

EFFECT OF YOGA PRACTICES IN PRIMARY HYPERTENSION: A SINGLE CASE STUDY

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ABSTRACT

One of the risk factors for hypertension is lack of exercise. Taking into consideration this factor the recent study was conducted in a patient newly diagnosed as a case of primary hypertension. After three readings of blood pressure measured at different timings in a month the case is diagnosed as primary essential hypertension. As the patient was not willing to take antihypertensive medicine, the alternative therapy was advised to the case. Alternative therapy consists of some yoga practices including both dynamic and relaxing along with diet change and lifestyle modifications. After three months of following the yoga protocol with every month follow up the results are concluded in this article. Blood pressure, body weight, Waist to Hip Ratio (WHR) and BMI (Body Mass Index) were noted before starting the yoga practice and after three months of practices as objective parameters along with some subjective parameters like sleep and other routine activities.

Keywords: Hypertension, Exercise, Yoga, Body weight.

INTRODUCTION

Hypertension (HTN) is a long-term medical condition in which the blood pressure in the arteries is persistently elevated. High blood pressure typically does not cause symptoms but it is a major risk factor for coronary artery disease, stroke, heart failure, Atrial fibrillation, vision loss, chronic kidney disease, and dementia.

High blood pressure is classified as primary (essential) high blood pressure and secondary high blood pressure. About 90-95 % cases are primary, defined as high blood pressure due to nonspecific lifestyle and genetic factors. Lifestyle factors that increase the risk include excess salt in the diet, excess body

weight, smoking, and alcohol use. The remaining 5–10% of cases are categorized as secondary high blood pressure, defined as high blood pressure due to an identifiable cause, such as chronic kidney disease, narrowing of the kidney arteries, an endocrine disorder or the use of birth control pills.

Blood pressure is expressed by two measurements, the systolic and diastolic pressures, which are the maximum and minimum pressures, respectively. For most adults, normal blood pressure at rest is within the range of 100–130 millimeters of mercury (mmHg) systolic and 60–80 mmHg diastolic. According to American Heart Association, high blood

pressure is present if the resting blood pressure is persistently at or above 130/80 or 140/90 mmHg. Diagnosis of primary hypertension is made by at least three resting measurements on at least two separate health care visits taking into consideration the other causes for secondary hypertension.

Lifestyle changes and medications can lower blood pressure and decrease the risk of health complications. Lifestyle changes include weight loss, physical exercise, decreased salt intake, reducing alcohol intake and a healthy diet.

In the present case study after diagnosis of primary hypertension patient was advised to take the medication but as the patient was not willing to start the antihypertensive medicine alternative non medicated therapy was adopted to lower the blood pressure.

Aims and objective: To evaluate the effect of yoga practices in primary hypertension.

Materials and Methods:

Place:

MES Ayurved Mahavidyalaya, Parshuram hospital & Research Centre, Swasthrakshan OPD. Ghanekhunt Lote Khed, Ratnagiri 415722.

Case: A Female patient, Age: 32 years, Complaints: headache intermittent since 3-4 months, Irregular

bowel habits, sleepiness and laziness. On Examination: Blood Pressure 150/100mm of Hg, Weight: 56.5 Kg, Height: 148 cm, Waist circumference: 88 cm, Hip circumference: 93cm

Treatment Given: Non medicinal treatment including Yoga Practices and Life style modification.

Case Report:

A female patient of 32 years age is diagnosed as a case of primary essential hypertension as no other cause was observed after thorough examination and investigations. After refusal of adapting antihypertensive medication alternate non medication therapy was personalized to her to lower the blood pressure. The blood pressure measurement was 150/100 mm of Hg before starting the therapy, also complaining about tiredness and fatigue with interrupted sleep. Lack of exercise due to busy lifestyle was one of the causes found after narrating the history by patient. As the patient was willing to follow the diet changes and convinced for doing exercise the yoga practices was advised to the patient. A special protocol of yoga and meditation was designed for the patient.

