ABSTRACT

Background

Cerebrovascular disease is the third leading cause of death in western countries. In Africa, it accounts for 4 - 9% of deaths and 6.5% - 41% of neurological admissions in hospital-based studies. Resting 12-lead electrocardiogram (ECG) in acute stroke patients indicated a frequency of 40 - 60% of arrhythmias, and even much more with 24-hour Holter ECG. There are paucity of data from Africa on the prevalence and types of arrhythmias in acute stroke patients.

Objective

This study described the prevalence, types and correlates of arrhythmias seen in acute stroke patients using 12-lead ECG and 24-hour Holter monitoring. It also related the occurrence of arrhythmia to one-month mortality.

Methods

This is a comparative cross sectional study involving one hundred (100) acute stroke patients and 100 age and sex-matched controls. Participants underwent laboratory investigations, 12-lead ECG and 24-hour Holter monitoring. Both groups were compared using student’s t test, Chi square and one-way ANOVA (with Tukey’s post hoc test for multiple comparisons) as appropriate. Binary logistic regression was used to assess the determinants of arrhythmias and one-month mortality outcome in acute stroke patients. Statistical significance was taken as a p value < 0.05

Results

The prevalence of arrhythmias was higher using 24-hour Holter monitoring than resting 12-lead ECG in acute stroke patients (87% vs 38%) (p<0.001). The types of arrhythmias in acute stroke patients were
sinus tachycardia, sinus bradycardia, sinus arrhythmia, sinus nodal pause, premature atrial complexes, atrial fibrillation (AF), supraventricular ectopies and different grades of ventricular ectopies including ventricular tachycardia (VT). The commonest sustained arrhythmia was AF. Compared to patients without arrhythmia, those with arrhythmia were more likely to be males [Odds ratio: 61.062 (95% confidence interval: 4.358 – 855.525) p=0.002]; diabetic [Odds ratio: 8.386 (95% confidence interval: 1.009 – 69.696) p= 0.049] and have LVH [Odds ratio: 119.819, (95% Confidence interval: 8.877 – 1617.255) p<0.001]. Age was not a significant predictor of the presence of arrhythmias [Odds ratio: 3.817, (95% Confidence interval: 0.532 – 27.482) p=0.184]. Acute stroke patients who smoked cigarette were significantly more likely to die within one-month post-ictus when compared with non-smokers [Odds ratio: 60.640 (95% confidence interval: 6.741 – 545.477) p=0.001]. There was no statistically significant association between the presence of arrhythmias and one-month mortality (p=0.174)

Conclusion

24-hour Holter monitoring showed higher prevalence of arrhythmias than 12-lead ECG in acute stroke patients. Male gender, presence of diabetes and LVH were predictors of arrhythmias in acute stroke patients. Cigarette smoking was a predictor of one-month mortality after controlling for sex, age and DBP.