SUMMARY

Background
Goiter is endemic in iodine deficient areas of the world. Thyroid diseases are the second most common endocrine disorder in Nigeria. Cardiovascular changes are a major cause of morbidity and mortality in thyroid disease patients. Despite this, data are sparse on the pattern of arrhythmias and cardiac dysfunction among these patients.

Objective
In this study, the prevalence and pattern of arrhythmias and left ventricular dysfunction among patients with goiter were determined.

Method
One hundred subjects with goiter and 100 age and sex matched control without goiter were recruited consecutively into the study. They all had echocardiography, 12-lead electrocardiography and 24-hours Holter electrocardiography. Various cardiovascular parameters were measured and recorded in all the study subjects.

Results
The mean age of the goiter group was 46.9 ± 13.9 years vs 46.6 ± 11.6 years in the control group (P=0.8510). Each group comprised 12 males and 88 females. Forty-seven subjects in the goiter group were hyperthyroid, 44 were euthyroid while 9 of them were hypothyroid. All the apparently healthy subjects in the control group were euthyroid.

Left ventricular (LV) dysfunctions (systolic and diastolic) were common among patients with goiter. The prevalence of systolic dysfunction in goiter subjects was 14% compared to 3% of controls while diastolic dysfunction was seen in 24% of goiter subjects as compared to 11% of the controls. Hyperthyroid and hypothyroid goiters were more associated with LV systolic and diastolic dysfunction. The prevalence of LV systolic dysfunction among the hyperthyroid, euthyroid and hypothyroid groups were 6.4%, 4.5% and 100%, respectively while that of LV diastolic dysfunction were 23.4%, 9.2 and 100% respectively. Enhanced systolic function was seen in 38.3% of the hyperthyroid group.
Cardiac arrhythmias were commoner in patients with goiter. The prevalence of heart rhythm abnormality (using 12-lead ECG) was 43% in the goiter group compared to 24% of the control group while it was 51% and 24% in the goiter and control subjects respectively using 24-hours Holter ECG. Cardiac arrhythmias were noted to be most common among the hypothyroid and hyperthyroid subjects. The 12-lead ECG prevalence of arrhythmias among the hyperthyroid and hypothyroid groups was 63.8% and 44.4% while the 24-hour Holter prevalence was 74.5% and 66.7% among the hyperthyroid and hypothyroid groups. The commonest rhythm abnormality in hyperthyroid goiter was sinus tachycardia while the commonest rhythm abnormality in hypothyroid goiter was sinus bradycardia.

Variables identified as predictors of left ventricular dysfunction were LAD (P<0.001) and LVIDD (P=0.005) while the thyroid function status (P=0.013) and the level of sTSH (P=0.038) were the predictors of cardiac arrhythmias.

**Conclusion**

Left ventricular dysfunction and cardiac arrhythmias are common in hypothyroid and hyperthyroid goiter population. 24-hour Holter ECG monitoring detected more arrhythmias among subjects with goiter compared to 12-lead ECG.

**Key words:** thyroid diseases, arrhythmia, left ventricular dysfunction.