ABSTRACT

**Background:** Left ventricular mass is known to be influenced by genetic factors. This study was carried out to determine the influence of parental history of hypertension on the left ventricular mass of normotensive adolescent Nigerians and to identify the determinants of left ventricular mass.

**Methods:** One hundred and eighty-three individuals aged 13-19 years were recruited for the study. The subjects (n = 91) comprised normotensive individuals with positive family history of hypertension in one or both biological parents and the controls (n = 92) consisted of age and gender matched normotensive offspring of normotensive parents. The basic anthropometric parameters, blood pressure and electrocardiography were done for each individual. Left ventricular mass was determined by echocardiography.

**Results:** The basic anthropometric parameters were comparable in the two groups. There was no difference in LV dimensions, LV systolic and diastolic functions and outflow tract velocities in the two groups. However the
interventricular septum and posterior wall thickness were significantly higher in the subjects than in the controls, $(1.13 \pm 0.12\text{cm} \text{ vs } 0.99 \pm 0.09\text{cm}, p<0.00001)$ and $(0.95 \pm 0.12\text{cm} \text{ vs } 0.89 \pm 0.09\text{cm}, p<0.001)$ respectively. LVM and LVMI were significantly higher in subjects than in controls, $(179.10 \pm 40.67\text{g} \text{ vs } 147.70 \pm 30.98\text{g}, p<0.000001)$ and $(106.97 \pm 18.49\text{g/m}^2 \text{ vs } 87.95 \pm 16.54\text{g/m}^2, p<0.000001)$ respectively. Males had significantly higher LVM and LVMI than females in both subjects and controls. Children with maternal hypertension had significantly higher LVM and LVMI than children with paternal hypertension, $187.46 \pm 38.19\text{g} \text{ vs } 173.93 \pm 31.75\text{g}, p<0.001$ and $110.15 \pm 20.53\text{g/m}^2 \text{ vs } 104.31 \pm 17.54\text{g/m}^2, p<0.001$. LVM correlated with variables like age, weight, BSA height, SBP and DBP. Multiple regression analyses showed weight contributed most to the variance in LVM, followed by age and to a lesser extent SBP in both subjects and controls. The case prevalence of LVH determined by echocardiography was 19%. Comparatively electrocardiography had a low sensitivity in diagnosing LVH.

**Conclusion:** This study suggests that there is a genetic predisposition to increased LVM in adolescents with a positive family history of hypertension and maternal hypertension could be more significant in the transmission of genetic susceptibility to increase LVM.