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Open Access Journal of Cardiology
ISSN: 2578-4633

Subclinical Atrial Fibrillation Duration Should be Incorporated in the Clinical Assessment of Stroke Risk during Atrial Fibrillation Screening

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Opinion

Volume 4 Issue 1

Received Date: June 29, 2020

Published Date: July 30, 2020

DOI: 10.23880/oajc-16000150

Opinion

Recently, opinion leaders have reviewed the gaps in evidence and summarized the arguments for and against screening for atrial fibrillation (AF) [1]. The diagnosis of AF requires a rhythm documentation using an electrocardiogram (ECG) showing at least 30s of the typical pattern of AF: absolutely irregular RR intervals and no discernible, distinct P waves. Its independent association with a 5-fold increased risk of stroke or systemic embolism in the presence of concomitant risk factors and in the absence of anticoagulation has been fully established [2]. The diagnosis and prognostic implications of subclinical AF (SCAF) evidenced during prolonged ECG recordings in patients with pacemakers or other implanted devices, or detected fortunately using various kinds of screening devices in a general asymptomatic population, is less straightforward. The ASSERT trial have shown that 6min of SCAF increased by 2.5 fold the risk of stroke compared with patients without atrial high rate episodes [3], and this finding was largely confirmed by other trials [4]. However, this increased stroke risk was only half of what would be expected in similar patients with clinical AF [5]. More recently, a sub analysis of ASSERT has shown that the risk of ischemic stroke or systemic embolism in patients with SCAF between 6 min and 24h was not significantly different from patients without SCAF and that only SCAF>24h was associated with a clear risk of stroke and systemic embolism [6]. SCAF might thus be associated with a lower stroke risk compared with overt AF.

Duration of SCAF may thus be of critical importance to assess the stroke risk of device-detected AF, and the same assumption could be made concerning these asymptomatic subjects wearing long term self-screening devices that are increasingly affordable and accessible and are recommended, at least in specific populations, for the detection of AF [7,8]. Sensitivity, specificity and diagnostic accuracy of these different tools are addressed for each of these tools in specific studies. However, the clinical significance of detecting some SCAF in these asymptomatic subjects is not yet established. One way of comparing the possible prognostic implications of these different technologies could thus be to compare the relative timing needed for diagnosing significant AF to the length of the monitored time, and calculate the "AF time / monitored time ratio" (AFt/Mt ratio) as show in Table 1.

Device	AF Time	Monitored Time	AFt/Mt Ratio
Holter	30sec	24h	1/2.880
Pacemaker	30sec	8years	1/8.409.600
	6min	8years	1/700.800
	24h	8years	1/2.920
AF Detecting Watch	30sec	2years 14/24h	1/1.226.400
	6min	2years 14/24h	1/102.200
	1h	2years 14/24h	1/10.220
	3h	2years 14/24h	1/3.406

Interestingly, estimating the average battery longevity of a pacemaker at 8years, 6min of AF on a 24h Holter recording wears a comparable Aft/Mt ratio to 24h of SCAF on a pacemaker, reinforcing the observation of Van Gelder et al in the ASSERT population [6]. This parameter could than possibly also be used to estimate the SCAF duration needed to evidence using one of these publically available watches or other screening device to detect a significant stroke risk in subjects referred for AF screening, taking into account the portion of the day when the watch is effectively worn at the arm wrist (14/24h) over 2 years. According to this assumption, at least 3hours of SCAF should be evidenced using these techniques to detect a comparable stroke risk with 30sec of overt AF. Obviously, these hypotheses will require prospective testing in screening populations, but already suggest that 30 sec of SCAF detected through these various publically available devices do not presuppose a comparable stroke risk than clinically detected AF.

No conflict of interest

No funding regarding this opinion paper

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