A mature woman with palpitations

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Articles in this section use cases to illustrate the emergency management of patients presenting in general practice with cardiac problems. They are inspired by, but not based on, real patient situations.

Annie is 67 years old and is new to your practice. She presents today complaining of palpitations. She has been feeling very unwell over the past two days. She says that she only suffers from hypercholesterolaemia, which is controlled by diet.

How do you approach Annie's initial assessment?

Answer: Annie appears unwell so you lie her down on your examination couch and check her vital signs and take the history. As you check her pulse, you notice that she has a fast irregularly irregular rhythm. She says the palpitations have been constant over the past 48 hours and she describes them as 'having a fast heart beat'. She is able to 'tap it out' (this is an easy way for patients to describe an arrhythmia when they know how to take their pulse). The palpitations are accompanied by fatigue and dyspnoea during exercise.

Annie denies fever, chest or back pain, or any other associated symptoms. Her initial vital signs are temperature 36.5°C, blood pressure 110/60 mmHg, heart rate 140 beats per minute (irregular rhythm) and respiratory rate 16 breaths per minute. There are no other signs of cardiovascular instability (such as hypotension, dyspnoea, poor peripheral perfusion or decreased level of consciousness).

The remainder of Annie's cardiovascular examination is normal and there are no signs of cardiac failure.

You perform a bedside ECG. What does the ECG show (see Figure 1)?

Answer: The ECG shows irregularly irregular narrow complex tachycardia with low-voltage fibrillatory waves without defined P waves, consistent with a diagnosis of atrial fibrillation with a rapid ventricular response. ST changes are likely to be rate related. These changes should be reviewed once the heart rate is below 100 beats per minute.

The patient's age and assessment of her comorbidities, symptoms and haemodynamic condition will help to decide the need for urgent treatment and elect between rate control and rhythm control. These will assist in the diagnosis and detection of possible precipitants.

In view of Annie's symptoms and her ECG, what should you do next?

Answer: You should explain to Annie that atrial fibrillation is a common but potentially serious condition. It is an irregular heart rhythm in which electrical signals are generated chaotically throughout the upper chambers (atria) of the heart. She should be reassured that it is a condition that requires initial treatment in hospital and can be easily managed in the long term with the aim to prevent complications.

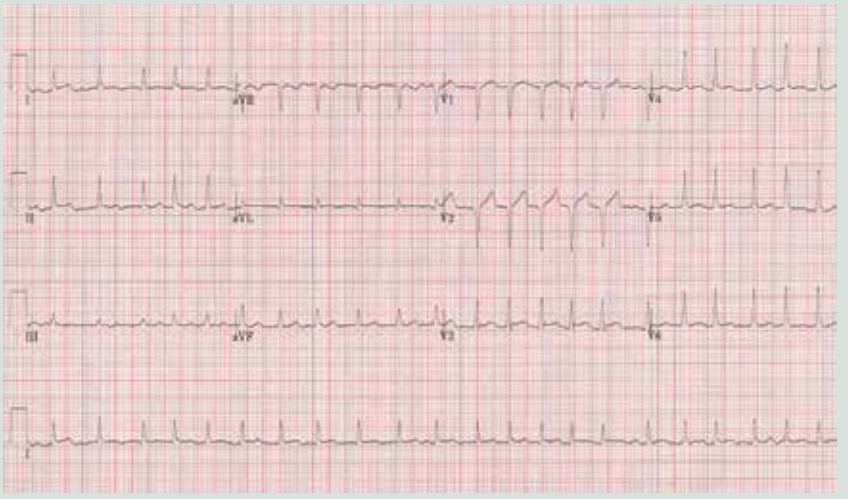

Figure 1. Annie's ECG showing irregularly irregular narrow complex tachycardia with low-voltage fibrillatory waves without defined P waves. This is consistent with a diagnosis of atrial fibrillation with a rapid ventricular response.

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You call an ambulance to take her to the nearest emergency department and contact the on-duty emergency physician to inform them that this patient presented to your surgery with symptomatic atrial fibrillation of at least a 48-hour duration with no hypotension or chest pain. The presentation should be documented in a letter for the patient to give to the emergency department, which can also be faxed or emailed. This information will assist in the planning of appropriate treatment of her condition. The management options for when Annie arrives in the emergency department are outlined in the Box.

Before the ambulance arrives, Annie asks you about the potential complications of atrial fibrillation.

