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CLINICAL RESEARCH

Smartphone electrocardiogram for detecting atrial fibrillation after a cerebral ischaemic event: a multicentre randomized controlled trial

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Aims Atrial fibrillation (AF) is a preventable cause of ischaemic stroke but it is often undiagnosed and undertreated. The utility of smartphone electrocardiogram (ECG) for the detection of AF after ischaemic stroke is unknown. The aim of this study is to determine the diagnostic yield of 30-day smartphone ECG recording compared with 24-h Holter monitoring for detecting AF ≥30 s.

Methods and results In this multicentre, open-label study, we randomly assigned 203 participants to undergo one additional 24-h Holter monitoring (control group, $n = 98$) vs. 30-day smartphone ECG monitoring (intervention group, $n = 105$) using KardiaMobile (AliveCor®, Mountain View, CA, USA). Major inclusion criteria included age ≥55 years old, without known AF, and ischaemic stroke or transient ischaemic attack (TIA) within the preceding 12 months. Baseline characteristics were similar between the two groups. The index event was ischaemic stroke in 88.5% in the intervention group and 88.8% in the control group ($P = 0.852$). AF lasting ≥30 s was detected in 10 of 105 patients in the intervention group and 2 of 98 patients in the control group (9.5% vs. 2.0%; absolute difference 7.5%; $P = 0.024$). The number needed to screen to detect one AF was 13. After the 30-day smartphone monitoring, there was a significantly higher proportion of patients on oral anticoagulation therapy at 3 months compared with baseline in the intervention group (9.5% vs. 0%, $P = 0.002$).

Conclusions Among patients ≥55 years of age with a recent cryptogenic stroke or TIA, 30-day smartphone ECG recording significantly improved the detection of AF when compared with the standard repeat 24-h Holter monitoring.

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