HEMODYNAMIC PATTERNS IN ESSENTIAL HYPERTENSION

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The evaluation of haemodynamic patterns in hypertensive patients by radionuclide techniques and tomographic gamma camera has revealed differences between older and younger patients. In younger hypertensive patients, the hyperkinetic state reflected in an increase in heart rate and, consequently, an increased cardiac index and left ventricular ejection fraction (LVEF) in comparison with normotensive controls. Older hypertensive patients, however, show a different haemodynamic pattern, with reduced systolic and diastolic function at rest compared with normotensive elderly people, and marked depression of cardiac systolic and diastolic reserve during exercise. Elderly hypertensive patients also show strikingly higher hyperresistance and reduced peripheral perfusion in comparison with younger hypertensive patients. These haemodynamic differences need to be taken into account when considering antihypertensive treatment.

In a study in 106 elderly hypertensive patients, treatment with four different antihypertensive drugs, produced a significant decrease in total peripheral resistance and blood pressure, together with a reduction in left ventricular (LV) afterload and an increase in cardiac output and LVEF (tending towards normal values). The LV peak filling rate was also increased and evaluation of systolic and diastolic cardiac reserve during exercise showed positive changes in cardiac performance.

Left ventricular hyperthropy (LVH) is a powerful predictor of cardiac events. Long term increases in BP predispose to LVH, impaired diastolic relaxation and, ultimately, ventricular dysfunction.

A reduction in LVH produces a number of different beneficial effects:

- Increases in LV filling and diastolic reserve
- Moderate increases in cardiac output and LVEF especially in elderly patients.
- Increases in coronary flow reserve, especially when coronary vasodilator drugs are given.

Coronary flow reserve was evaluated in LV prehypertrophic and LV hypertrophic hypertensive patients. Under maximal dipyridamole vasodilatation, coronary flow reserve was highly impaired in comparison with normotensive controls, and increases in arteriolar wall thickness, collagen content and diastolic dysfunction were also noted. A marked improvement in coronary flow reserve in patients who received antihypertensive therapy was confirmed.