**ABSTRACT**

**Objectives:** This study was designed to determine the usefulness of left atrial volume index as a surrogate marker of left ventricular diastolic dysfunction in adult Nigerian hypertensives.

**Background:** Left ventricular (LV) diastolic dysfunction is prevalent in hypertension. Several studies have identified a relationship between left atrial volume and diastolic dysfunction. The association between left atrial (LA) volume and diastolic function in black African hypertensives is not well known.

**Methods:** Transthoracic echocardiography was conducted for 200 hypertensives who were in sinus rhythm, with no history of atrial arrhythmias or valvular heart disease, compared with 100 age and sex matched normotensive controls. Doppler indices of diastolic function were assessed and left atrial volume was measured using the biplane area length method and further indexed to body surface area. Associations between left atrial volume index and diastolic dysfunction were examined.

**Results:** The normal reference range for LAVI obtained from the normotensive controls was 15.3 to 30.9 mL/m². In the hypertensive cases, 70% had left atrial enlargement while diastolic dysfunction occurred in 80%. The mean left atrial volume index in the hypertensives with diastolic dysfunction (38.5 ± 10.4 mL/m²) was significantly higher than the hypertensives with normal diastolic function p < 0.0001. Left atrial volume index increased significantly with worsening diastolic dysfunction; 30.6 ±9.2 mL/m² (normal diastolic function), 37.9 ± 10.5 mL/m² (grade I DD), 38.5 ± 8.3 mL/m² (grade II DD), 49.4 ± 15.5 mL/m² (grade II-IV DD) (p=0.0001). Left atrial volume index was found to correlate positively with age, duration of hypertension, systolic and diastolic blood pressure, LV mass, and diastolic function grade. In a multivariate model, LA
volume index was independently associated with age, LV mass, female gender, diastolic dysfunction and abdominal obesity. A left atrial volume index of > 31.2 mL/m² was found to predict the presence of left ventricular diastolic dysfunction with 76.3% sensitivity and 55% specificity. The area under the receiver operator characteristic curve for LAVI to detect grade I, grade II, and grade III to IV diastolic dysfunction was 0.70, 0.75 and 0.87 respectively, showing a progressive increase with worsening diastolic dysfunction. Left atrial volume index performed better than LA linear M-mode dimensions in the detection of diastolic dysfunction.

**Conclusion:** Diastolic dysfunction is common in Nigerian hypertensives. Left atrial enlargement is highly prevalent in hypertensives with diastolic dysfunction. There is a strong association between left atrial volume index and left ventricular diastolic dysfunction. Left atrial volume index predicts the presence of diastolic dysfunction and has a graded increase with worsening diastolic dysfunction.