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RESEARCH ARTICLE

Comprehensive Management of Hypertension: Enhancing Non-Pharmacological Treatments

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ABSTRACT

Background: In the entire world, cardiovascular diseases (CVD) are primarily brought on by hypertension, or elevated blood pressure. From 4.5% (0.9 billion adults) in 2000 to 7% (1.6 billion adults) in 2010, the prevalence of hypertension has increased in relation to the global burden of diseases. Comprehensive management including non-pharmacological and pharmacological strategies of hypertension.

Healthy lifestyle choices can lower cardiovascular risk and postpone or prevent the onset of high blood pressure. Additionally, the first line of antihypertensive therapy is lifestyle change. One of the best way of life adjustments for lowering blood pressure is weight loss. Physical activity on a regular basis can reduce high blood pressure by 5 to 8 mm Hg. Every day, try to engage in at least 30 minutes of moderate exercise, such as walking, running, cycling, swimming, or dancing. High-intensity interval training is an alternative option. Short bursts of intense exercise are interspersed with slower intervals of activity during this form of training. A diet low in saturated fat, salt, and cholesterol and high in whole grains, fruits, vegetables, and low-fat dairy products can reduce high blood pressure by up to 11 mm Hg. It is possible to reduce blood pressure by roughly 4 mm Hg by limiting alcohol consumption to fewer than one drink per day for women and two drinks per day for males. Quitting smoking can potentially extend life by lowering blood pressure, lowering the risk of heart disease, and improving general health. The quality of your sleep can affect your blood pressure. Chronic (long-term) emotional stress may be a factor in high blood pressure. Controlling blood pressure also requires taking it at home and going to the doctor frequently. Strong social networks of family and friends are crucial for health. Following lifestyle changes, pharmacological therapy should be started. The choice of medication is based on the patient's age, general cardiovascular risk, and co-morbidities. The pharmaceutical treatment plans suggested here are generally in line with the most recent US and European recommendations.

Conclusion: The optimal initial treatment strategy for hypertension should be comprehensive hypertension management, which focuses on lowering total cardiovascular risk through lifestyle changes, BP lowering, and lipid management.

Keywords: Hypertension, lifestyle management, exercise, non-pharmacological

Background

In the entire world, cardiovascular diseases are primarily brought on by hypertension, or elevated blood pressure (BP). From 4.5% (0.9 billion adults) in 2000 to 7% (1.6 billion adults) in 2010, the prevalence of hypertension has increased in relation to the global burden of diseases. Comprehensive management including non-pharmacological and pharmacological strategies of hypertension.[1,2]

Hypertension definition according to guideline

Based on European Society of Cardiology (ESC), hypertension is defined as office Systolic Blood Pressure readings over 140 mmHg and/or diastolic readings over 90 mmHg. This is supported by data from numerous Randomized Controlled Trials (RCTs) that show treating patients in range of these BP marks is advantageous. [3]

In comparison to previous thresholds (home Blood Pressure 135/85 mmHg and office Blood Pressure 140/90 mmHg), the 2017 American College of Cardiology/American Heart Association (ACC/AHA) BP statement showed criteria for hypertension status (Home Blood Pressure 130/80 mmHg and office Blood Pressure 130/80 mmHg) has significantly modified the commonness of hypertension subclass. The outset (home BP more than 135/85 mmHg and office BP more than 140/90 mmHg) suggested by the preceding Joint National Committee (JNC)[7] and the 2018 ESC /ESH guideline, the predominancy of normotension, masked uncontrolled hypertension, sustained uncontrolled hypertension, and white coat hypertension was 15%, 19%, and 31%, in each specific cases, in the J-HOP study[4], a general practice-based national registry of home. In accordance with the 2017 ACC/AHA BP guideline outset definitions (i.e., 130/80 mm Hg for both home BP and office BP), the predominance of persistent hypertension, normotension, masked uncontrolled hypertension, white coat uncontrolled hypertension, and was 58%, 14%, 10%, and 17%, in each specific cases. Thus, a rise in the incidence of persistent hypertension and a decrease in the prevalence of normotension are the results of the reclassification of hypertension.[4]

Administered diagnosis of hypertension

If the BP is not significantly elevated (e.g., hypertension grade 3) and absence of obvious Hypertension-Mediated Organ Damage (HMOD) sign, the diagnosis of hypertension shall not be predicated on a singular time of blood pressure measurements during a single office visit (e.g. Left Ventricular Hypertrophy (LVH), haemorrhages and exudates of hypertensive retinopathy, renal or vascular damage). Repeat blood pressure readings at subsequent office visits have long been used by all other patients (i.e., nearly all patients) to confirm a BP increase that persists as well as to classify their hypertension status in RCTs and clinical practice. The total amount of duration among visits and visits itself vary depending on how severe the hypertension is, and these two factors are inversely related to each other.

