SUMMARY

Left ventricular hypertrophy (LVH) has been shown to be a significant independent risk factor for adverse cardiac outcomes both in the general population and in patients with hypertension, even without underlying heart disease.

While impaired exercise capacity has been demonstrated in Nigerian hypertensives patients with Electrocardiographic LVH and/or cardiomegaly on chest xray there is a paucity of data relating echocardiographic (ECHO) LVH and diastolic function to exercise capacity.

This study was designed to assess the association of LVH and dysfunction with abnormal exercise capacity among Nigerian hypertensives.

A total of one hundred and fifty subjects made up of 50 hypertensive patients with LVH, 50 hypertensives without LVH and 50 normal volunteers were studied. They were matched for age, sex and body mass index. All subjects had clinical evaluation and were tested for hematological and biochemical abnormalities. All subjects also had 2D and Doppler echocardiography and the Bruce protocol treadmill exercise test.

The results demonstrated significant impairment of exercise capacity in hypertensives with or without LVH compared to normotensive subjects. The hypertensive with LVH patients showed worse cardiovascular responses to exercise when compared to hypertensives without LVH.

M-mode and 2D echocardiography showed that hypertensives with LVH had a significantly higher indices of left ventricular (LV) dimension in diastole (P < 0.0001), LV dimension in systole (P<0.0001), Right ventricular (RV) dimension (P<0.05), left atrial
dimension (P=0.002), aortic dimension (P<0.05), LV mass (P<0.0001), Interventricular septal wall thickness (P<0.0001), posterior wall thickness (P<0.0001) and aortic cusp separation (P<0.0001).

The study did not demonstrate any significant differences between the patients and the controls in the means of the ejection phase indices of LV systolic function: Fractional shortening, ejection fraction and Doppler derived stroke distance.

The means of some of the transmitral and tricuspid Doppler parameters assessed such as E, A, E/A ratio were significantly different from those of the controls.

This study also showed that ejection fraction, fractional shortening, isovolumic relaxation time and Doppler transmitral flow velocity pattern correlate with metabolic equivalent in hypertensives with LVH.

The study concludes that hypertensives with LVH have larger ventricular dimensions, normal systolic function, but impaired LV and RV filling patterns. These abnormalities might have contributed to the limited exercise capacity observed in these patients.