Effect of Specialised Ayurvedic Protocol in Stress-induced Hypertension: A Case Series

ABSTRACT

Background: *Bhramari Pranayama* (humming bee breath), involves inhalation through both nostrils, followed by exhalation mimicking the sound of a humming bee. This simplistic yogic practice is often recommended for patients suffering from hypertension. However, there is currently a dearth in anecdotal reports as well as robust clinical evidence documenting the effects of *Bhramari Pranayama*. Here described are two cases of stress-induced hypertension successfully treated with *Bhramari Pranayama.*

Case: Patient 1 was a 42-year-old male with a history of diabetes and hypertension. His chief complaints were burning micturition and neck pain for a 2-year duration. He was diagnosed with stress-induced hypertension. Patient 2 was a 44-year-old male with history of hypertension and also a history of grade 1 fatty liver. His chief complaints were chest pain on sleeping position, disturbed sleep, and palpitations. He too was diagnosed with stress-induced hypertension. Both patients were advised combination therapy that consisted of *Panchakarma* hypertension therapy (*Snehana*, *Swedana* and *Shirodhara*), oral medication (Artyl, Serena, and Endoguard capsules) as well as *Bhramari Panayama,* a controlled breathing practice. Patient 1 had blood pressure measuring 142/108 mmHg at admission which significantly reduced to 124/80 mmHg after 150 days. Patient 2 had blood pressure measuring 116/87 mmHg which changed to 117/78 mmHg after 90 days.

Conclusion: *Bhramari* therapy was found to be effective in our patient by controlling systolic and diastolic blood pressure, thus highlighting its effect in relieving stress-induced derangements in blood pressure.

Keywords: Ayurveda; blood pressure; breathing; hypertension.

1. INTRODUCTION

Hypertension is one of the most common and prevalent risk factors for cardiovascular disease. The prevalence of hypertension in India ranges from 30–40% and further accounts for 57% stroke and 24% prevalence of coronary artery disease-related mortality in India [1]. Stress is a pathological process and chronic psychosocial stress leads to elevated in blood pressure abetting the risk of development of hypertension, referred to as stress-induced hypertension [2].

Hypertension is currently treated with pharmacological agents in combination with lifestyle modifications. However, lifestyle modifications alone are overlooked as a strategy in the prevention, and treatment of hypertension. Yoga is an ancient science that originated from India in 5000 BC. It is a commonly practiced lifestyle modification implementing specific postures, breathing techniques as well as concentration techniques. *Pranayama* or controlled breathing has been practiced to maintain a healthy physiology of the body. *Bhramari Pranayama* (humming bee breath), involves inhaling through both nostrils, followed by an exhale that mimics the sound of a humming bee. This practice can be adopted by all regardless of age or gender [3] Short inspirations and protracted expirations have a substantial influence on the physiological system, changing the usual breathing rhythm. *Bhramari Pranayama* practice consistently produces sensations of happiness and mental rejuvenation. However, there is currently a dearth in anecdotal reports as well as robust clinical evidence documenting the positive effects of *Bhramari Pranayama* [4]. Here described are two cases of essential hypertension successfully treated with *Bhramari Pranayama.*

2. CASE REPORT

Patient 1 was a 42-year-old male employed in the information technology (IT) sector. The patient was diagnosed with a diabetes mellitus and hypertension a few months before

presenting to our Madhavbaug Clinic. His chief complaints were burning micturition and neck pain for a 2-year duration. His blood pressure measured 142/108 mmHg during his first visit to our Madhavbaug Clinic. Patient 2 was a 44-year-old male whose chief complaints were chest pain on sleeping position, disturbed sleep, and palpitations. He had a 6-year history of hypertension and also had a history of grade 1 fatty liver. His blood pressure measured 116/87 mmHg during his first visit to our Madhavbaug Clinic. The major *hetu* i.e., causative factors identified to be common in both patients was sleep disturbance, emotional disturbance, excessive thoughts yet lack of expression, and stress. A diagnosis of stress-induced secondary hypertension was made in both patients. The treatment strategy for Patient 1 was hypertension therapy consisting of *Snehana* (centripetal oleation), *Swedana* (passive heat therapy) and *Shirodhara* (oil dripping on forehead) in 10 sessions. Endoprotective therapy was also performed and consisted of *Snehana* (centripetal oleation), *Swedana* (passive heat therapy) and *Basti* (rectal drug administration) in 8 sessions. Oral medications in the form of Artyl (*Sunthi* and *Brahmi*), Serena (*Brahmi, Shankhapushpi, Jatamansi*, and *Khurasani Ajwayan*) and Endoguard (*Amlaki, Haridra,* and *Guduchi*) were advised to Patient 1. The total duration of therapy was 150 days. Patient 2 was advised hypertension therapy consisting of *Snehana* (centripetal oleation), *Swedana* (passive heat therapy) and *Shirodhara* (oil drip on forehead) in 10 sessions and oral medications as mentioned for Patient 1 were advised. The total duration of therapy was 90 days. *Bhramari* therapy was recommended to both the patients twice a day (11 repetitions at each time) to both patients, after waking up and before sleeping at night. A 1000 calorie diet which is low in sodium, carbohydrates and rich in fiber, good quality fats, potassium, and magnesium was given to both the patients during the treatment duration. The outcomes for Patient 1 and Patient 2 are displayed in Table 1 and Table 2, respectively.