Therefore, relying on the degree of BP rise also the confirmation of HMOD or CVD were positive, more significant BP rise (i.e. grade 2 or greater) necessitates less visits and shorter time intervals between visits (i.e. a few days or weeks). In contrast, repeat measures may be taken for a few months in patients with grade 1 hypertension level, particularly if he had no HMOD and low risk. Routine screening tests and a CV risk assessment are typically carried out concurrently with the BP assessment. When Home Blood Pressure Measurement (HBPM) and/or Ambulatory Blood Pressure Management (ABPM) are logistically and financially feasible, they might be used as a preference to repetitious office BP measures to assure the diagnosis of hypertension.[4] This method can offer crucial additional clinical information, such as the ability to identify white-coat hypertension, that can be expected, particularly in individuals with grade 1 hypertension on office blood pressure measurements also who do not have any signs of HMOD or CVD [5]. Finding masked hypertension presents a unique problem. People with blood pressure is in the high-normal level are more likely to have masked hypertension, so out-of-office blood pressure might be taken into account of these cases. In some situations, out-of-office blood pressure evaluations are also recommended.[6]

Comprehensive management of hypertension

1. Lose extra kilogram of weight and control the waistline

Weight gain can lead lead to obesity and also prevalently causes a significantly raising in blood pressure. Moreover, to increasing blood pressure, being obesity or overweight can induce to sleep-apnea, leading distorts breathing while asleep.

One of the finest of life tweaks to significantly reduce blood pressure is slimming down. Even a minor slimming down can help lowering blood pressure if you are obese or overweight. In most cases, each kilogram (2.2 pounds) of weight loss may effect in a reduction in blood pressure of more or less 1 mmHg. [7]

The mensuration of the waistline is also imperative. High blood pressure chance can be increased by bringing out too much weight around the waist.

All in all:

- Men who have a waistline size of more than 40 inches are at risk (102 centimeters).
- Women who have waist measurements larger than 35 inches are at danger (89 centimeters). Different ethnic groups have different numbers.

2. Regular exercise

Work out activity on a regular basis can diminish high blood pressure by 5 to 8 mmHg. And to shut out blood pressure from escalating once more, they are critical to proceed exercising. The goal set for leastwise 30 minutes of moderate physical activity each day as a overarching goals.

Exercise can also counteract high blood pressure from evolving in those with raised blood pressure (hypertension). Straight exercise can help people with hypertension lower their blood pressure to a more manageable level.

Periodic and straight physical activity lowers blood pressure throughout the course of 1 to 3 months. The precedence only last throughout keeping up the fitness regimen.

What level of workout is required?

Severe aerobic exercise for 75 minutes, moderate aerobic exercise for 150 minutes, or a integration of the two, each week is required. On most days of the week, goals of aerobic exercise for at least 30 minutes. If not used to exercise session, move consciently toward the objective and then divide the aerobic exercise into three periods of ten minutes each. This provides the same advantages as a single 30-minute session.

Aerobic exercise is any physical activity that causes the heart and respiratory rates to increase. Examples include:

- Walking
- Basketball or tennis
- Jogging
- Stair climbing
- Gardening, consist of raking leaves and mowing the lawn
- Swimming
- Bicycling
- Dancing

Aerobic and weight training appear to set the most heart-healthy benefits.

Sit for several hours a day, taking 5- to 10-minute breaks to stretch and move every hour. Take a quick walk or go to the kitchen or break room for a drink of water and make a brief Schedule of this workout would be beneficial

When the needs care provider's

The following conditions need to be aware:

- A family profile of previous of heart-related problems before the age of 55 in men and 65 in women
- A chronic health issues such as diabetes, lung and heart disease
- A history of Acute Coronary Syndrome (ACS)
- Uncertain whether about self health condition
- High cholesterol or high blood pressure
- Pain or discomfort in your chest, jaw, neck, or arms while exercising
- Dizziness while exercising
- Overweight or obese
- Never take regular exercise before
- Smoke or recently quit smoking

Some medications, including blood pressure medications, have an effect on heart rate. Medicines can also alter the body's response to exercise. Getting more exercise can sometimes reduce the need for blood pressure medication.

Check heart rate

Begin slowly to turn down he risk of injury while exercising. Warm up prior to exercising and cool down afterwards. Gradually increase the power of workouts.

Stop if feel any pain.

If notice any of the following warning signs of potential heart problems while exercising, stop immediately and seek medical attention.

- Dizziness or faintness
- An irregular heartbeat
- Pain or tightness in the chest, neck, jaw, or arms
- Severe shortness of breath

Monitor the progress

Preservating track of blood pressure measurement is the only way to detect and manage high blood pressure. At each health checkup, regularly check the blood pressure. Use a home blood pressure monitor as well. It is best to take your blood pressure at home at the same time every day.

