infarction, target organ damage, smoking, diabetes mellitus, hypercholesterolaemia, obesity, sedentary lifestyle).

The aim of the examination should be twofold. First, to detect the underlying condition that might be causing elevated blood pressure, and secondly, to detect the target organ damage. It is essential to examine the following:

- General body habitus, e.g. cushioned face, obesity.
- Pulse – measure rate, rhythm, volume for at least 1 minute, and look for radiofemoral delay.
- Blood pressure – using a validated device blood pressure should be recorded with the patient in a sitting position and with the back supported, after he/she has rested for at least 5 minutes. The arm should rest on a surface and the blood pressure device should be at the level of the heart. The patient should not have smoked, drunk coffee or tea or eaten in the previous 30 minutes. A cuff of appropriate size should be used, as inappropriate cuff size may give rise to a false reading (under cuffing and over cuffing), and two readings should be taken 2 minutes apart during one visit. Readings should be repeated three times at intervals of at least 1 - 2 days before making a clinical assessment of hypertension.
- Pedal oedema (secondary to renal pathology or cardiac failure).
- Body mass index (BMI) (mid-abdomen circumference and waist-over-hip ratio can also be used).
- Skin bruising and rashes (Cushing’s disease and vasculitis).
- Eyes – proptosis and fundoscopic examination (hypertensive retinopathy).
- Neck – goitre and bruit.
- Lungs – basal rales (due to secondary congestive cardiac failure).
- Heart – left ventricular hypertrophy (displaced apex beat) with left-sided S4 (indicative of hypertension for more than 6 months), early diastolic murmur for aortic regurgitation.
- Abdomen – scars from previous genitourinary (GU) surgery, palpable kidney or mass, flank tenderness (pyelonephritis, obstruction), or bruit (renovascular disease).
- Extremities – disparity in blood pressure.

**Investigations**

General clinical acumen and physical examination results should guide the family physician in evaluating a young patient with hypertension. Generally the laboratory examination in such patients falls into four categories:

**Side-room tests**

- urine dipstick (look for proteinuria, haematuria and glucose)
- blood glucose (finger-prick method).

**Screening tests**

- urine culture (if there is an indication of a urinary tract infection and renal pathology)
- electrolytes (e.g. hypokalaemia indicative of Conn’s syndrome) urea and creatinine (indicative of renal failure due to the nephritic syndrome)
- calcium levels (hyperparathyroidism)
- uric acid
- full blood count with differential count
- lipid profile
- resting ECG.

**Specific tests**

- urine for microalbuminuria (predictor of cardiovascular events in hypertension)
- 24-hour urine for catecholamines (vanillylmandelic acid (VMA) for phaeochromocytoma)
- hormone levels (thyroid and adrenals)
- renal ultrasound.

**Specialised studies**

- ambulatory blood pressure monitoring
- captopril challenge test
- captopril renal scan
- Doppler studies of renal arteries
- renal angiogram
- renal biopsy
- magnetic resonance angiography.

**Further reading**


**USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE IN THE MANAGEMENT OF HYPERTENSION: AN OVERVIEW**

L H MABUZA, MB ChB, BTh, MFamMed
Principal Family Physician and Senior Lecturer, University of Limpopo (Medunsa campus), and Dr George Mukhari Hospital, Pretoria

Complementary and alternative medicine (CAM) can be defined as medical interventions that are neither taught widely in orthodox medical schools nor generally available in hospitals. Such approaches include homeopathy, acupuncture, chiropractic, yoga, herbal remedies, naturopathy, osteopathy, reflexology and aromatherapy.

Thus far there is scanty scientific knowledge on the use of CAM. Systematic reviews done on the subject have found that many clinical trials testing CAM have major flaws, e.g. poor statistical power, lack of comparison with treatments or placebos or both, and poor controls. As a result these reviews typically conclude by recommending larger well-designed studies to lend authority to their findings. Furthermore, even before these products can be launched into definitive clinical trials, minimum clinical trial standards need to be fulfilled.