Table 1: Yoga Practices Protocol for Hypertension case is given in the

Sl. no.	Practices and Duration								
1	Warm up exercise 10 minutes <ul style="list-style-type: none"> • Neck rotation clockwise and anticlockwise 3 rounds • Movements of fingers 10 rounds • Shoulder rotation 10 rounds • Wrist joint movements 10 rounds • Knee joint movements 5 rounds • Ankle joint rotation 5 rounds clockwise and anticlockwise <ul style="list-style-type: none"> • Sideward bending • Forward bending • Backward bending 								
2	Sun salutations with proper breathing techniques 12 cycles In one cycle positions and breathing pattern was as given below: <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Position (<i>Aasan sthithi</i>)</td> <td style="width: 50%;">Breathing pattern</td> </tr> <tr> <td>• Namaskarasana (Prayer pose)</td> <td>Exhalation</td> </tr> <tr> <td>• Hastauttanasana (Raised arms pose)</td> <td>Inhalation</td> </tr> <tr> <td>• Hastapadasana (Standing forward bend)</td> <td>Exhalation</td> </tr> </table>	Position (<i>Aasan sthithi</i>)	Breathing pattern	• Namaskarasana (Prayer pose)	Exhalation	• Hastauttanasana (Raised arms pose)	Inhalation	• Hastapadasana (Standing forward bend)	Exhalation
Position (<i>Aasan sthithi</i>)	Breathing pattern								
• Namaskarasana (Prayer pose)	Exhalation								
• Hastauttanasana (Raised arms pose)	Inhalation								
• Hastapadasana (Standing forward bend)	Exhalation								

	<ul style="list-style-type: none"> • Ashwa Sanchalanasana (Equestrian pose) Inhalation • Dandasana (Stick pose) Maintain Inhalation • Ashtanga Namaskara (Salute with eight parts) Exhalation • Bhujangasana (Cobra pose) Inhalation • Adho Mukha Svanasana (Downward facing dog pose) Exhalation • Ashwa Sanchalanasana (Equestrian pose) Inhalation • Hastapadasana (Standing forward bend) Exhalation • Hastauttanasana (Raised arms pose) Inhalation • Tadasana (Mountain pose) Exhalation
3	<p>Yoga practices</p> <ul style="list-style-type: none"> • <i>Trikonasana</i> 30 seconds minimum • <i>Vrukshasana</i> 30 seconds minimum • <i>Shashankasana</i> 30 seconds minimum • <i>Parvatasana</i> 30 seconds minimum • <i>Pashimottasana</i> 30 seconds minimum • <i>Vakrasana</i> 30 seconds minimum • <i>Dhanurasana</i> 30 seconds minimum • <i>Makarasana</i> 30 seconds minimum • <i>Shavasana</i> 5 minute
4	<p>Breathing practices</p> <ul style="list-style-type: none"> • Hands in and out breathing • <i>Anulom vilom pranayam</i> 15 rounds • <i>Chandra Nadi Pranayam</i> • <i>Bhramari pranayam</i>
5	<p>Meditation</p> <p><i>Om</i> meditation – chanting of <i>Om</i> for 5 minutes.</p>

All these practices were taught to the patient till proper technique adaptation in Swastharakshana OPD at MES Ayurved Mahavidyalaya, Ghanekhunt Lote, khed Ratnagiri. After the proper adaptation of techniques patient was instructed to do these practices at home regularly with follow up by every one month. Time for exercise was as per patient's suitability provided either empty stomach in morning or four hours after meal in evening. Use of low sodium salt was advised to patient as the diet change. Walking with ex-

posure to sunlight in morning time for ten minutes was advised as lifestyle modification to the patient.

Observation & Results: Observations were noted at the time of follow up taken on every month continued for three months. Blood pressure, body weight, waist to hip ratio and BMI were noted before starting the yoga practice, during yoga practices and three months of practices as objective parameters along with some subjective parameters like sleep and other routine activities.