Jogging, dancing, swimming, cycling, and Walking are examplification of aerobic exercise that could help furtherdown blood pressure. High-intensity interval training is another course of action. Short bursts of intense activity are alternated with sessions of lighter activity in this variety of training.

Strength training can be useful to lower blood pressure. Aim for at the very least two days per week of strength training exercises.

3. Eat a healthy diet

The typical well balanced dietary consist of fruits, whole grains, low-fat dairy products, and vegetables and additionally low in cholesterol and saturated fat, can turn down blood pressure level up to 11 mmHg. The Mediterranean and Dietary Approaches to Stop Hypertension (DASH) diet are two models of eating plans that can support the influence blood pressure.

The DASH diet is a synthesis of the past and present worlds. Researcher developed it predicated on past dietary basis, and it has been personalized to target some of modern society's health problems especially cardiovascular disease

A typical DASH diet portion guidance for a patient is as follows:

1. Carbohydrates: approximately seven portions per day
2. Vegetables: approximately five portions per day
3. Product that contained Low-fat dairy: two portions daily
4. Nuts and seeds: once or twice a week
5. Fruits: approximately five meals each day
6. Lean meat products: limit yourself to two or fewer portions per day.

These recommendations are examined in greater detail below.

Carbohydrates

As a part of diet, carbohydrates are mostly starches and cellulose. The human body is unable to digest cellulose. It is mostly found in plant fiber. Healthy starches, or "carbs," must be counted in the diet for preservative micronutrients and mostly for energy. Low carb diets are not as healthy because they may result in lower caloric intake than recommended or consumption of unhealthy fats as a replacement.

DASH includes the following healthy carbohydrates:

- vegetables with Green leafy: mustards, spinach, kale, collards, broccoli
- Whole grains: millets, cracked wheat, oats
- Fruits with a low glycemic index
- Beans and lentils

Fats

The rise of the epidemic chronical disease have long been suspected by the fats. Nevertheless, new research has shown that this is not the case. Fats are now classified as either good or bad.

Good fats have been shown to increase HDL and lower small dense LDL particles when consumed in moderation. They also reduce inflammation, supply essential fatty acids, and improve overall health. These fats. DASH also includes the following sources of good fats

- *Flax seeds*
- *Avocados*
- *Nuts and live oil*
- *Omega-3 fatty acids contained in fish*
- *Hempseeds*

vegetable shortenings, Margarine, and partially hydrogenated vegetable oils are examples of bad fats that cause a raising in particles of small LDL leading and encourage atherogenesis.

Because fats are a highly concentrated source of energy, they should be consumed in mediocrity. Serving sizes are less than those recommended for other nutrients in the DASH diet.

Proteins

DASH suggests eating more plant proteins such as seeds, legumes, nuts, and soy products.

Low-fat dairy, Lean meats, fish and eggs, should be the primary sources of animal protein in the diet.

Processed and cured meats are not prompted because they have been linked to hypertension and have substances leading to cancer.

The DASH diet also recommends eating foods high in calcium, magnesium and potassium to support smooth muscle and endothelial relaxation also avoid endothelial dysfunction. Spinach, oranges and bananas are some potassium-rich foods. Vegetable with green leafy and dairy productsare high in calcium. Magnesium can be found in nuts, whole grains, seeds and leafy vegetables [8,9]

Diet containing potassium can help to reduce the impacts of sodium (salt) on blood pressure. Foods, such as fruits and vegetables, are better sources of potassium other than supplements. Serve in 3,500 to 5,000 mg daily to reduce blood pressure by 4 to 5 mm Hg.

4. Limit intake of salt (sodium).

A long debate about the pathophysiological relationship among sodium intake and an expanding in blood pressure take much time. Boosted up salt consumption may affect water retention, effecting in high flow in arterial vessels. Pressure natriuresis has been proposed as a physiologic phenomenon in which an alleviate of renal arteries blood pressure causes an escalating in salt and water excretion [10]

According to animal model studies[11,12] this hemodynamic load may cause an adverse microvascular remodelling owing to the effects of increased BP numbers. Changes in vascular resistances are linked to increased BP numbers and high sodium intake, but the implements reigning this phenomenon might not be viewed solely as a reflex pressor response addressed at alleviating sodium excretion. Moreover, in normotensive subjects, extreme salt consumption can cause functional abnormalities, anatomic remodelling and microvascular endothelial inflammation.

Even a tiny depletion in sodium intake can refine heart condition and lower blood pressure by up 5 to 6 mm Hg. The effect of sodium consumption on blood pressure differ between individuals. Restrict sodium intake to 2,300 milligrams (mg) or less per day. A degrade sodium intake — 1,500 mg or less per day — is ideal for most adults.

