Adherence to anticoagulation guidelines for atrial fibrillation: a district general hospital survey

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Abstract

Atrial fibrillation (AF) is the commonest sustained cardiac arrhythmia and a significant cause of hospital admission, morbidity and mortality. AF significantly increases the risk of embolic stroke, and anticoagulation with warfarin can reduce this risk by up to 61%. International guidelines recommend the use of warfarin for atrial fibrillation in patients considered at higher risk for stroke.

This prospective observational study evaluates current adherence to anticoagulation guidelines for patients with atrial fibrillation. It was carried out in a district general hospital in London on 93 patients with atrial fibrillation admitted via the emergency department over a four-month period.

Patients' mean age was 77 years and the mean age of onset of AF was 75 years. Eighty-eight per cent of patients were ≥ 75 years and/or had another risk factor for embolic stroke requiring warfarin therapy. Anticoagulation treatment did not adhere to guidelines in 56% of patients at the time of hospital admission. This proportion fell slightly to 52% at the time of hospital discharge. A total of 20% of patients were discharged on no anticoagulation at all.

The adherence to anticoagulation guidelines for patients with atrial fibrillation, who are at risk of embolic stroke, appears inadequate. Despite the evidence supporting oral anticoagulation, clinical practice seems resistant to change. The future may include patient self-monitoring and the use of oral direct thrombin inhibitors to improve stroke prophylaxis.

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Introduction

Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia, affecting 5% of the UK population over 65 years of age, and 10% of those over 75 years. AF is a significant cause of hospital admission, morbidity and mortality, and is an increasingly common condition in our ageing population.[1-4] A feature of concern to healthcare systems is the rising prevalence, projected to increase up to three fold over the next 50 years.[5]

Atrial fibrillation is well recognised to increase the risk of embolic stroke, particularly in the elderly; however, anticoagulation with warfarin substantially reduces this risk.[6-10] A meta-analysis of 16 trials of anti-thrombotic strategies concluded that adjusted-dose oral anticoagulation was highly effective at preventing embolic stroke in patients with atrial fibrillation, with a risk reduction of 61% *vs*. placebo. This figure may be compared to a 22% risk reduction using aspirin.[11] International guidelines recommend the use of warfarin for atrial fibrillation in patients at higher risk for stroke (table 1).[12] Past audits have shown that the drug is underused in clinical practice.[13,14]

This prospective observational study was designed to report current adherence to anticoagulation guidelines for patients with AF in a district general hospital and to evaluate whether this therapy is underused.

Methods

The Hillingdon Hospital was the setting for this study. It is a typical London district general hospital, with a catchment population of 275,000. Consecutive patients with atrial fibrillation, admitted via the emergency department over a four-month period, were included in this prospective observational study. A 12-lead electrocardiogram confirmed atrial fibrillation in all cases. The following baseline demographics were then recorded: patient age, age of onset of AF, associated co-morbidity (hypertension, ischaemic heart disease, acute myocardial infarction, rheumatic valve disease, heart failure, diabetes, history of transient ischaemic attacks and stroke), left ventricular ejection fraction and left atrial size on transthoracic echocardiogram if known, cardiac symptoms and baseline blood pressure and heart rate. The classification of AF (permanent, persistent, paroxysmal and first episode) and the subsequent anticoagulation treatment, on admission and at dis-

Table 1. Risk factors for ischaemic stroke and systemic embolism in patients with non-valvular atrial fibrillation

- Previous stroke or transient ischaemic attack
- Diabetes mellitus
- History of hypertension
- Coronary artery disease
- Heart failure
- Advanced age

charge, were assessed according to the American College of Cardiology/American Heart Association/European Society of Cardiology (ACC/AHA/ESC) guidelines.[12]

Patients were considered to have a contra-indication to warfarin if any of the following were documented: haemorrhagic tendency (e.g. thrombocytopenia, prolonged international normalised ratio [INR]), intracranial haemorrhage (history of or current), major bleeding within past six months (requiring transfusion or hospitalisation), severe liver disease, psychiatric illness affecting compliance, malignant hypertension, history of falls, chronic alcohol dependence, allergy to warfarin or previous discontinuation because of bleeding, life expectancy < 12 months and previous documentation of poor compliance with either medication or blood tests.

Results

We identified 93 consecutive patients with atrial fibrillation during a four-month period. The baseline demographics are shown in table 2. The mean age of patients in this cohort (n=93) was 77 years and 56% were males. The majority of patients (96.8%) were of Caucasian origin. Thirty-one per cent of patients were classified with permanent AF, 15% with persistent AF, 14% with paroxysmal AF, 15% with a first episode of AF of < 48 hours onset and 25% with a first episode of > 48 hours or unknown time of onset. The most common overall precipitant of atrial fibrillation was sepsis (including pneumonia), which accounted for 32.3% (n=30) of all patients. The majority of patients (53.8%) presented with dyspnoea although 21.5% had no cardiac symptoms at all.

Adherence to anticoagulation guidelines on admission

At the time of hospital admission 53% (n=49) of patients were known to have a diagnosis of atrial fibrillation, to be ≥ 75 years of age and/or to have another risk factor for embolic stroke. In this subgroup 26.5% (n=13) had absolute contra-indications to warfarin treatment. The remaining cohort (n=36) should have already been on warfarin therapy, as assessed using the ACC/AHA/ESC guidelines, for the prevention of embolic stroke. We found that 36% of patients were on warfarin, 31% were on aspirin, 8% on both warfarin and aspirin and 25% were on no anticoagulation. Among those aged 75 years or more, 35% were on warfarin, 30% on aspirin and 35% on no anticoagulation.

