

Catch Atrial Fibrillation, Prevent Stroke

Detection of atrial fibrillation and other arrhythmias with short intermittent ECG

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Title

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Abstract

Background: Atrial fibrillation (AF) is the most common arrhythmia in the adult population, affecting about 5% of the population over 65 years. Occurrence of AF is an independent risk factor for stroke, and together with other cardiovascular risk factors (CHADS₂/CHA₂DS₂-VASc), the stroke risk increases. Since AF is often paroxysmal and asymptomatic (silent) it may remain undiagnosed for a long time and many AF patients are not discovered before suffering a stroke.

Aims: To estimate the prevalence of previously undiagnosed AF in an out-of-hospital population with CHADS₂ ≥ 1, in patients with an enlarged left atrium (LA) and of total AF prevalence in sleep apnea (SA) patients, conditions that have been associated with AF. To compare the efficacy of short intermittent ECG with continuous 24h Holter ECG in detecting arrhythmias.

Methods: Patients without known AF recorded 10–30 second handheld ECG (Zenicor-EKG®) registrations during 14–28 days at home, both regular, asymptomatic registrations twice daily and when having cardiac symptoms. Recordings were transmitted through the in-built SIM card to an internet-based database. Patients with palpitations or dizziness/presyncope referred for 24h Holter ECG were asked to additionally record 30-second handheld ECG registrations during 28 days at home.

Results: In the out-of-hospital population with increased stroke risk, previously unknown AF was diagnosed in 3.8% of 928 patients. Comparing AF detection in patients with an enlarged LA versus normal LA showed that eleven of 299 patients had AF. Five of these had an enlarged LA (volume/BSA). No statistical difference in AF prevalence was found between patients with enlarged and normal LA, 3.3% and 3.2% respectively, (p = 0.974). AF occurred in 7.6% of 170 patients with sleep apnea, in 15% of patients with sleep apnea ≥ 60 years, and in 35% of patients with central sleep apnea. AF prevalence was also associated with severity of sleep apnea, male gender and diabetes. Comparing the efficacy of arrhythmia detection in 95 patients with palpitations or dizziness/presyncope with continuous 24h Holter and short intermittent ECG, 24h Holter found AF in two and AV-block II in one patient, resulting in 3.2% relevant arrhythmias detected. Short intermittent ECG diagnosed nine patients with AF, three with PSVT and one with AV-block II, in total 13.7% relevant arrhythmias. (p = 0.0094).

Conclusions: Screening in the out-of-hospital patient population (mean age 69.8 years) yielded almost 4% AF, making it seem worthwhile to screen older patients with increased stroke risk for AF with this method. Screening patients with LA enlargement (mean age 73.1 years) did not result in higher detection rates compared with the general out-of-hospital population. AF occurred in 7.6% of patients with sleep apnea, (mean age 57.6 years) and was associated with severity of sleep apnea, presence of central sleep apnea, male gender, age ≥ 60 years, and diabetes. Short intermittent ECG is more effective in detecting relevant arrhythmias than 24h Holter ECG in patients with palpitations or dizziness/presyncope.

Keywords

atrial fibrillation, atrial flutter, arrhythmia, electrocardiography, handheld ECG, intermittent ECG, Holter ECG, stroke, prevention, screening, left atrial enlargement, sleep apnea

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