This article discusses the basic principles of CAM most commonly used in South Africa, their role in the management of
The concept of yogic therapy is based on total health – the harmonisation of body and mind.

**Herbal remedies**

Herbal medicines consist of leaves, bark, roots, stems, bulbs, fruits, flowers and seeds. These may be used in their green fresh form, dried and preserved, or ground into powder. Herbs have healing properties and are applied to sores or painful parts of the body as pastes or poultices, swallowed for emesis, given as enemas, or the powders used like snuff. In South Africa a number of herbs are gaining popularity as immunity boosters for immunocompromised patients. Patients consult herbalists for a variety of ailments, including hypertension.

For example, a tea made from the leaves of Olea europaea has been used in both Europe and Africa, ostensibly to lower blood pressure, improve blood circulation and balance blood sugar levels. Studies on animals have shown some antihypertensive and vasodilatory effects, but studies on humans are too small to allow conclusions to be drawn.

**Homeopathy**

Homeopathy is based on the law of similars and potenisation. The law of similars states that, as exposure to a substance can cause specific symptoms in a healthy person, the substance can be used to stimulate the body’s curative powers to overcome similar symptoms during illness. Potenisation is a process that involves a series of precise dilutions and successions (vigorous shakings). Therefore, homeopathy is considered as a form of ‘energy medicine’ in which energy fields from the mother tincture are imparted to the carrier (water or alcohol) during the succussions. A substance has to undergo this process to be useful as a homeopathic remedy.

Depending on the holistic presentation of the hypertensive patient, a variety of homeopathic remedies are offered, e.g. lachesis for an anxious hypertensive, and aurum for stress-related blood pressure. However, so far, there are no studies that convincingly demonstrate that homeopathy is superior to placebo.

**Acupuncture**

This ancient Chinese practice is over five thousand years old. The technique uses hair-like, fine needles which are inserted into known ‘acupuncture points’ along meridians. The meridians are thought to be the precise pathways through which vital energy (qi) is believed to travel. Each of the 12 major meridians is connected to a particular organ. Additionally, there are 8 ‘extra’ meridians and innumerable smaller meridians throughout the body. There are 365 specific junctures (points) along these meridians into which the acupuncture needles can be inserted, aimed at affecting the energy balance of the body, thus conferring the healing capacity. One of the roles of acupuncture is its use as anaesthesia or analgesia through the stimulation of endorphin release. Another common use is in the treatment of addictions (alcohol, drugs and cigarettes). Through its reduction of activity in the sympathetic nervous system, acupuncture is thought to have the potential to reduce elevated blood pressure.

**Yoga**

The concept of yogic therapy is based on total health – the harmonisation of body and mind. It operates at three levels: prevention, cure and rehabilitation.

The role of yoga has gained recognition by the World Health Organization (WHO) as a supplementary and complementary therapy. Prevention of hypertension using the principles of yoga entails adoption of a proper lifestyle: water drinking (2 - 3 glasses) in the morning for effective body waste removal (daily Ushapan); a diet free of excessive oil and saturated fats (Satvik, simple mitahar); the practice of mind-purging techniques like Vimohana; avoidance of suppression of emotions; having ‘Satsang’ (being in good company or good atmosphere); and doing everything in moderation – to mention but a few.

Yoga practitioners believe that the practice unites mind and body activities, resulting in stress relief – essential in managing hypertension. The patient is guided to assume specific poses and to perform specific movements during the practice.

**Chiropractic**

According to Palmer’s doctrine, most diseases are caused by ‘misalignment’ of the spinal bones (subluxations) correctable by spinal manipulation and adjustment.

