Journal of Heart and Stroke

Editorial
Published: 11 Dec, 2017

Subclinical Atrial Fibrillation – A Review of Present Knowledge

*Fatma Akdag and Ype S Tuininga**

Department of Cardiology, Deventer Ziekenhuis, Netherlands

Editorial

Clinical atrial fibrillation (AF) is defined by symptoms of AF and its documentation on surface electrocardiogram. It is known to be among the risk factors of ischemic stroke and systemic embolism. However, only about 15% of strokes are attributable to clinical AF. The most frequently identified risk factor is cerebrovascular disease. In 20% to 40% of cases with stroke no cause can be found, despite complete diagnostic evaluation, also known as cryptogenic stroke. In non-valvular AF, one must consider treatment with anticoagulation when CHA2DS2-VASc score is ≥ 1.

Because AF was thought to be underestimated in stroke patients, effort was made to developing better diagnostic tools in patients with cryptogenic stroke. Long-term monitoring with an insertable cardiac monitor (ICM) was shown to be more effective than conventional follow-up (control) for detection of atrial fibrillation in these patients. After 1 year, AF was detected in 12.4% in the ICM group versus 2.0% in the conventional group. In patients whom had completed the 36-month visit, the rate of detection of AF was 30.0% in the ICM group versus 3.0% in the control group. Most often this atrial fibrillation was asymptomatic and paroxysmal and thus unlikely to be detected by strategies based on symptom-driven monitoring or intermittent short-term recordings [1]. In the last years increasing attention has been focused on subclinical atrial fibrillation (SCAF), a distinct form of AF that, by definition, can only be detected by cardiovascular implantable electronic devices (CIEDs) with an atrial lead such as permanent pacemakers, implantable cardioverter-defibrillators (ICDs), cardiac resynchronization therapy (CRT) devices or implantable cardiac loop recorders. SCAF often precedes the development of clinical AF, and in many cases, SCAF is discovered only after ischaemic stroke have occured. In a large proportion of patients with a CIED asymptomatic atrial high rate episodes (AHRE) have been found. In one tenth of the patients within 3 months after implantation of a CIED, detection of AHRE occurred at least once, and during a mean follow-up period of 2.5 years it was found in 34.7% of the patients. Episodes of subclinical atrial tachyarrhythmias were almost eight times as common as episodes of clinical atrial fibrillation, with development of clinical AF in only 15.7% of these patients. These AHRE were associated with a significantly increased risk of ischemic stroke or systemic embolism by a factor of 2.5, and were independent of other risk factors for stroke and of the presence of clinical AF [2]. Similar results were found in the TRENDS [3] and SOS AF [4] trials. However, whether SCAF is causally related to stroke is not completely resolved. In only 6% to 27% of the patients with SCAF there was AHRE on the device recordings in the 30 days prior to the thromboembolic events [5-7]. This suggests that other risk factors may play an important role. Among these, the CHADS-VASc risk factors are well-known [8]. In patients with the same CHADS-VASc score, the annual stroke risk in clinical AF seems to be higher than in subclinical AF [8,9]. In addition, a combination of a high CHADS-VASc score with enlarged left atrium predisposes for AF in patients above the age of 65 years. Thirty percent of this group showed SCAF on ICM in the recently presented results of the ASSERT-II trial [10]. Its clinical significance however is unclear. AHRE burden of ≥ 5.5 hours on any of 30 prior days appeared to double the tromboembolic event risk [9]. In the EHRA consensus document treatment with oral anticoagulation is recommended in SCAF with burden of >5.5 hours a day in CHA2DS2-VASc score of ≥ 2, and to consider this treatment in CHA2DS2-VASc of 1 in male and 2 in female [11]. Shorter duration may merit oral anticoagulation if multiple risk factors are present [12,13] . The number of ICMs that would need to be implanted to detect a first episode of SCAF is 14 for a 6-months monitoring-period, 10 for 12-months, and 4 for a 36-months period [1]. Although continuous monitoring provides a higher rate of SCAF detection, there is a lack of a distinct temporal association between AHRE and the actual event as mentioned earlier in this paper. The most effective duration of monitoring has also not been determined. Considering the high costs and lack of comparative studies with clinical end-points (sttroke, embolism) implantation of an

OPEN ACCESS

Correspondence:
Ype S Tuininga, Department of Cardiology, Deventer Ziekenhuis, P.O. Box 5001, 9700 GC Deventer, Netherlands,
E-mail: y.s.tuininga@dz.nl

Received Date: *08 Nov 2017*
Accepted Date: *04 Dec 2017*
Published Date: *11 Dec 2017*

Citation:
Akdag F, Tuininga YS. Subclinical Atrial Fibrillation – A Review of Present Knowledge. J Heart Stroke. 2017; 2(7): 1043.

ISSN: 2475-5702

ICM in patients with cryptogenic stroke to detect SCAF is so far not recommended. Further studies are needed tot determine wether AHRE or/and SCAF is a causal risk factor. Because of the lack of a distinct temporal association between AHRE and the thromboembolic event, AHRE could be a risk marker for a thromboembolic event and not reflect a direct mechanism. Besides that, it has to be taken into account that AHRE not only represents SCAF, but also includes artifacts, atrial flutter, or reentrant supraventricular tachycardia. On the other hand, the atrial lead possibly generates a different type of AF. In these patients a reduction in thromboembolic events may not be extrapolated when started with oral anticoagulants. To date, there are several large clinical trials ongoing to determine wether the use of oral anticoagulation in patients with AHRE or SCAF reduces stroke in a cost-effective fashion [14-16]. These trials are expected to complete in 2019. Whether widespread and intensive screening for SCAF will be recommended will depend on its results.

