EDITORIAL

Defining the optimal screening time duration and modalities for detecting subclinical atrial fibrillation

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Subclinical atrial fibrillation (SCAF)[1] is defined as asymptomatic episodes of atrial tachyarrhythmia that are detected by cardiac implantable electronic devices or wearable monitors. Similarly to atrial fibrillation (AF), SCAF is associated with an increased risk of stroke and mortality.[2] Early detection and management of SCAF/AF have thus the potential to prevent strokes, decrease mortality, and reduce health care costs. The need to improve SCAF/AF screening in patients with stroke risk factors using electrocardiographic (ECG) monitoring devices is unanimously recognized, and various strategies and tools have been proposed. However, identifying the most effective recording time duration in an asymptomatic population remains a challenge.

In this issue of *Polish Archives of Internal Medicine*, Mitręga et al[3] report on continuous long-term ECG monitoring using a wearable vest with telemonitoring and automated AF detection algorithms to detect SCAF/AF/atrial flutter in asymptomatic patients, aged 65 years or older, with or without previously known AF. All 2974 participants underwent a 30-day ECG recording with a wearable vest, and 72% of the respondents obtained at least 14 days of analyzable ECG signals. Subclinical or clinical AF was detected in 515 patients (17.3%). Fifty percent of the patients with arrhythmias were detected by the 6th day of the monitoring, while 75% of the patients were detected by the 13th day of screening. Longer-term (14 days) screening is thus preferred to short-term (<7 days) screening in this population of elderly adults (mean [SD] age, 77.5 [7.9] years). The number of patients that had to be screened to detect 1 patient with de novo AF was 17. Additionally, all participants were asked to assess the tolerance and discomfort of wearing the vest. Skin irritation was the most common adverse reaction (9.4% redness, 3.7% rash, and 3.3% chafing), while almost 80% of the patients reported no adverse effects.

Much remains to be said about whom to screen for SCAF. Selection of the population is crucial. The STROKESTOP study[4] was the first randomized controlled trial comparing outcomes in asymptomatic patients aged 75 years or older originating from 2 regions of Sweden, randomly assigned to be invited to screening for AF or to a control group. After a median follow-up of 6.9 (interquartile range, 6.5–7.2) years, with arrhythmia management according to the findings, significantly fewer primary end point events occurred in the screening group than in the control group (31.9% vs 33%; hazard ratio, 0.96; 95% CI, 0.92–1; P = 0.045). As compared with the STROKESTOP population, Mitręga et al[3] witnessed higher prevalence of AF in their elderly cohort (17.3% vs 10.7%). It is worth noting that their participants were sicker, with more frequent arterial hypertension (81.2% vs 53%), diabetes (29.2% vs 11%), and heart failure (22.4% vs 4%) than in the Swedish population. This population heterogeneity may explain the discrepancies between the studies.

Another knowledge gap concerns the clinical implications of SCAF burden partly due to the highly variable nature of the AF episodes. In clinical AF stroke risk is clearly increased (4 to 5 times), while in SCAF this increase is less pronounced (2 to 2.5 times).[5] Ongoing studies, such as ARTESiA[6] and NOAH-AFNET-6[7] aim to address the question of whether to initiate anticoagulation in patients with SCAF episodes shorter than 24 hours.

With the widespread access to and development of new ECG monitoring technologies, caregivers and patients are faced with the opportunity, but also the dilemma of AF screening. Potential benefits may include stroke and heart failure prevention as well as preventing the development of atrial cardiomyopathy. Negative aspects include stress, anxiety, overdiagnosis, and

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overtreatment. Thus, the candidates for screening should be able to accept or refuse the screening but also the complete management scheme related to a positive test through an informed decision-making process.

There are various types of ECG monitoring systems currently available, including Holter recordings, patches, wearable belts / vests, implantable loop recorders, or electronic memories of cardiac implantable electronic devices, and also photoplethysmography techniques using cellphone applications or smartwatches. Both the optimal duration and search method for AF remain debatable,[8] as not all these methods are fully validated for definitive AF diagnosis. Current guidelines still require the ECG confirmation of AF before initiating any treatment. In their paper, Mitręga et al[3] also report a main drawback of wearable monitors, that is, patient compliance. In a 2017 *Lancet* study of 200 patients with recent stroke, Wachter et al[9] reported that 75% of the participants wore a 10-day Holter ECG for at least 8 days, but only two-thirds of them agreed to wear a second 10-day Holter ECG after 3 months. Mitręga and colleagues[3] may have obtained superior tolerance to the wearable device possibly due to differences in the studied populations, but likely also to the systematic use of comfortable textile electrodes. It remains unclear which monitoring device best balances patient compliance, accessibility, and affordable costs.

In summary, there is increasing evidence[10] for using long-term ECG monitoring devices for AF screening, especially in high-risk populations. Pushing for 2 weeks of the monitoring time with a Holter vest maximizes the possibility of identifying AF, while mitigating patient incompliance to the device. However, it is important to stress that a clear management scheme in the case of AF detection should be established beforehand and fully discussed with the individuals undergoing screening.

ARTICLE INFORMATION

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