Table 2. Baseline demographics of the study population (n=93)

Age (mean, years)	77 (range 53–102)
Sex (male/female)	52/41
Age of onset of AF (mean, years)	75
Co-morbidity (%)	
- hypertension	48.4
- ischaemic heart disease	23.7
- acute MI	9.7
- rheumatic valve disease	6.5
- heart failure	16.1
- diabetes	10.8
- acute TIA	2.2
- acute CVA	5.4
- previous TIA	5.4
- previous CVA	6.5
Mean left atrial size (mm)	47
Mean left ventricular ejection fraction (%)	55
Cardiac symptoms (%)	
- dyspnoea	53.8
- palpitation	25.8
- chest pain	25.8
- orthopnoea	7.5
- syncope	4.3
- pre-syncope	5.8
- none	21.5
Baseline haemodynamics	
- systolic BP (mean, mmHg)	134
- diastolic BP (mean, mmHg)	79
- ECG heart rate (mean, beats/min)	118

Key: AF = atrial fibrillation; MI = myocardial infarction; TIA = transient ischaemic attack; CVA = cerebrovascular accident; BP = blood pressure

Adherence to anticoagulation guidelines at discharge

At the time of hospital discharge 88% (n=82) of patients were now known to have a diagnosis of atrial fibrillation, to be ≥ 75 years of age and/or to have another risk factor for embolic stroke. In these patients, 26% (n=21) had absolute contraindications to warfarin treatment. The remaining cohort (n=61) should have all been commenced on warfarin therapy, as assessed using the ACC/AHA/ESC guidelines, for the prevention of embolic stroke. We found that 41% of patients were discharged on warfarin, 33% on aspirin, 7% on both warfarin and aspirin and 20% remained on no anticoagulation. Among those aged 75 or more, 41% were on warfarin, 33% on aspirin, 3% on both and 23% on no anticoagulation.

Anticoagulation treatment did not adhere to international guidelines in 56% of patients at the time of hospital admission. This proportion fell slightly to 52% at the time of discharge from secondary care.

Discussion

Our study confirms that adherence to anticoagulation guidelines for patients with atrial fibrillation, who are at risk of embolic stroke, is inadequate. Despite the overwhelming and continued

evidence supporting oral anticoagulation in these patients,[15] clinical practice seems resistant to change. We found that the majority (56%) of patients presenting to our hospital were on inadequate anticoagulation. We have also shown that these shortfalls in overall therapy are present in the elderly subgroup. Provision of secondary care at a district general hospital marginally improved anticoagulation treatment in this study, but 52% of patients remained inappropriately treated. Furthermore, 20% of patients, considered at risk of embolic stroke, were discharged from our hospital on no anticoagulation at all. These data suggest that aspirin was not considered to be a suitable alternative.

The reasons for these inadequacies, which continue in clinical practice, may have three principal causes. The first is the difficulty in explaining warfarin treatment to patients, and their subsequent compliance. This is related to its extensive list of potential side effects and drug interactions. The second is the problematic logistics in arranging the subsequent support, education and administration of anticoagulation. Lastly, there may be continued physician-led resistance over prescribing a drug with the potential for severe haemorrhagic consequences. It has been shown that warfarin therapy also benefits the elderly,[6,7] and current guidelines suggest that all patients ≥ 75 should be on warfarin if there are no contra-indications. However, the existing trial data for the effectiveness of warfarin are drawn largely from studies in selected secondary care populations that under-represent the elderly. The on-going BAFTA study, a randomised controlled trial evaluating warfarin *vs.* aspirin in the elderly, should address this controversial issue.[16]

What then does the future hold, with regard to improving uptake of adequate anticoagulation and therefore stroke prophylaxis, for patients with atrial fibrillation?

Previous studies have suggested that patient self-monitoring of oral anticoagulation is feasible, using small portable devices.[17,18] It is hoped that the outcome of the SMART (Self-Management of Anticoagulation, a Randomised Trial) study[19] will clarify the efficacy of self-monitoring. This could alleviate pressure on primary and secondary care anticoagulation services, but may not change the resistance to treating patients based on its adverse side-effect profile.

The recent advent of a novel oral direct thrombin inhibitor, ximelagatran, may change the situation and improve stroke prophylaxis. This drug is claimed to have stable pharmacokinetic properties and renal metabolism.[20,21] It has the advantage over warfarin of fixed-dose treatment, without the need for either titration or ongoing anticoagulation monitoring. This combination of characteristics may improve the outlook with regard to appropriate anticoagulation for patients with atrial fibrillation who are at risk from embolic stroke.

The results of the SPORTIF-V clinical trial were presented at the recent American Heart Association Scientific Sessions in 2003.[22] This study compared ximelagatran and warfarin for the prevention of stroke and systemic events in high-risk patients with atrial fibrillation. The results suggest that ximelagatran was as effective as warfarin for this indication. One concern, however, was an elevation of liver enzymes in 6% of patients in the ximelagatran group during the first six months of treatment, compared with 0.8% of those on warfarin. Although levels generally returned to baseline, this issue will need further evaluation once the drug is used widely in clinical practice.

Key messages

- Atrial fibrillation (AF) is the commonest cardiac arrhythmia, affecting 10% of those > 75 years and with an increasing prevalence
- AF is associated with an increased risk of embolic stroke and is reduced by oral anticoagulation
- Inadequate adherence to anticoagulation guidelines continues, both on hospital admission and at discharge
- Future developments include patient self-monitoring and oral direct thrombin inhibitors

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Conflict of interest

None declared.

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