Atrial fibrillation: Stroke prevention in focus

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ARTICLE INFORMATION

ABSTRACT

Introduction: Atrial fibrillation (AF) is a common arrhythmia and a risk factor for stroke and other, adverse events. Internationally there have been recent advancements in the therapies available for, stroke prevention in AF. Nurses will care for individuals with AF across a variety of primary and acute, care settings and should be familiar with evidence based therapies.

Aim: This paper provides a review of the epidemiology of AF and stroke, stroke and bleeding risk, assessment tools and evidence based treatments for the prevention of stroke in AF including the use of, novel anti-thrombin agents.

Method: A review of key databases was conducted from 2002 to 2012 using the key search terms 'atrial, fibrillation' 'anticoagulation' 'risk assessment' and 'clinical management'. The following electronic, databases were searched: CINAHL, Medline, Scopus, the Cochrane Library and Google Scholar., Reference lists were manually hand searched. Key clinical guidelines from National Institute for, Clinical Excellence (NICE, UK), American Heart Association (AHA, USA), American College of Cardiology, (ACC, USA) and the European Society of Cardiology (ESC) and key government policy documents were, also included. Articles were included in the review if they addressed nursing management with a focus, on Australia.

Results: Many treatment options exist for AF. Best practice guidelines make a variety of, recommendations which include cardioversion, ablation, pulmonary vein isolation, pharmacological, agents for rate or rhythm control approaches, and antithrombotic therapy (including anticoagulation, and antiplatelet therapy). Treatment should be patient centred and individualised based upon, persistency of the rhythm, causal nature, risk and co-morbid conditions.

Conclusion: AF is a common and burdensome condition where treatment is complex and not without, risk. Nurses will encounter individuals with AF across a variety of primary and acute care areas, understanding the risk of AF and appropriate therapies is important across all care settings. Treatment, must be individually tailored to the needs of the patient and balanced with the best available evidence.

Introduction

Atrial fibrillation (AF) is an emergent health concern,[1] described by some as an evolving epidemic.[2] AF is the most commonly occurring cardiac arrhythmia and is a risk factor for stroke. Factors contributing to thrombus formation, include abnormalities of the heart wall, abnormal blood stasis and blood constituents, are

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described as Virchow's Triad.[3] In AF structural heart disease, stasis of blood within the left appendage and atrium, and abnormalities of coagulation contribute to stroke risk.[3] A patient's stroke risk can be minimised through timely identification and diagnosis of AF and application of evidence-based treatment. Internationally, there have been recent advancements in therapies aimed at reducing stroke. These include novel anticoagulants, surgical procedures and implantable devices.[4–8] These innovative therapies are becoming more common in the Australian healthcare system. Therefore, it is imperative that nurses remain knowledgeable of the available therapies and risk factors for the prevention of stroke in AF.

Aims and objectives

This paper outlines stroke prediction and bleeding risk assessment tools and provides a review of evidence based therapies to manage stroke risk in AF.

Methods

A review of key databases was conducted from 2002 to 2012 using the key search terms '*atrial fibrillation*' '*anticoagulation*' '*risk assessment*' and '*clinical management*'. The following electronic databases were searched: CINAHL, Medline, Scopus and the Cochrane Library. Google Scholar was used to augment the search. Policy documents and clinical evidence based guidelines were also included. Reference lists were manually hand searched. Results were limited to English language and full text documents. Clinical guidelines from National Institute for Clinical Excellence (NICE, UK), American Heart Association (AHA, USA), American College of Cardiology (ACC, USA) and the European Society of Cardiology (ESC) along with key government reports were also included. Articles were included in the review, if they addressed clinical management with a focus on Australia.

Atrial fibrillation

AF is distinguished by chaotic electrical atrial activation and ineffective contraction. It is commonly observed on ECG by the substitution of regular P waves with rapid oscillations or fibrillatory waves that vary in amplitude, shape, and timing, associated with an irregular frequent ventricular response when AV conduction is intact.[9] Cardiac and non-cardiac risk factors for the development of AF including emergent risk factors are summarised in Table 1.