Table 2: Results are given in

Parameter	Before Treatment	After 1 month	After 2 month	After 3 month
BW	56.5 Kg	55 Kg	53 Kg	50 Kg
WHR	0.94	0.92	0.91	0.88
BP	150/100 mm of Hg	130/90 mm of Hg	124/86 mm of Hg	120/ 78 mm of Hg
BMI	25.79	25.11	24.20	22.83

(BW= Body Weight, WHR = Waist to Hip Ratio, BP = Blood Pressure, BMI= Body Mass Index)

Table 3: The changes observed by the patient in routine activities before and after Yoga practices

Subjective Parameter	Before start of Yoga Practices	After start of Yoga Practices
Sleep	Disturbed sleep for about 6-8 hours	Sleep without any disturbances for 7 hours
Bowel habits	Irregular bowel habits	Regular Bowel habits
Activity	Lazy	Energetic

DISCUSSION

The first line of treatment for hypertension is lifestyle changes, including dietary changes, physical exercise, and weight loss. As the patient was willing to adapt alternative treatment for high blood pressure, a special Yoga protocol was advised to patient. In this protocol weight reduction along with relaxation was focused. Hence warm up exercise was started as a part of protocol. Here warm up exercise was mild that can lose the movements of joints and uniform movements to avoid sudden spasm or injuries to joints and muscles. After warm up exercise dynamic exercise practice was planned to reduce the abdominal diameter. Sun salutation (*Suryanamaskar*) was also the part of protocol. Sun salutation has positive effect on cardiovascular health as it is the best stretching exercise it helps in improving the muscle tone. Sun salutation also stimulates the nervous system and helps in regulating the endocrine system. In short it effects on overall health of mind and body. *Yogasanas* are the postures in which body gets relaxed along with strength to the body parts. All the asana advised to patient was easy in practice and helpful in reducing the weight. Breathing practices are important for improvement of pulmonary functions to prevent the pulmonary hypertension in future. Meditation is important part of protocol as it is the most relaxing practice to each and every organ of the body which results in lowering the blood pressure due to any stress.

Body weight before start of the yoga practices was more than required according to height of the patient hence BMI was also above 25 which proves that patient is overweight and needs to loss the weight for normal BMI. As yoga practices and diet modification started weight losses by 1.5 kg after 1 month and around 6.5 kg weight loss achieved in three months of regular yoga practices. After continuation of yoga

practices for three months BMI also get reduced to 22.83 which come within normal range. WHR i.e. Waist to Hip ratio was another parameter was used to check the progress of protocol. Initially the ratio was 0.94 which is categorized as high risk to health. After six months yoga practices this ratio became 0.88 which is categorized as moderate risk to health. Here the weight loss is steady with no harmful signs on body. The blood pressure measurements were taken before starting of yoga practices which shows relatively high range, but no any reason for the hypertension was found without the sedentary lifestyle. After starting the yoga sessions blood pressure goes down by 10-20 units at the one month follow up which comes within normal range after continue practice of yoga session for three months. Along with yoga practices salt restriction in diet is also became helpful to avoid retention of fluid in the body. Some subjective parameters were also checked by questioning to the patient like sleep pattern, bowel habits and activity as the high blood pressure is also the effect of improper sleep and bowel habits. Before starting the yoga the sleep of the patient was quite disturbed. Bowel habits were irregular like often constipated in a week. After the starting of doing yoga the bowel habits became regular. As the physical activity gets increased by yoga practices sleep pattern also get changed which reduced the laziness of patient and gives energetic feel. Lifestyle modifications like walking in morning sunlight gives Vita D to body which is also an important part to regulate the heart function.

CONCLUSION

Lack of exercise or sedentary lifestyle is one of the causes of pre hypertension and hypertension in adult age. Yoga is the choice as types of moderate exercise in conditions were vigorous exercise is contraindicated. Yoga practices are also best for slow and steady

weight loss without many restrictions in diet. Sun salutation is best stretching exercise to lower blood pressure, regulates the hormones and improves the overall cognitive response. Yoga and meditation is helpful to change the behavior of lazy activity in sedentary peoples. Yoga practices are helpful in hypertension in adults definitely as the choice of treatment. Yoga practices along with meditation should be done regularly to lower the blood pressure. It will be alternative choice in the treatment of hypertension but definitely preventive measure for cardiac diseases, Diabetes Mellitus and other lifestyle induced conditions. In the present case yoga practices are advised to patient as a part of daily routine for prevention of hypertension in future. One should follow the yoga practices to lower the blood pressure but if there is no significant change observed within three to six months of regular practices antihypertensive medicine should start to lower blood pressure.

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