

## INTRODUCTION

Atrial Fibrillation (AF) is the most prevalent sustained arrhythmia. Overall global prevalence of AF is 1-2% in the adult population with prevalence increasing with increasing age.

AF increases overall and cardiovascular mortality. 20 to 30% of all strokes and left ventricular dysfunction are associated with AF. AF is also associated with high rate of hospitalization and poor quality of life.

AF must be aggressively diagnosed and managed to reduce the high mortality and morbidity associated with that.

## EPIDEMIOLOGY

In developed countries almost 25% of middle aged persons are expected to have AF in their lifetime. In the European Union annual incidence of AF is 120000 to 215000. After the age of 65 years, the prevalence of AF reaches almost 6%. The United Nation Population Fund has projected a 326% increase of people aged between 60 to 80 years in India over next decade.

Non-valvular AF (NVAf) is associated with a 500% increased risk of stroke. The AF related strokes are more severe. The risk of stroke in AF increases with age, being 1.5% at 50 to 59 years of age to 23.5% at 80 to 89 years. Valvular AF is associated with a 17 fold increased risk of stroke. The West Birmingham Atrial Fibrillation project showed a prevalence of 0.6% in the Indian subset. However, there is paucity of epidemiological data to

determine the true incidence and prevalence of AF in India. Recently the Indian Heart Rhythm Society - Atrial Fibrillation (IHRS-AF) registry, REALIZE-AF and Indian subgroup analysis (unpublished) of trials of the newer oral anticoagulant (NOAC) have thrown light on the AF scenario in India. The prevalences of paroxysmal AF in the RE-LY (Randomised Evaluation of Long term anticoagulant therapy), REALISE-AF, and IHRS-AF study were 38%, 43% and 19.5% respectively and prevalence rates of permanent AF were 18.6%, 34.3% and 33.7% respectively.

## DIAGNOSIS AND CLASSIFICATION OF AF

AF is suspected on the basis of pulse examination and confirmed by a 12 lead ECG with a rhythm strip. Sometimes a prolonged (72 hours) ECG monitoring is required. Also it is important to interpret data from implanted pacemakers and ICDs for episodes of AF.

AF may be classified as per the duration. This is described in Table 1. In RealiseAF Survey from India it was found that 28.6% patients had paroxysmal AF, 22.6% had persistent AF and 34.3% had permanent AF.

AF is also classified on the basis of its pathogenesis: AF secondary to structural heart disease (eg, heart failure, left ventricular hypertrophy), focal AF, polygenic AF, monogenic AF, post operative AF, AF with mitral stenosis or prosthetic heart valve and AF in athletes.

Risk factors for developing AF include heart failure (both with reduced and preserved ejection fraction), hypertension, valvular heart disease, diabetes, obesity, chronic obstructive airway disease, hyperthyroidism, hypertrophic cardiomyopathy, sepsis, and chronic kidney disease. Detection and control of the risk factors are essential for AF management.

## TREATMENT OF ACUTE (FIRST DIAGNOSED) AF

Acute AF may present with hemodynamic instability, hemodynamically stable but symptomatic and hemodynamically stable and asymptomatic.

Hemodynamic instability is usually associated with severe mitral or aortic stenosis, hypertrophic cardiomyopathy, sepsis etc. Direct Current (DC) cardioversion with 150-200 Joules is usually employed. Pharmacological cardioversion may be done with intravenous class Ia (quinidine), Ic (flecainide, propafenone) antiarrhythmic drugs (AAD) if there is no structural heart disease or with amiodarone in presence of structural heart disease. Due to more wide spread availability amiodarone is commonly

**Table 1: Classification of AF**

Name	Description
First diagnosed AF	when detected first, irrespective of suspected duration and symptoms
Paroxysmal AF	when terminated of its own or by cardioversion within 7 days of onset
Persistent AF	when lasted for more than 7 days, even if terminated later on
Long standing persistent AF	when persisting more than a year but planned to be converted
Permanent AF	when cardioversion option is abandoned.

964 used in India in all situations. Ibutilide and vernakalant are other options. Cardioversion must be done under anticoagulation coverage, like heparin or low molecular weight heparin.

If the patient is hemodynamically stable and has AF for more than 48 hours, then patient should wait for 3 weeks on adequate oral anticoagulation (VKA or NOAC) before cardioversion and the anticoagulation should continue for at least 4 weeks after the cardioversion.

Maintenance of sinus rhythm after successful cardioversion is done with long term AAD use. If there is no structural heart disease dronedarone, propafenone, flecainide and sotalol are recommended. In associated stable coronary artery disease without heart failure, dronedarone is recommended. In presence of heart failure, amiodarone is the drug of choice. AAD should not be used in presence of sinoatrial or atrioventricular node dysfunction without pacemaker backup. Catheter ablation may be contemplated in experienced centres.