Definition and classification

AF can be classified as paroxysmal, *recurrent episodes that self-terminate, usually within 48 h*, persistent, *recurrent episodes that last more than one week*, or permanent, *ongoing AF*. The normal progression of AF is from short, rare episodes increasing in duration to more frequent events and over time, most patients develop sustained episodes of AF.[10] Classification systems aim to provide an easier description of types of AF. The ACC/AHA/ESC Guidelines recommend a simplistic scheme for clinical relevance, as detailed in Fig. 1.

- **Paroxysmal AF**: self terminating within 7 days.[11]
- **Persistent**: requiring termination by pharmacological or electrical cardioversion.[11]
- **Permanent**: restoration to normal sinus rhythm is either impossible or unadvisable.[11]

Table 1
Cardiac and non cardiac risk factors for the development of AF.

Cardiac	Non-cardiac
Hypertension	Age
Heart failure	Gender: male
Valve disease	Diabetes
Ischaemic heart disease	Electrolyte abnormalities
Cardiomyopathy	Excessive alcohol intake
Cardiac surgery	Obesity
Atrial septal defects	Smoking
Ion channel disorders	Obstructive sleep apnoea
Myocarditis	COPD
Pericarditis	Pulmonary embolism
Left atrial enlargement	Thyroid dysfunction
Left ventricular hypertrophy	Altered metabolism
Congenital defects	Autonomic changes
	Environmental influences
	Excessive caffeine consumption

| Novel & emergent risk factors	
Genetic influences & familial history	Parental history of AF doubled risk of AF in offspring[72]
Ethnic and socio-demographic differences	Blacks appear to be at a lower risk of AF than whites.[73] European ancestry in African Americans at an increased risk[74] Increased probability if Caucasian Increased probability if from a lower socio-economic background
Excessive endurance sports training[75]	Athletes may experience any arrhythmia during rest of exercise,[76] however AF is the most common cause of palpitations in athletes.[77] Possible association between anabolic steroid use and development of AF.[78,79]
Pericardial fat	Pericardial fat is associated with the prevalence of AF.[80]
Chronic kidney disease	Reduced kidney function and the presence of albumin-urea are strongly associated with the incidence of AF.[81]
Rheumatoid arthritis	Increased risk of developing AF.[82]
Coeliac disease	Increased risk of developing AF.[83]
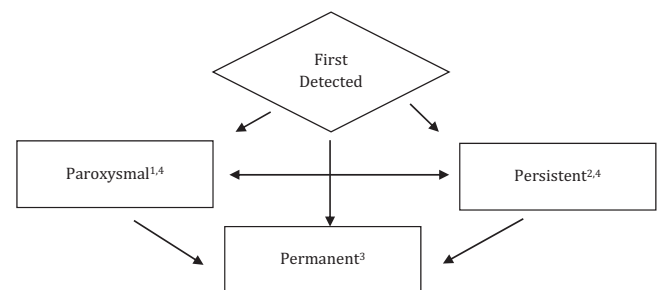
Fig. 1. Patterns of AF: [(1)] Episodes that generally last 7 days or less (most less than 24 h) [(2)] episodes that usually last longer than 7 days [(3)] cardioversion failed or not attempted [(4)] both paroxysmal and persistent AF may be recurrent.
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Stroke risk is similar with paroxysmal, persistent or permanent AF. Therefore, the selection of antithrombotic prophylaxis should be independent of the rate/rhythm control strategy.[12]

Screening and diagnosis

The screening and diagnosis of AF can be problematic. This is due to fluctuations in the presence of signs, particularly in paroxysmal AF many of which can be subtle and silent in nature. Signs and symptoms of AF are summarised in Table 2. An opportunistic manual palpation of a patient's radial pulse remains one of the most effective, feasible, and valid ways of checking for heart rate