Atrial fibrillation

- Acute Distal Internal Carotid Artery Occlusion in Which Angiography during Mechanical Thrombectomy Revealed a Shunt between the Internal Carotid Artery and the Cavernous Sinus: A Case Report
- APOE epsilon4 and Risk of Intracranial Hemorrhage in Patients With Atrial Fibrillation Taking Apixaban
- Prediction Model to Optimize Long-Term Antithrombotic Therapy Using Covert Vascular Brain Injury and Clinical Features
- Real-World Patent Foramen Ovale Closure in Japan- Results From 1-Year Follow-up of the Amplatzer^{TM} PFO Occluder Japan Post-Marketing Surveillance Study
- Bone mineral loss and risk of atrial fibrillation: A multicohort study
- Hemorrhagic Stroke in Atrial Fibrillation: Trends in Incidence, Case Fatality, and Prior Oral Anticoagulation
- Delayed-onset spinal subdural hematoma after kyphoplasty
- Innovation under pressure: Managing a complex carotid-jugular fistula in a war-zone limited-resources area

---

Atrial fibrillation (AF or A-fib) is an abnormal heart rhythm characterized by rapid and irregular beating.

Classification

Although the pattern of AF can change over time, at the moment of diagnosis it may be helpful to characterize the arrhythmia. These arethe different patterns:

The first-detected episode of AF. It can be self-limited or not and the symptoms can range from an ECG finding in absence of symptoms (up to30%) to the development of heart failure or syncope. In asymptomatic patients, uncertainty remains about the duration of the episode and the possibility of previous undetected episodes. The possibility of recurrent AF without significant symptoms must be taken into account and ruled out.

see Paroxysmal atrial fibrillation

Recurrent AF. After 2 or more episodes, AF is considered recurrent. When the arrhythmia terminates spontaneously, recurrent AF is designated paroxysmal; when sustained beyond 7 days, it is termed persistently. This last type includes those cases of long-standing AF, usually leading to permanent AF, in which cardioversion has failed to terminate AF.

It has been suggested that in most patients paroxysmal AF represents an earlier stage of the disease and that its natural history in the absence of intervention is to progress to persistent/permanent types of AF.

Covert atrial fibrillation (AF) is a major cause of cryptogenic stroke. This study investigated whether a dose-dependent relationship exists between the frequency of premature atrial contractions (PACs) and AF detection in patients with cryptogenic stroke using an insertable cardiac monitor (ICM).

Methods: We enrolled consecutive patients with cryptogenic stroke who underwent ICM implantation between October 2016 and September 2020 at 8 stroke centers in Japan. Patients were divided into 3 groups according to the PAC count on 24-hour Holter ECG: ≤200 (group L), >200 to ≤500 (group M), and >500 (group H). We defined a high AF burden as above the median of the cumulative duration of AF episodes during the entire monitoring period. We evaluated the association of the frequency of PACs with AF detection using log-rank trend test and Cox proportional hazard model and with high AF burden using logistic regression model, adjusting for age, sex, CHADS2 score.

Results: Of 417 patients, we analyzed 381 patients with Holter ECG and ICM data. The median age was 70 (interquartile range, 59.5-76.5), 246 patients (65%) were males, and the median duration of ICM recording was 605 days (interquartile range, 397-827 days). The rate of new AF detected by ICM was higher in groups with more frequent PAC (15.5%/y in group L [n=277] versus 44.0%/y in group M [n=42] versus 71.4%/y in group H [n=62]; log-rank trend P<0.01). Compared with group L, the adjusted hazard ratios for AF detection in groups M and H were 2.11 (95% CI, 1.24-3.58) and 3.23 (95% CI, 2.07-5.04), respectively, and the adjusted odds ratio for high AF burden in groups M and H were 2.57 (95% CI, 1.14-5.74) and 4.25 (2.14-8.47), respectively.

Conclusions: The frequency of PACs was dose-dependently associated with AF detection in patients with cryptogenic stroke [1)].