References

1. Sanna T, Diener HC, Passman RS, Di Lazzaro V, Bernstein RA, Morillo CA, et al. Cryptogenic stroke and underlying atrial fibrillation. N Engl J Med. 2014;370(26):2478-86.
2. Healey JS, Connolly SJ, Manja V, Liu Y, Simek KD, Quinn R, et al. Sub-clinical atrial fibrillation in elderly primary care patients without clinical atrial fibrillation. Circulation. 2015;132(3):A14972.
3. Glotzer TV, Daoud EG, Wyse DG, Singer DE, Ezekowitz MD, Hilker C, et al. The relationship between daily atrial tachyarrhythmia burden from implantable device diagnostics and stroke risk: the TRENDS study. Circ Arrhythm Electrophysiol. 2009;2(5):474-80.
4. Boriani G, Glotzer TV, Santini M, West TM, De Melis M, Sepsi M, et al. Device-detected atrial fibrillation and risk for stroke: an analysis of?>?10,000 patients from the SOS AF project (Stroke preventiOn Strategies based on Atrial Fibrillation information from implanted devices). Eur Heart J. 2014;35(8):508-16.
5. Brambatti M, Connolly SJ, Gold MR, Morillo CA, Capucci A, Muto C, et al. Temporal relationship between subclinical atrial fibrillation and embolic events. Circulation. 2014;129(21):2094-9.
6. Martin DT, Bersohn B, Waldo AL, Wathen MS, Choucair WK, Lip GY, et al. Randomized trial of atrial arrhythmia monitoring to guide anticoagulation in patients with implanted defibrillator and resynchronization devices. Eur Heart J. 2015;36(26):1660-8.
7. Daoud EG, Glotzer TV, Wyse DG, Ezekowitz MD, Hilker C, Koehler J, et al. Temporal relationship of atrial tachyarrhythmias, cerebrovascular events, and systemic emboli based on stored device data: a subgroup analysis of TRENDS. Heart Rhythm. 2011;8(9):1416-23.
8. Gage BF, Waterman AD, Shannon W, Boechler M, Rich MW, Radford MJ. Validation of clinical classification schemes for predicting stroke: results from the National Registry of Atrial Fibrillation. JAMA. 2001;285(22):2864-70.
9. Healey JS, Alings M, Ha A, Leong-Sit P, Birnie DH, de Graaf JJ, et al. Subclinical Atrial Fibrillation in Older Patients. Circulation. 2017;136(14):1276-83.
10. Gorenek B, Bax J, Boriani G, Chen S, Dagres Taya N, Glotzer V, et al. Device-detected subclinical atrial tachyarrhythmias: definition, implications and management-an European Heart Rhythm Association (EHRA) consensus document, endorsed by Heart Rhythm Society (HRS), Asia Pacific Heart Rhythm Society (APHRS) and Sociedad Latinoamericana de Estimulación Cardíaca y Electrofisiología (SOLEACE). Europace. 2017;19(9):1556-78.
11. Glotzer TV, Hellkamp AS, Zimmerman J, Sweeney MO, Yee R, Marinchak R, et al. Atrial high rate episodes detected by pacemaker diagnostics predict death and stroke: report of the Atrial Diagnostics Ancillary Study of the MOde Selection Trial (MOST). Circulation. 2003;107(12):1614-9.
12. Kaufman ES, Israel CW, Nair GM, Armaganijan L, Divakaramenon S, Mairesse GH, et al. Positive predictive value of device-detected atrial high-rate episodes at different rates and durations: an analysis from ASSERT. Heart Rhythm. 2012;9(8):1241-6.
13. Population health research institute. Apixaban for the reduction of thrombo-embolism in Patients With Device-Detected Sub-Clinical Atrial Fibrillation (ARTESiA); ClinicalTrials.gov Identifier: NCT01938248.
14. Kirchhof P, Blank BF, Calvert M, Camm AJ, Chlouverakis G, Diener HC, et al. Probing oral anticoagulation in patients with atrial high rate episodes: Rationale and design of the Non-vitamin K antagonist Oral anticoagulants in patients with Atrial High rate episodes (NOAH-AFNET 6) trial. Am Heart J. 2017;190:12-18.
15. Diederichsen SZ, Haugan KJ, Køber L, Højberg S, Brandes A, Kronborg C, et al. Atrial fibrillation detected by continuous electrocardiographic monitoring using implantable loop recorder to prevent stroke in individuals at risk (the LOOP study): Rationale and design of a large randomized controlled trial. Am Heart J. 2017;187:122-132.
16. Diener HC, Easton JD, Granger CB, Cronin L, Duffy C, Cotton D, et al. Design of Randomized, double-blind, Evaluation in secondary Stroke Prevention comparing the EfficaCy and safety of the oral Thrombin inhibitor dabigatran etexilate vs. acetylsalicylic acid in patients with Embolic Stroke of Undetermined Source (RE-SPECT ESUS). Int J Stroke. 2015;10(8):1309-12.