



Effect of Shavasan on Vascular Response to Cold Stress

- ¹S. Pande, ¹R.Singh ²R.C. Agrawal

¹Department of Physiology, MGIMS, Sevagram

²Department of Physiology, GMC, Jabalpur

Abstract :

Objective: To study the effect of yogic exercise (Shavasan) on vascular response to cold stress.

Design: Selection of hyper-reactors by doing cold pressure test and recording the response of shavasan on blood pressure.

Setting: Human Physiology Lab, Deptt. of Physiology, Govt. Medical College, Jabalpur, S.S. Medical College, Rewa and Mahatma Gandhi Institute of Medical Sciences, Sewagram, Wardha.

Subjects: Medical Students aged between 17 to 24 years.

Result: Response of cold stress on hyper-reactors significantly reduced after shavasan.

Conclusion: Shavasan is an effective yogic exercise in preventing development of hypertension by changing hyper-reactors to normoreactors.

Key Words: Shavasan, Vascular response, cold stress.

INTRODUCTION:

Studies by many workers have demonstrated that the systolic blood pressure is variable and changes in it are seen in response to many forms of stimuli such as excitement, exercise, pain, cold etc.

Cold Pressure Test as a standard stimulus to study the vasomotor response was introduced in 1932 (Hines and Brown 1932). The subjects who showed greater response in his study were called HYPER-REACTORS. It was suggested by them that some of these hyper-reactors may possibly be candidates for hypertension in future. Yoga was found to have a considerable effect on different physical efficiencies of human being (Gopal et al 1973, Nayar et al 1975).

It has been demonstrated that one of the yogic exercises called SHAVASAN can play an important role in the management of hypertensives by reducing the drug requirement to marked extent some times, even to nil in some (Datey et al 1969, 1975). Markiewicz et al 1984 and Wroblewski 1983).

The present work was undertaken to study whether SHAVASAN can also influence the response of normotensive hyper-reactors to cold pressure.

MATERIAL AND METHOD:

The subjects of the present study were the medical students aged between 17 to 24 years. The blood pressure of these subjects was recorded after a rest of 20 minutes or more. Then one hand of the subject was dipped in cold water at 4°C temperature to a point just



above the wrist for 60 secs. At the end of this the blood pressure was again recorded and hand was removed from the cold water. Those subjects in whom the rise in systolic blood pressure was more than 20 mm Hg or in diastolic blood pressure more than 15 mm Hg were grouped as HYPER-REACTORS. Other were grouped as NORMOREACTORS.

The hyper-reactors were further divided into two groups at random, the study group and control group. The subjects of study group performed shavasan daily for 30 minutes for 1 month. The cold pressure test was again repeated after one month in both the groups.

TECHNIQUE OF SHAVASAN:

The subjects were asked to lie down in a calm and quite room in supine position with the hands and legs fully extended. The feet were kept apart by about 9 inches with the toes directed outwards. The hand were kept close to the body at an angle of approximately 15° with the trunk, keeping the forearms in mid prone position and fingers semiflexed. The eyes were closed lightly and the subjects were asked to take slow rhythmic breathing. They were instructed to keep their attention to the sensation of breathing at the nostrils only.

The devitalization of group of muscles was carried out in the following order-first the lower limbs, then the upper limbs, neck, face and lastly the trunk. During this the subjects were suggested to feel that a particular group of muscle is completely relaxed and has become non-impressional to both the afferent and efferent stimuli.

The subjects were asked to retain this posture for about 30 minutes, after which the revitalization is done in the same order in which the muscles were devitalized. Then they were asked to sit up for a minute before standing.

OBSERVATION:

Out of 300 students studied 120 were found hyperreactors to cold pressure test. In the entire group mean systolic B.P. was 118 mmHg and diastolic B.P. was 76 mmHg. The mean value of systolic and diastolic blood pressure were 124 mmHg and 80 mmHg respectively in hyperreactors whereas in normoreactors the respective values were 118 mmHg and 76 mmHg. This showed that there was no significant difference in basal blood pressure of hyperreactors and normoreactors was present (table I).

Table I: Effect of cold stress on blood pressure.	
Blood Pressure before cold stress Systolic/diastolic (Mean +SD)	Rise In BP. after cold stress Systolic/diastolic (Mean + SD)
Normoreactor (n= 180) 118 + 8.7/76 + 5.8	10.3 + 3.6*/10.2 + 2.6*
Hyper-reactors (n = 120) 124 + 8.3/80 + 7.2	26.0 + 11.6*/28.0 + 9.6*
*Increase in B.P. significant (p'value < 0.001)	



The mean rise in syst. B.P. was 26 mmHg and in Diast. B.P. 28 mmHg in hyperreactors. On the other hand, in normoreactors, the mean rise in syst. and diast. B.P. levels were 10.3 mmHg. and 10.2 mm Hg respectively, Table I).

After SHAVASAN practice for one month in hyper reactors the mean rise in systolic B.P. was found to be reduced from 26 mmHg. to 15 mm Hg. and the rise in diastolic B.P. from 28 mm Hg. to 13.5 mm Hg. and in contrast, the control group of hyper reactors, which did not practice Shavasan, did not show any marked change in syst. and diastolic B.P. after one month (Table II).

Rise in Blood Pressure due to cold stress	
SYSTOLIC BP (Mean + SD)	DIASTOLIC BP (Mean + SD)
1. Control Group (n = 60)	
Ist reading 24.5 + 11.7	26.3 + 5.5
2nd reading 24.0 + 8.7	25.2 + 10.3
(after 1 month)	
2. Study Group (n=60)	
(a) Before shavasan 26.0 + 11.6	28.0 + 9.6
(b) After Shavasan 15.0 + 5.8	13.3 + 4.9
'p' values between 2a and 2b < 0.01	

DISCUSSION:

The effect of shavasan in reducing the rise in blood pressure due to cold application in hyper-reactors may probably be due to the influence of shavasan at the level of reticular formation of the brain stem. There are three feed back mechanisms which are said to influence the activity of reticular formation: i) from cerebral cortex, ii) from peripheral receptors and iii) from adrenal Medulla. From peripheral receptors pain and proprioceptive impulses are said to be more important than others. In shavasan because of marked relaxation of muscles the number of proprioceptive impulses are reduced to a certain extent. As the subject is asked to concentrate on the sensations at his nostrils it helps the subject to forget his usual thoughts during the period of shavasan and may provide mental relaxation.

Because of these two factors probably undue activity of reticular formation during awakened condition might be reduced and as a result of this, response of the subject to cold pressor test becomes less than before.

An earlier study had found that 84.6% of hyperreactors and 86.6% of hypertensive subjects had a positive findings of cardiovascular diseases in their families, which indicates to



a greater chance of development of hypertension in hyperreactor than in normoreactors (Hines and Brown 1932).

Views has expressed that shavasan has beneficial effect in hypertensive subjects. Some of the hyper-tensives in his study were controlled only by shavasan training, without requiring any drug treatment. (Datey and Bhagat 1975)

CONCLUSION:

On the basis of the above observations and the present study it can be said that shavasan may act as a prophylactic measure against future development of essential hypertension in atleast some of the subjects, if not all.

More so, it may also be useful to a certain degree against development and in management of those disorders in which stress is supposed to play important role.

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