Pathophysiology

Currently, the definition of newly detected AF has not agreed upon, and the pathophysiology remains incompletely understood, possibly involving complex alterations in both the autonomic network and humoral regulation [2)].

Clinical features

Often it starts as brief periods of abnormal beating which become longer and possibly constant over time.

Most episodes have no symptoms.

Occasionally there may be heart palpitations, fainting, shortness of breath, or chest pain.

The disease is associated with an increased risk of heart failure, dementia, and stroke.

It is a type of supraventricular tachycardia.

Hypertension and valvular heart disease are the most common modifiable risk factors for AF. Other heart-related risk factors include heart failure, coronary artery disease, cardiomyopathy, and congenital heart disease.

In the developing world, valvular heart disease often occurs as a result of rheumatic fever. Lung-related risk factors include COPD, obesity, and sleep apnea. Other factors include excess alcohol

intake, diabetes mellitus, and thyrotoxicosis.

However, half of the cases are not associated with one of these risks.

Diagnosis

A diagnosis is made by feeling the pulse and may be confirmed using an electrocardiogram (ECG). A typical ECG in AF shows no P waves and an irregular ventricular rate.

Treatment

Atrial fibrillation treatment

Atrial fibrillation is the most common serious abnormal heart rhythm.

In Europe and North America, as of 2014, it affects about 2% to 3% of the population.

This is an increase from 0.4 to 1% of the population around 2005.

In the developing world about 0.6% of males and 0.4% of females are affected. The percentage of people with AF increases with age with 0.14% under 50 years old, 4% between 60 and 70 years old, and 14% over 80 years old being affected.

A-fib and atrial flutter resulted in 112,000 deaths in 2013, up from 29,000 in 1990.

The first known report of an irregular pulse was by Jean-Baptiste de Sénac in 1749. This was first documented by ECG in 1909 by Thomas Lewis.

Atrial fibrillation (AF) is increasingly recognized as the single most important cause of disabling ischemic stroke in the elderly.

Perera et al., undertook an international survey to characterize the frequency of AF-associated stroke, methods of AF detection, and patient features.

Consecutive patients hospitalized for ischemic stroke in 2013 to 2014 were surveyed from 19 stroke research centers in 19 different countries. Data were analyzed by global regions and World Bank income levels.

Of 2144 patients with ischemic stroke, 590 (28%; 95% confidence interval, 25.6-29.5) had AF-associated stroke, with highest frequencies in North America (35%) and Europe (33%) and lowest in Latin America (17%). Most had a history of AF before stroke (15%) or newly detected AF on electrocardiography (10%); only 2% of patients with ischemic stroke had unsuspected AF detected by poststroke cardiac rhythm monitoring. The mean age and 30-day mortality rate of patients with AF-associated stroke (75 years; SD, 11.5 years; 10%; 95% confidence interval, 7.6-12.6, respectively) were substantially higher than those of patients without AF (64 years; SD, 15.58 years; 4%; 95%

confidence interval, 3.3-5.4; P<0.001 for both comparisons). There was a strong positive correlation between the mean age and the frequency of AF (r=0.76; P=0.0002).

This cross-sectional global sample of patients with recent ischemic stroke shows a substantial frequency of AF-associated stroke throughout the world in proportion to the mean age of the stroke population. Most AF is identified by history or electrocardiography; the yield of conventional short-duration cardiac rhythm monitoring is relatively low. Patients with AF-associated stroke were typically elderly (>75 years old) and more often women [3)].

Retrospective cohort studies

A retrospective cohort study was conducted in King Abdulaziz Medical City in Jeddah, Saudi Arabia. This design is particularly well-suited for studying rare events like ICH, as it enables the inclusion of a larger sample size over an extended period without requiring a long follow-up. Patients were identified through medical records of those with Afib on anticoagulation who developed ICH, confirmed by brain CT. The primary endpoint was to evaluate the management, outcome, and prognosis of ICH in these patients. The secondary endpoint was to assess the association between clinicopathological features and in-hospital mortality.