Chiropractic physicians diagnose and treat patients whose health problems are associated with the nervous, muscular or skeletal systems – especially the spine. They believe that disturbance of these systems impairs the body’s normal function, hence lowering its resistance to disease. Body functions are controlled by the central nervous system through the spine and vertebral column. Hence, dysfunction of the latter two leads to alteration of the important body functions. Furthermore, they hold that pain develops owing to skeletal imbalance through joint or articular dysfunction, particularly in the spine. Therefore, chiropractors offer treatment through manipulation of the back, neck, extremities and other joints.

Almost like Western-trained physicians, chiropractors follow a standard routine: medical history, and general
Herbal medicine can cause hepatotoxicity, nephropathy, cardiomyopathy, encephalopathy and neuropathy. The hepatotoxic effect may lead to fulminant exacerbation of autoimmune hepatitis.

Side-effects

Over recent years, a number of studies have been published on the potential adverse effects of CAM. This goes contrary to the popular belief that the medicines and methods used in CAM are ‘natural’, ‘soft’, ‘holistic’ and therefore harmless. It has been said that ‘a drug or method without side-effects has no desired main effect’. Accordingly, it can be argued that any method with proven clinical effects probably also presents a risk for unwanted effects, including overdose.

Herbal medicine can cause hepatotoxicity, nephropathy, cardiomyopathy, encephalopathy and neuropathy. The hepatotoxic effect may lead to fulminant exacerbation of autoimmune hepatitis. Pneumothorax (rare), cardiomyopathy, encephalopathy and neuropathy. The hepatotoxic effect may lead to fulminant exacerbation of autoimmune hepatitis. Herbs such as ginseng, kava, St John’s wort, and valerian can cause liver damage and other side-effects. They are ‘natural’, ‘soft’, ‘holistic’ and therefore harmless. It has been said that ‘a drug or method without side-effects has no desired main effect’. Accordingly, it can be argued that any method with proven clinical effects probably also presents a risk for unwanted effects, including overdose.

The hepatotoxic effect may lead to fulminant exacerbation of autoimmune hepatitis.

However, the ingredients in homeopathic preparations are so diluted that they carry virtually no trace of the original substance. Consequently, they should cause no side-effects. There may be no adverse effects from the chemical ingredients of the substance as a result of the multiple dilutions, but if the original substance does in fact leave ‘some kind of imprint’ on the diluent molecules, imbuing them with the properties of the original substance, then adverse effects are inherent, even if by placebo effect.

Conclusion

The primary health care provider should be committed to the context of the patient’s illness and to the patient as a person. Although it cannot be expected of him/her to be an expert on CAMs, patients will use them, so knowledge of the different CAM modalities is important.

Further reading


The Family Physician and the Pregnant Hypertensive

J V NDIMANDE, MB ChB, MPraxMed
Senior Specialist, Department of Family Medicine and Primary Health Care, University of Limpopo (Medunsa campus), Pretoria
Consultant, Dr George Mukhari Hospital, Pretoria

Part of the family physician’s responsibility is to care for the pregnant patient. The measurement of maternal blood pressure remains an essential part of the examination at any antenatal clinic. Ideally the patient’s blood pressure should be assessed before she falls pregnant, as a decrease in blood pressure during the first half of pregnancy is normal.

Hypertensive diseases of pregnancy are the leading causes of direct maternal deaths in South Africa. Pre-eclampsia is a multi-organ disease unique to pregnancy, clinically evident by the presence of hypertension and proteinuria. In its severe forms pre-eclampsia is the commonest cause of maternal and perinatal mortality and morbidity.

Significant problems relate directly to the effects of elevated blood pressure. A family physician can prevent these problems by rendering advice on lifestyle modification such as alcohol and cigarette smoking. This principle, if applied, can prevent severe adverse effects on both the mother and the unborn baby.

Maternal blood pressure has an effect on the weight of the baby. Perinatal mortality is associated with raised maternal blood pressure in women with pre-existing hypertension and in those in whom hypertension is first diagnosed in pregnancy.