Pulmonary vein isolation surgery is sometimes effective in paroxysmal AF whereas biatrial maze procedure is suitable for persistent AF.

In chronic AF both the physician and patient should decide together whether cardioversion will be attempted or rate control strategy with stroke prevention measures will be accepted. In the later situation, the AF is termed as permanent AF.

### **RATE CONTROL IN AF**

Whether rhythm control has survival benefit over rate control in chronic AF is still controversial. Both acute and long term AF needs ventricular rate control for symptomatic benefit. Beta blockers, verapamil, diltiazem and digoxin, either alone or in combination, are recommended for this purpose. Though controversial, a resting heart rate below 110 per minute may be an initial target. Stricter control is required for patients remaining symptomatic. None of these has any mortality benefit in AF (even beta blockers lose their mortality benefit for heart failure with reduced ejection fraction in presence of AF). Recalcitrant cases may require atrioventricular node ablation in conjunction with permanent pacemaker implantation. Amiodarone may be used in selective cases for rate control. Verapamil and diltiazem are not indicated if left ventricular ejection fraction is below 40%.

In RealiseAF Survey from India it was found that 46.1% patients received rate control treatment, 35.2% rhythm control treatment and 18.4% received no drugs for AF. Amiodarone was the most commonly prescribed drug (39.2%) followed by beta blockers (38.5%) and digitalis (31.9%). class I drugs are rarely prescribed.

### **STROKE PREVENTION IN AF (SPAF)**

20-30% of all strokes are due to AF. Many idiopathic strokes are found to be due to silent paroxysmal AF.

Stroke risk needs to be assessed in all patients with AF and to be updated in every clinical visit. CHA2DS2-VASc

score is the standard risk estimator. Oral anticoagulant (OAC) has clear benefit in all men with CHA2DS2-VASc score of 2 or more, and all women with CHA2DS2-VASc score of 3 or more. A score of 1 in men and 2 in women may also merit OAC therapy. Other patients do not need OAC, and specifically antiplatelets have no role in SPAF. But in India almost half of AF patients received antiplatelets only. Bleeding risk scores like HASBLED should also be assessed to tailor therapy in individual patient. Broadly, there are two groups of OAC, vitamin K antagonists (VKA) and non vitamin K antagonist newer OAC (NOAC). In moderate to severe mitral stenosis and with mechanical heart valve prosthesis, only VKAs are recommended. In all other cases both groups can be used interchangeably if there is no specific contraindication to one agent or other.

VKA (warfarin, acenocoumarol) drugs have multiple drug-drug and drug-food interactions, need close monitoring of INR, have a narrow therapeutic window, are slow in onset and offset of action, and have higher risk of intra cranial bleeding. The TTR (time in therapeutic range) should be kept as high as possible while on VKA. The optimum is above 60% whereas in India it is found to be around 30% in various substudies. The NOACs are generally preferred on these accounts, but they are expensive and they do not have easily available antidotes. The substudies including Asian populations of the original trials of each of these drugs.

Catheter based left atrial appendage (LAA) occlusion and surgical LAA exclusion are considered for patients not suitable for OAC therapy.

In stable coronary artery disease patients with AF only OAC is recommended without any antiplatelet agent. In ACS patients and in those with coronary stents, and with low bleeding risks, 6 months triple therapy (aspirin 75 mg daily, clopidogrel 75 mg daily and OAC) followed by another 6 months of dual therapy (clopidogrel and OAC) and then lifelong OAC monotherapy is recommended. In patients with high bleeding risk, the respective durations of triple, dual and monotherapy are 1 month, 11 months and lifelong.

If a patient on VKA has minor bleeding, the dose of VKA is to be delayed till INR comes below 2. For moderate bleeding, symptomatic treatment, treatment of cause and in some cases intravenous vitamin K are given. For severe bleed, prothrombin complex concentration or fresh frozen plasma is needed. In minor bleeding on NOAC one day or one dose is skipped. For moderate bleeding, along with symptomatic treatment oral charcoal is given if the last dose is taken recently. Specific antidotes are available for severe bleeding.

When OAC needs to be stopped for planned operations, bridging therapy with heparin or low molecular weight heparin proved be of no use unless there is mechanical heart valve prosthesis.

### **UPSTREAM THERAPY OF AF**

In people with high risk for developing AF because of

presence of risk factors, it has been shown in some studies that treatment with ACEI, ARB, statin or ranolazine may prevent the first attack of AF.

## CONCLUSION

In India burden of AF is huge. Early detection, proper patient counseling and guide line based tailor made therapy go a long way to reduce the loss of productive life. Standardizations of pathological laboratories, patient education and most importantly providing the treatment at affordable costs are high in priority for effective management of AF in India.

## REFERENCES

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