3. DISCUSSION

The present study describes two cases of middle-aged males diagnosed with stress-induced hypertension. Patient 1 had blood pressure measuring 142/108 mmHg at admission

Table 1. Baseline (day 1) and follow-up (day 150) findings in Patient 1

Variable	Day 1	Follow-up
Heart rate, beats per min	92	80
Blood pressure, mmHg	142/108	124/80
Abdominal girth, cm	105	102
Ambulatory blood pressure monitoring	**Observations:** • No evidence of white coat effect • Inadequate dip in nocturnal blood pressure • Absent early morning surge • All blood pressure averages - 144.25/100.09 mmHg • Daytime blood pressure average - 144.0/101.0 mmHg • Night time blood pressure average - 140.0/92.0 mmHg **Impression:** Evidence of Stage 1 hypertension with nocturnal overload	**Observations:** • Evidence of white coat effect • Adequate dip in nocturnal blood pressure • Absent early morning surge • All blood pressure averages - 124.9/85.1 mmHg Daytime blood pressure average - 128.0/88.0 mmHg • Night time blood pressure average -104.0/67.0 mmHg **Impression:** Evidence of pre hypertension without nocturnal overload
Complaints	Burning micturition and neck pain	No complaints
Allopathic Medicines	No medication	No medication

Table 2. Baseline (day 1) and follow-up (day 90) findings in Patient 2

Variable	Day 1	Follow-up
Heart rate, beats per min	63	107
Blood pressure, mmHg	116/88	117/78

Abdominal girth, cm	92	84
Ambulatory blood pressure monitoring	**Observations:** • No evidence of white coat effect • Adequate dip in nocturnal blood pressure • Absent early morning surge • All blood pressure averages - 118.76/70.95 mmHg • Daytime blood pressure average - 121.0/72.0 mmHg • Night time blood pressure average - 101.0/62.0 mmHg • Elevated hypertension stage **Impression:** Evidence of elevated hypertension	**Observations:** • No evidence of white coat effect • Adequate dip in nocturnal blood pressure • Absent early morning surge • All blood pressure averages - 118.76/70.95 mmHg • Daytime blood pressure average - 121.0/72.0 mmHg • Night time blood pressure average -101.0/62.0 mmHg **Impression:** Evidence of elevated hypertension
Complaints	Pain in chest on sleeping position h/o acidity and gases	No fresh complaints
Allopathic Medicines	Nebicard 5 mg	No medication

which significantly reduced to 124/80 mmHg after 150 days. Patient 2 had blood pressure measuring 116/87 mmHg which changed to 117/78 mmHg after 90 days. These satisfactory results were achieved through combination therapy that consisted of *Panchakarma* hypertension therapy (*Snehana*, *Swedana* and *Shirodhara*), oral medication (Artyl, Serena, and Endoguard capsules) as well as *Bhramari Panayama,* a controlled breathing practice.

Panchakarma is an ancient Ayurvedic practice, throughout the years it has found place in the treatment of many diseases and disorders. It consists of *Snehana*, *Swedana* and *Shirodhara*. *Snehana* is external oleation with til and rose oil massaged on hands, legs, shoulders, thorax, abdomen, and the back in a centripetal manner. Rose oil has been found to decrease breathing rate, blood oxygen saturation and systolic blood pressure. It has also been found to be provide a more calming and relaxed state of mind [5]. *Swedana* is passive heat therapy with Dashmool decoction with the body in a supine position. *Swedana* has relaxing and detoxifying effects on the human body [6]. *Shirodhara* is dripping of oil on the forehead. Jatamansi kadha was used for *Shirodhara*. It has been found to create a state of calmness and relaxation comparable to that of meditation [7].

Oral medication prescribed was Artyl, Serena, and Endoguard capsules. Earlier pilot studies have investigated the effect of Artyl capsules. A pilot study prescribed 500 mg Artyl orally twice daily to patients suffering from hypertension. Findings revealed the Artyle capsule significantly decreased both diastolic and systolic blood pressures without adverse events [8].

A dearth in literature evidencing the effects of *Bhramari Panayama* on cardiovascular and physiological systems exists. Kuppusamty et al. [9] assessed the immediate effect of *Bhramari Panayama* on resting cardiovascular parameters in healthy adolescents and found significant reductions in heart rate, blood pressure, pulse pressure and mean arterial pressures. The study concluded that *Bhramari Panayama* provides a relaxed state in which parasympathetic activity overrides sympathetic activity. These study findings were further fortified by Pramanik et al. [10].

4. CONCLUSION

Bhramari therapy was found to be effective in our patient by controlling systolic and diastolic blood pressure, thus highlighting its effect in relieving stress-induced derangements in blood pressure.

CONSENT

All authors declare that written informed consent was obtained from the patient.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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