5. Restrict alcohol

Women should restricting alcohol consumption to less than one drink per day and men to less than two drinks per day. They significantly reduce blood pressure by about 4 mm Hg. A glass is equal to 1.5 oz. of 80-proof liquor, 5 oz. of wine, and 12 oz. of beer

However, excessive alcohol consumption can cause blood pressure to rise by several points. It can also make blood pressure medications less effective.

6.Quit smoking

Acute increase in heart rate and blood pressure associated with cigarette smoking. One of the first studies on this topic, which looked at the reactions of heavy smoking (in very 15 minutes for an hour they took one cigarette) on heart rate and blood pressure in a group of normotensive smokers, found that in taking time off conditions, the first cigarette caused a noticeable and immediate increase in heart rate and blood pressure with the remaining three cigarettes producing similar results.[13]

The hemodynamic impacts were so long-lasting that heart rate and blood pressure were steadfastly lesser during the non-smoking hour than during the smoking hour, indicating that heavy smoking is connected with an escalating in blood pressure that lasts for more than 15 minutes after smoking one cigarette, as well as an connected in blood pressure variability. On the other literature have shown that the acute escalating in heart rate and blood pressure caused by cigarette smoking is connected with an increase in plasma catecholamines, implying that the effect is interceded by adrenergic nervous system excitation.[14, 15]

7. Adequate sleep Time

Sleep deprivation (less than six hours of sleep per night for several weeks) may assist to hypertension. General sleeplessness restless leg syndrome and Sleep apnea are all conditions that can disrupt sleep (insomnia).
According to a 2016 American Heart Association scientific guidance on cardiometabolic health and

sleep, there is effectual epidemiological statement that self-reported short sleep duration, explicated using various cut-offs (5, 6, or 7 hours), is a serious risk for hypertension. [16]

According to a 2019 review on blood pressure and sleep period,[17] most literatures using self-reported sleep total time found a greater risk of hypertension in the number of short sleepers, eventhough those using objectively measured sleep duration found contradictory results. Short sleep, combined with sleep disorders, may be especially dangerous. Impartially assessed sleep duration between 5 and 6 hours and 5 hours alleviated the oppurtunities of hypertension by 45% and 80%, in each specific cases, among 7107 patients with Obstructive sleep apnea.

In terms of hypertension risk, extremely short sleep duration (5 hours) was more deleterious than OSA, implying that short sleep in OSA may be a goal for hypertension precaution [18]

7. Decrease stress

Long-term (chronic) emotional stress may assist to hypertension. More research is needed to specify if only stress alleviation techniques can decrease blood pressure.

A review of 19 studies on stress and hypertension found that 21,05% had no significant relationship between stress and hypertension. And 78,95% indicates a significant relationship between the two variables. According to this study, mild, moderate, and severe stress all contribute to different stages of hypertension. The review concludes that the higher the stress level, the higher the incidence of hypertension in individuals. 19

9. Home blood pressure monitoring and regular checkups

In an era of exhibitory progress in communication and information technology, having patients' home BP values self-measured remotely and daily sent to electronic health records and providers may improve the validity of hypertension diagnosis and the effectiveness of its management, particularly when HBPM is combined with co-interventions. Furthermore, HBPM combined with information on patients' living situations may deliver integrated data that can be used to more precisely guide hypertension management, As a result, CVD risk is reduced. [20] According to the evidence, patients taking antihypertensive medication have a benefit from HBPM measurement because of its complementation to office BP measurement for the diagnosis of hypertension and keep tracking BP control. Furthermore, HBPM may have a positive influence on hypertension control by reactivying medication adherence. In spite of the fact that office BP remains the standard method for assessing BP in real-world clinical practice, data from meta-analyses and systematic reviews indicate that HBPM, especially when combined with co-interventions, lowers BP and is related with a higher rate of BP control. [4]

10. Seek assistance

Family support is extremely important in maintaining and controlling blood pressure and returning it to normal in hypertension patients. Furthermore, blood pressure measurements may be performed by family members who have learned about hypertension from medical personnel. 21

According to Nugraha (2014)22, there is a link between family knowledge level and complication prevention behaviors among hypertension patients. This disparity could be explained by the fact that the sample in Nugraha's study consisted of hypertension patients rather than elderly hypertensive patients.

Conclusion

Comprehensive hypertension management that focuses on non-pharmacological strategies such as weight control, salt reduction, eating according to the DASH guidelines, well planned physical activity, quitting smoking, and independent measurement of blood pressure can underneath blood pressure in the diabetic population. Other benefits of these lifestyle changes include enhanced cardiac function and a mitigation in overall cardiovascular risk.

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