A total of 36 patients were included in this study. Patients who were ≥ 70 years old accounted for 52.7%, and males constituted 61.1% of the patients. Spontaneous ICH was seen in 72.2%, while the rest were traumatic in origin. Conservative management was done in 80.5%; 69.4% had their Afib medication ceased upon admission, and only 66.6% of those had their Afib medications resumed. The factors associated with mortality during hospital admission included higher BMI (30.2 (26.3-33.1) vs. 25.1 (22.1-29.2), P = 0.0255), diabetes (14 (82.3%) vs. 8 (42.1%), P = 0.0134), higher International Normalized Ratio (INR) (1.8 (1.2-2) vs. 1.2 (1.1-1.3), P = 0.0356), spontaneous ICH (15 (88.2%) vs. 11 (57.8%), P = 0.0425), and Glasgow Coma Scale (GCS) ≤ 8 (15 (88.2%) vs. 4 (21.0%), P = 0.0002). Regarding the outcome, 47.2% passed away during their hospital stay. Upon discharge, 78.9% had a GCS score of ≥ 14; apixaban was the most common medication prescribed (42.1%). The follow-up periods of the discharged patients had a median of 445 days; 33.3% passed away, while only 5.5% of them developed a recurrent ischemic stroke.

The findings revealed that ICH in Afib patients is associated with high mortality and overall poor prognosis. There is a clear need for standardized management guidelines. Further studies are essential to establish evidence-based recommendations and reach reliable conclusions to improve patient outcomes [4)].

This study contributes preliminary data from a Middle Eastern population, which is underrepresented in the ICH-Afib literature. However, due to major limitations in design, scope, and analysis, its utility lies more in highlighting gaps in current knowledge than in offering practice-changing conclusions. The study would have been strengthened by a larger, multicenter design, prospective data collection, and adjusted statistical modeling.

1)

Shimada Y, Todo K, Doijiri R, Yamazaki H, Sonoda K, Koge J, Iwata T, Ueno Y, Yamagami H, Kimura N, Morimoto M, Kondo D, Koga M, Nagata E, Miyamoto N, Kimura Y, Gon Y, Okazaki S, Sasaki T, Mochizuki H; CRYPTON-ICM Registry Investigators. Higher Frequency of Premature Atrial Contractions Correlates With Atrial Fibrillation Detection after Cryptogenic Stroke. Stroke. 2024 Mar 4. doi:

10.1161/STROKEAHA.123.044813. Epub ahead of print. PMID: 38436115.
2)

Wang Y, Qian Y, Smerin D, Zhang S, Zhao Q, Xiong X. Newly Detected Atrial Fibrillation after Acute Stroke: A Narrative Review of Causes and Implications. Cardiology. 2019 Oct 10:1-10. doi: 10.1159/000502971. [Epub ahead of print] Review. PubMed PMID: 31600748.
3)

Perera KS, Vanassche T, Bosch J, Swaminathan B, Mundl H, Giruparajah M, Barboza MA, O'Donnell MJ, Gomez-Schneider M, Hankey GJ, Yoon BW, Roxas A Jr, Lavallee P, Sargento-Freitas J, Shamalov N, Brouns R, Gagliardi RJ, Kasner SE, Pieroni A, Vermehren P, Kitagawa K, Wang Y, Muir K, Coutinho JM, Connolly SJ, Hart RG; ESUS Global Registry Investigators. Global Survey of the Frequency of Atrial Fibrillation-Associated Stroke: Embolic Stroke of Undetermined Source Global Registry. Stroke. 2016 Sep;47(9):2197-202. doi: 10.1161/STROKEAHA.116.013378. Epub 2016 Aug 9. PubMed PMID: 27507860.
4)

Alghamdi AM, Alkulli OA, Fatani F, Subahi FS, Tayeb AF, Alghamdi A, Alzahrani M, Almehmadi F. Management and Outcomes of Intracranial Hemorrhage in Atrial Fibrillation Patients: Highlighting Practices in Saudi Arabia. Cureus. 2025 Apr 22;17(4):e82813. doi: 10.7759/cureus.82813. PMID: 40416207; PMCID: PMC12102585.