Hypertension: New Guidelines

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There is no disease which its definition, classification and guidelines for treatment keep changing like hypertension. This task is usually taken by large national and international organizations. One such organization is the American Joint National Committee for Detection, Evaluation, Treatment and Prevention of High Blood Pressure (JNC).The latest report of this committee (JNC 7) published in May 2003 which came six years after the (JNC 6), released in 1997, made very interesting changes in definition and treatment of hypertension after new knowledge has come to light from variety of sources.

Prehypertensive is a term used for the first time. This term is given for those people whose systolic blood pressure is 120 – 139 mm Hg or diastolic blood pressure is 80 – 89 mm Hg. Blood pressure of 119/79 or less is normal.

Classes of hypertension which were three in JNC 6 and four in previous reports are now only two in this report and they are called stages. Stage 1 hypertension is a blood pressure of 140-159/ 90-99. If systolic blood pressure is equal to or more than 160 mm Hg. and if diastolic blood pressure is equal to or more than 100 mm Hg. then stage 2 hypertension is diagnosed. In general diagnosis of hypertension and prehypertension is based on the average
Of two or more properly measured seated blood pressure readings.

Blood pressure awareness, treatment and control rates all over the world are far from being satisfactory. Awareness in 1999 – 2000 American study was 70%, treatment rate was 59% while control rate was 34% only. In the few Iraqi studies we have the awareness rate, compliance for treatment and blood pressure control rate are far below the American figures (Al- Alwan and Al-Shaarbaf).

The primary focus in treatment should be on achieving the blood pressure goal of 140/90 or less. It was found that in persons older than 50, systolic blood pressure of more than 140 mm Hg. is more important cardiovascular disease risk than high diastolic blood pressure. In patients with hypertension and diabetes or chronic renal disease the goal is to have blood pressure of 130/80 Or less. To achieve these goals life styles modification should be applied first for all patients as well as for those who are prehypertensive. Life styles modification include weight reduction for those who are obese or overweight, diet rich in calcium and potassium and poor in sodium, physical activity and no alcohol consumption.

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The JNC 7 report stresses that thiazide diuretics should be used in the treatment of hypertension either alone or in combination with other groups of antihypertensive drugs. In fact most hypertensive patients require two or more antihypertensive drugs to achieve goal blood pressure level. The other groups which could be used in combination with thiazide diuretics or as replacement for this group in the rare situations in which diuretics are contraindicated are beta blockers , calcium channel blockers, angiotensin converting enzyme inhibitors (ACEIs) and angiotensin receptor blockers (ARBs). Centrally acting drugs, alpha blockers and direct vasodilators are needed in complicated hypertension as well as in pregnancy related hypertension. Regular follow up is needed rather frequently in those on two or more drugs. Once blood pressure is at goal level visits at three to sixth months intervals are enough. Low doses aspirin should be considered only if blood pressure is controlled. Risk of bleeding is high with uncontrolled hypertension.

In ischemic heart disease with hypertension the suggested drugs are one of the beta blockers or a long acting calcium channel blockers in case of stable angina. Beta blockers and ACEIs are indicated in acute coronary syndrome i.e. myocardial infarction and unstable angina. In post myocardial infarction and hypertension the recommended drugs are ACEIs, Beta blockers and aldosterone antagonists. Needless to say that in all cases of ischaemic heart disease intensive lipid management and aspirin therapy is also indicated. In asymptomatic left ventricular dysfunction beta blockers and ACEIs are recommended but when symptomatic or end stage heart failure exist then the suggested antihypertensive therapy is ACEIs, ARBs, beta blockers, aldosterone antagonists and loop diuretics.

Hypertension with diabetes or chronic renal failure needs special emphasis. In both these situations the goal is to lower blood pressure to less than 130/80. This goal can usually be achieved by combination of two or more drugs. Any of the five major groups of antihypertensive therapy can be used in diabetic hypertensive patients. ACEIs and ARBs have been found to have a favorable effect on the progression of diabetic nephropathy. More aggressive treatment is usually needed for hypertension and chronic renal failure. Combination of three drugs is commonly needed.

expansion between silicon and gold affects bending of the microcantilever, temperature changes of a million of a degree can be measured yet another mechanism of response was employed to measure proteins in solution. Antibodies where covalently attached to the silicon surface of a cantilever in such away that the surface induced in the antibody when it reacted with its antigen where detected. Another type of biosensor uses sophisticated technology to detect a specific trait of abnormality in aliving organism(e.g. detecting cancer , monitoring the status of diabetes without using blood samples).(10)

Yet another type of biosensors , the bioreporters is based on detection of light emitted by a specially engineered microorganisms that is involved in bio-remedication.

Another class of biosensors use various techniques to turn biological system into a tiny electronic device, to analyze biological or physiological processes, or to detect and identify bacteria (e.g. the infrared microspectrometer). DNA can be used to identify organisms ranging from humans to bacteria and viruses . The identification consists of reading the sequence of the DNA letters (A , G , C , AND T) that compose the alphabet used to describe the basis attached to the deoxyribose phosphate polymer that forms the backbone of the DNA helix. The latter category of biosensors is known as genosensors.

New and faster methods to read the DNA sequence would clearly be advantageous .(DNA sequence information would be as common as blood type and would be more informative.(10)

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