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Electrocardiogram abnormalities in patients with heart failure with reduced ejection fraction at the Charlotte Maxeke Johannesburg Academic Hospital heart failure clinic

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Abstract

Background:
The 12-lead electrocardiogram (ECG) is a low-cost tool used in the workup of all patients with heart failure with reduced ejection fraction (HFrEF). There is a paucity of evidence on the prognostic utility of the ECG in the African population with HFrEF.

Aim:
To describe the ECG abnormalities seen in patients with HFrEF and their predictive and prognostic utility during follow up at the Charlotte Maxeke Johannesburg Academic Hospital heart failure clinic.

Methods:
Data was collected retrospectively from heart failure clinic files at Charlotte Maxeke Johannesburg Academic Hospital. All new patients referred to this clinic between 01 January 2015 and 31 December 2016 with left ventricular ejection fraction less than 50% were included.

Results:
This study included 107 patients with HFrEF (median age 49 years). Of these, 43% (n=46) were male and 57% (n=61) were female. Most patients in the study were of African ethnicity (76.6%). The median follow up was 44.4 months. The most common ECG abnormalities were inverted T waves (67.3%), fragmented QRS (fQRS) (25.2%) and prolonged QTc interval (25.2%). Pathological Q waves were less common (16.8%). fQRS in lateral ECG leads was more common in patients with ischaemic heart disease (18.2%, p=0.033). QRS duration > 100ms was associated with cardiovascular events (47% of patients, p=0.022). LV non-recovery was associated with PR interval (median 176ms, p<0.001), fQRS (30.6% vs. 5.0%, p=0.026), and inferior inverted T waves (52.8% vs 20.0%, p=0.017).

Conclusion:
We demonstrate that some ECG abnormalities in HFrEF have different prevalence in South African patients to what has been described in more developed nations. Our findings show fQRS may be a useful marker of myocardial scar or prior myocardial infarction in our population.