Stroke Prevention & Atrial Fibrillation

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Arrhythmia Nurse Specialist
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Learning Outcomes

- What is Atrial Fibrillation?
- Why is Atrial Fibrillation important?
- What causes Atrial Fibrillation?
- Stroke Prevention & Atrial Fibrillation
Normal condition

Chaotic and irregular conduction

Atrial fibrillation
Classification of AF subtypes

First diagnosed episode of atrial fibrillation

Paroxysmal
(usually ≤48 Hrs, can be <7 days)

Persistent
(requires CV)

Long Standing
(persistent > 1 year)

Permanent
(accepted)

Why is AF important?

- Independent risk factor for mortality
- 3-fold increase in congestive heart failure
- 5-fold increase in stroke risk
- 80-89y AF accounts for 24% of strokes
- AF present in 15-20% of those with acute stroke
- Associated with impaired cognitive function and dementia

Pepper (2012)
Cost of AF

- 1-2.5% of total NHS budget

(Stewart et al, Heart 2004)
Prevalence of AF in UK

- Most common of serious cardiac rhythm disturbances
- Prevalence doubles with each decade
  - 0.5% 50-59 years
  - 9% 80-89 years
- 1 in 4 people aged >40 years will develop AF
Common causes of AF

- **Chronic**
  - Hypertension
  - Ischaemic heart disease
  - Mitral valve disease
  - Heart failure
  - Atrial hypertrophy

- **Acute**
  - Alcohol
  - Acute infection
  - Thyrotoxicosis
  - Pulmonary embolus
  - Electrolyte imbalance
Symptoms

If sustained AF:

- Palpitations
- Chest pain
- Dyspnoea
- Dizziness/syncope
- Reduced exercise tolerance (often significant)
- Panic attacks/Agoraphobia/depression

If Paroxysmal:

- As above, but may be more severe (less well tolerated)
- Often preceded by exertion, ‘thump’ in the chest, fatigue, alcohol, coffee and other stimulants

Atrial fibrillation

Record 12-lead ECG

Assess TE Risk

Anticoagulation issues

Rate and rhythm control

Treatment of underlying disease ‘Upstream’ therapy

AF type Symptoms

Consider referral

Presentation
EHRA score
Associated disease
Initial assessment

Oral anticoagulant
None

Rate control
± Rhythm control
Antiarrhythmic drugs
Ablation

ACEIs/ARBs
Statins/PUFAs
Others


ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; PUFA = polyunsaturated fatty acid; TE = thromboembolism
Diagnosis

MANUAL pulse checking will give a strong clue

- ‘Irregular irregularity’ – any rate
- Variable strength of individual pulses
- Often omitted since introduction of automated BP machines, etc.

12 Lead ECG

- NICE – an ECG should be performed in all patients, whether symptomatic or not, in whom AF is suspected because an irregular pulse has been detected
Anticoagulation/Stoke Prevention
AF increases the risk of stroke

- AF is associated with a pro-thrombotic state
  - ~5 fold increase in stroke risk\(^1\)

- Risk of stroke is the same in AF patients regardless of whether they have paroxysmal or sustained AF\(^2,3\)

- Cardioembolic stroke has a 30-day mortality of 25\%\(^4\)

- AF-related stroke has a 1-year mortality of ~50\%\(^5\)

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(b) Risk factor-based approach expressed as a point based scoring system, with the acronym CHA$_2$DS$_2$-VASc
(Note: maximum score is 9 since age may contribute 0, 1, or 2 points)

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestive heart failure/LV dysfunction</td>
<td>1</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1</td>
</tr>
<tr>
<td>Age $\geq$75</td>
<td>2</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1</td>
</tr>
<tr>
<td>Stroke/TIA/thrombo-embolism</td>
<td>2</td>
</tr>
<tr>
<td>Vascular disease$^a$</td>
<td>1</td>
</tr>
<tr>
<td>Age 65–74</td>
<td>1</td>
</tr>
<tr>
<td>Sex category (i.e. female sex)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Maximum score</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>
What is this patient’s risk of stroke?

- 67 year old female
- Paroxysmal AF
- Hypothyroid on thyroxine 100 micrograms od.
- ECHO: mild left ventricular hypertrophy
- Rx:
  - Flecainide 50mg bd
  - Verapamil 40mg tds

**Stroke risk?**
What is the patient’s risk of stroke

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- $\text{CHA}_2\text{DS}_2\text{-Vasc} = 2$ (age, female) = OAC (2.2)
Atrial fibrillation

Valvular AF

Yes

No (i.e., non-valvular AF)

<65 years and lone AF (including females)

No

CHA$_2$DS$_2$-VASc

0

1

≥2

Oral anticoagulant therapy

HAS-BLED score

and preferences

No aspirin

NOAC

VKA

ESG Guidelines 2012
HAS-BLED bleeding risk score

<table>
<thead>
<tr>
<th>Letter</th>
<th>Clinical characteristic^a</th>
<th>Points awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Hypertension</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>Abnormal renal and liver function (1 point each)</td>
<td>1 or 2</td>
</tr>
<tr>
<td>S</td>
<td>Stroke</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>Bleeding</td>
<td>1</td>
</tr>
<tr>
<td>L</td>
<td>Labile INRs</td>
<td>1</td>
</tr>
<tr>
<td>E</td>
<td>Elderly (e.g. age &gt;65 years)</td>
<td>1</td>
</tr>
<tr>
<td>D</td>
<td>Drugs or alcohol (1 point each)</td>
<td>1 or 2</td>
</tr>
</tbody>
</table>

Maximum 9 points

High risk = >3
Anti-thrombotic therapy in AF

- Meta-analysis of 29 trials (28,044 patients)

- Warfarin reduced stroke by 60%; aspirin by 20%
Warfarin is safe in the elderly

- Elderly patients (>75) under-represented in early trials, perceived to do badly on warfarin with reduction in ischaemic stroke offset by increased bleeding.

- BAFTA trial included elderly patients with AF (>75) randomised to warfarin or aspirin and showed warfarin to be clearly superior to aspirin with no significant difference in bleeding including intracranial bleeds. (Mant et al 2007 Lancet 370:493-503)

- Findings supported by the small WASPO trial which showed significantly more adverse events in elderly patients treated with aspirin compared to warfarin. (Rash et al 2007 Age Ageing 36:151-6)

- Van Walveren et al (2009)- risk of stroke starts to rise from the age of 65, and as the patients get older, the absolute benefit of warfarin is increased while the benefit of aspirin declined rapidly. (Stroke ; 40:1410-6).
Novel Oral Anti-Coagulants

**Dabigatran**
- RE-LY, NEJM 2009

**Rivaroxaban**
- ROCKET AF, NEJM 2011

**Apixaban**
- ARISTOTLE, NEJM 2011

- Dabigatran, 110 mg
- Dabigatran, 150 mg
- Warfarin

- n=18,113
- n=14,264
- n=18,201

- Cumulative Event Rate (%)
- Patients with Event (%)
- Days since Randomization
- Months
Summary

- AF is common
- AF causes stroke

Treatment priorities:
- Exclusion of concomitant pathology
- Assess and treat for stroke risk
- Achieve symptom control
Any Questions?