Abstract

**Background:** Cardiovascular system abnormalities are prominent features of sickle cell anaemia. Previous studies have been inconclusive on the diastolic and systolic function in sickle cell anaemia patients. There is limited literature on their left ventricular geometric patterns in SCA subjects.

**Objectives:** To assess the left ventricular structure and functions in patients with sickle cell anaemia seen at the University College Hospital, Ibadan and to compare with controls of comparable age and sex.

**Materials and methods:** One hundred and sixty-one subjects were recruited into the study. There were 90 SCA subjects in steady state and 71 controls. The groups were of comparable age and sex. They all had clinical evaluation and Echocardiographic examination, including M-mode, Doppler echocardiography and tissue Doppler imaging.

**Results:** The mean age of SCA subjects was 26.10 years while the mean age for the control group was 25.95 years. The sickle cell anaemia subjects had smaller baseline clinical characteristics and also lower systolic and diastolic blood pressures. Twenty eight patients (29.83%) had dyspnoea, None of the controls had dyspnoea.

The SCA subjects had larger cardiac dimensions. There was no difference in the LV systolic load dependent indices and load independent indices between the two groups.

There was diastolic dysfunction among the SCA subjects with a prevalence of 16.6% using TDI and 10% using transmitral flow indices. The E/E^i_ which is a measure of of left ventricular filling pressure and myocardial stiffness was higher among the SCA subjects. The predominant abnormal LV geometric pattern in SCA subjects was eccentric LV hypertrophy.
**Conclusion:** This study has shown that there is normal systolic function in sickle cell anaemia patients. There is evidence of diastolic dysfunction among SCA subjects and they may have increased myocardial stiffness. The predominant abnormal LV geometric pattern in SCA subjects is eccentric LV hypertrophy. There is need for long term prospective longitudinal studies in among SCA subjects in Nigeria to determine the prognostic implication of diastolic dysfunction and abnormal LV geometry.