi Chikitsa, 28/31, p.782, Chaukhamba Bharti Academy, Varanasi.
5. Yadavji Trikrumji Acharya, 1941, Charak Samhita with Ayurveda Dipika Hindi Commentary of Chakrapani Datta, Vatavyadhi Chikitsa 28/31, Nirnaya Sagar Press, Bombay.
6. Beevers D.G. et al, 2001, ABC of Hypertension : Blood pressure measurement Part II Conventional sphygmomanometry : technique of blood pressure measurement. BMJ; 322: 1043-1047.
7. D. Gareth Beevers et al, 2007, ABC of hypertension, 5th ed., p.18, Blackwell Publishing Ltd.
8. Chobanian A.V., Bakris G.L., Black H.R. et al, 2003, The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report JAMA; 289:2560-2572.
9. Norman M. Kaplan et al, 2006, Clinical Hypertension, 9th edn. (Indian edn. 2006).
10. Chuneekar K.C., Bhav Prakash hindi Commentary, reprint 1999, Haritakyadi varga, 1/165-166, p. 82, Chaukhamba Bharti Academy, Varanasi.
11. Chuneekar K.C., Bhav Prakash hindi Commentary, reprint 1999, Guduchyadi varga, 3/189-190, p. 393, Chaukhamba Bharti Academy, Varanasi.
12. Chuneekar K.C., Bhav Prakash hindi Commentary, reprint 1999, Guduchyadi varga, 3/44-46, p. 292, Chaukhamba Bharti Academy, Varanasi.
13. Chuneekar K.C., Bhav Prakash ahindi Commentary, reprint 1999, Guduchyadi varga, 3/279-281, p. 461, Chaukhamba Bharti Academy, Varanasi.
14. Chuneekar K.C., Bhav Prakash hindi Commentary, reprint 1999, Vatadi varga, 5/26-27, p. 523, Chaukhamba Bharti Academy, Varanasi.
15. Chuneekar K.C., Bhav Prakash hindi Commentary, reprint 1999, Guduchyadi varga, 3/231-233, p. 422, Chaukhamba Bharti Academy, Varanasi.

16. Chuneekar K.C., Bhav Prakasha hindi Commentary, reprint 1999, Guduchyadi varga, 3/269-270, p. 454, Chaukhambha Bharti Academy, Varanasi.
17. Dr. R.K. Sharma and Vd. Bhagwan Dash, 1994, Charaka Samhita; Vol. 3, Vatavyadhi Chikitsa, 28/31, Chaukhambha Sanskrit Series Office, Varanasi-1.

हिन्दी सारांश

‘चन्द्रमारादि योग’ के चिकित्सकीय प्रभाव का उच्चरक्तचाप के रोगियों पर अध्ययन

अजय कुमार, टीना सिंघल एवं बी.एन. उपाध्याय

‘हायपरटेन्शन’ अर्थात् उच्चरक्तचाप एक ऐसा भयावह रोग है जिससे दुनियाभर में करीब दस लाख लोग प्रतिवर्ष मृत्यु को प्राप्त होते हैं। इसलिये इसे साइलेण्ट किलर (Silent Killer) नाम से जाना जाता है। उच्चरक्तचाप नाम से आयुर्वेद में कोई व्याधि नहीं मिलती है, परन्तु आधुनिक विद्वानों ने विभिन्न रोगों से इसका सामंजस्य स्थापित करने का प्रयास किया है। आधुनिक चिकित्सा पद्धति में उच्चरक्तचाप चिकित्सा के लिये बहुत सारी औषधियाँ उपलब्ध हैं परन्तु उनका अधिक समय प्रयोग करने से कुछ हानिकारक प्रभाव पड़ता है। आयुर्वेद में वर्णित औषधियों में बहुत से ऐसे द्रव्य हैं जिनका उच्चरक्तचाप नाशक प्रभाव देखा गया है। इन सभी द्रव्यों को मिलाकर ‘चन्द्रमारादि योग’ बनाया गया और उच्चरक्तचाप के रोगियों पर परीक्षण किया गया। प्रस्तुत शोधपत्र में परीक्षण का विस्तृत वर्णन किया गया है।

