Editorial

Gone Fishing (for Silent Atrial Fibrillation)

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Atrial fibrillation (AF) is associated with a stubbornly elevated mortality (3.5%–4% per year in trials), at odds with the decline in mortality after a first myocardial infarction. Furthermore, the prevalence and incidence of AF are increasing as our societies get older, and treatment of other acute and chronic cardiac disorders that predispose to AF will further prolong the lives of patients at risk of AF. Hence, there is a need to improve outcomes in patients with AF.

AF can present in a variety of clinical scenarios. Some patients suffer so much that they seek specialist help to be relieved from the arrhythmia. Others present with diffuse symptoms, often including fatigue and shortness of breath, and are found to be in AF on clinical or ECG examination. In yet others, AF is an incidental finding when an irregular heartbeat is detected on physical examination and/or an ECG is recorded for other reasons, such as during preoperative assessment. In these patients, the diagnosis of AF is made in time to institute therapy, such as oral anticoagulation, rate control, rhythm control, and therapy of concomitant cardiovascular diseases. It is estimated that one third of patients with AF are asymptomatic. Paroxysmal AF, in particular, frequently occurs without patient awareness. Studies in which systematic ECG monitoring is used have suggested that 50% to 70% of AF episodes occur without patient symptoms. Some patients are particularly unfortunate, and the diagnosis of AF is made only after presentation with an AF-related complication. The most devastating complication of AF is an acute ischemic stroke. In others, paroxysmal, self-terminating AF may remain undiagnosed even after the first stroke. Acute strokes in patients with previously undiagnosed AF are a tragic occurrence because oral anticoagulation can prevent the majority of thromboembolic complications. In these patients, earlier diagnosis and treatment are needed to prevent the complications of AF. Furthermore, early diagnosis and treatment may mitigate the progression of AF from a very treatable problem to a condition that is refractory to all therapeutic interventions.

In light of the difficulty involved in detecting rare and often clustered episodes of paroxysmal AF and when the prevalence of AF (1% to 2% in the population) is considered, trying to detect silent AF may appear like a fishing expedition. As in fishing, a successful expedition requires experience, equipment, and the right environment to achieve a good catch.

In this issue of Circulation, Engdahl and colleagues report on a successful fishing expedition for silent AF: They went to Halmsted municipality in Sweden and invited all inhabitants aged 75 to 76 years to participate in a stepwise screening program for AF. Initially, all participants underwent 12-lead ECG recording and collection of a history of cardiovascular risk factors and diseases. Thereafter, those without known AF who also had at least 1 additional stroke risk factor (heart failure, diabetes mellitus, hypertension, prior stroke or transient ischemic attack) were given a patient-operated hand-held ECG system. They were instructed to record daily short-term ECGs twice per day for 2 weeks. The researchers detected previously unknown AF in 10 of 848 patients (1%) using the initial 12-lead ECG. Furthermore, 81 of 848 of the screened patients (10%) had known AF but did not receive anticoagulant therapy. The subsequent screening by patient-operated ECG detected silent AF in an additional 30 of 403 patients with 1 additional risk factor (7.4%). Overall, this relatively simple screening program identified previously unknown AF in 75 of 848 patients (9%) in need of oral anticoagulant therapy and generated a stimulus to start anticoagulation in 81 additional patients with known AF. In 57 of 75 patients in whom screening identified silent AF (76% of those with an indication of anticoagulant therapy, 7% of those who were screened, and 4% of those invited for screening), anticoagulant therapy was initiated after the screening program. This indicates that predominantly asymptomatic patients newly diagnosed with AF are receptive to oral anticoagulation. Indeed, this is a good catch.

Engdahl and colleagues followed good anglers’ advice: They picked a good fishing ground, the elderly, in whom AF prevalence is high. In addition, they used simple yet effective techniques: They recorded a 12-lead ECG in all patients to detect chronic forms of AF and used a simple, validated patient-operated ECG to search for paroxysmal AF in those at highest risk (ie, participants with 1 additional CHADS2 factor added to age). Another strength of the study is its population-based approach as opposed to, for example, screening programs instituted in patients who have suffered a cryptogenic stroke. This distinguishes the present study from almost all prior fishing expeditions for silent AF. Hence, Engdahl and colleagues are to be applauded for pioneering the systematic fishing for AF in an unscreened elderly population.

Other waters have been fished with the use of diverse techniques: Silent AF can be identified in stroke survivors with...
higher accuracy than usual care when stroke unit telemetry, or prolonged Holter ECG recordings are used. Ongoing studies are evaluating these technologies and implemented long-term ECG monitors (eg, Study of Continuous Cardiac Monitoring to Assess Atrial Fibrillation After Cryptogenic Stroke [CRYSTAL AF], NCT00924638) in stroke survivors in multicenter settings close to clinical practice. Additional fishing grounds have also been probed, at least in preliminary data sets: A patient-operated ECG system similar to the one used by Engdahl and colleagues identified silent AF in patients who seek medical help for the treatment of hypertension, diabetes mellitus, or stroke, especially in those who accumulate several stroke risk factors. Blood-based biomarkers, including genetic markers, may in the future help to further define good fishing grounds for silent AF, although their role in clinical practice is yet to be defined. Also, the first step of the screening grounds for silent AF, although their role in clinical practice remains unknown regarding the best technique and fishing grounds to detect silent AF before its first complication, but we will need to learn more to optimize the type of ECG screening (ie, how densely to knit our fishing nets) in different patient populations. This process will require balancing technological possibilities, burden to the patient, and cost on the one hand with sensitivity and specificity on the other hand, especially when fishing for silent paroxysmal AF.

Identifying and implementing the best technique for finding silent AF is a crucial clinical need, as attested to by a simple hand, especially when fishing for silent paroxysmal AF. This work was supported by European Network for Translational Research in Atrial Fibrillation (EU FP7).

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References


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