Answer: You could inform her of the risk that a clot could form in the heart and travel to the brain causing a stroke. New evidence also suggests an increased risk of heart attack in patients with atrial fibrillation, particularly in women.[3]

What are the possible precipitants of atrial fibrillation?

Answer: Possible precipitants of atrial fibrillation include:

- infection
- drugs such as caffeine and alcohol ('holiday heart')
- obstructive sleep apnoea and obesity
- endocrine disorders (hyperthyroidism, phaeochromocytoma)
- cardiac inflammatory conditions (myocarditis, pericarditis)
- acutely increased atrial pressure (pulmonary embolism).[4]

What is Annie's risk of having a stroke? Which clinical predictor can you use to determine the risk of stroke in patients with atrial fibrillation?

Answer: The CHA_2DS_2-VASc score is used to determine the need for anticoagulation or antiplatelet therapy.[5-7] Figure 2 shows how to calculate the CHA_2DS_2-VASc score and how to treat patients with nonvalvular atrial fibrillation depending on their score.[7] Annie's CHA_2DS_2-VASc score is 2, which indicates a need for long-term anticoagulation.

Management options for Annie in the emergency department

Rate control: Decreasing the heart rate to below 110 beats per minute and anticoagulation (e.g. enoxaparin) are the initial management options for Annie who has symptoms of over 48 hours in duration and no haemodynamic compromise. The drugs used for rate control include beta blockers (metoprolol), calcium channel blockers (verapamil or diltiazem) and digoxin. This should be followed by an outpatient echocardiogram and subsequent synchronised electrical defibrillation four weeks later.

Often patients are anticoagulated with warfarin or a novel anticoagulant before cardioversion. If patients are anticoagulated with warfarin, they should have a therapeutic international normalised ratio for one month before electrical cardioversion.

Rhythm control: Reverting the heart rate to a normal rhythm is the initial management option for atrial fibrillation in patients with haemodynamic instability, heart failure or chest pain, and in those with symptoms of less than 48 hours duration. Although no significant difference in mortality and stroke between rhythm and rate control has been proven, patients benefit from symptomatic improvement with rhythm control.

The most commonly used drugs for rhythm control are flecainide (provided the patient does not have myocardial or coronary disease), sotalol and amiodarone. Alternatively, synchronised electrical cardioversion under procedural sedation can be used, depending on each individual emergency department's protocol (e.g. a risk assessment in a patient who has rapid atrial fibrillation of less than 48 hours duration).[1,2]

	Risk factor	Score
C	Congestive heart failure/left ventricular dysfunction	1
H	Hypertension	1
A_2	Age >75 years	2
D	Diabetes	1
S_2	Stroke, transient ischaemic attack or systemic embolism	2
V	Vascular disease (myocardial infarction, peripheral vascular disease, aortic plaque)	1
A	Age 65 to 74 years	1
Sc	Sex category (female gender)	1
	Total	

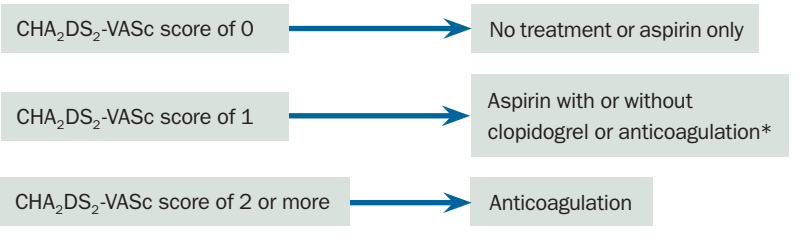

Figure 2. CHA_2DS_2-VASc score and recommended treatment.[7]

* The European Society of Cardiology recommends a lower threshold for anticoagulation (CHA_2DS_2-VASc score of 1 or more).[1,7]

Annie says she is concerned about the risks of bleeding with anticoagulation. How can this risk be reduced?

Answer: Several measures can be taken to decrease the incidence of bleeding in anticoagulated patients. These include the discontinuation of aspirin and clopidogrel and the strict control of hypertension and international normalised ratio (INR, if warfarin is the elected drug). Newer anticoagulants, such us dabigatran, rivaroxaban and apixaban, are more expensive than warfarin but have the same rate of reduction of stroke, lower bleeding risk and less need for monitoring.[1]

Outcome

Annie attends the local emergency department where she is commenced on enoxaparin for anticoagulation and metoprolol for rate control. She is discharged home on warfarin for anticoagulation. Before discharge, the resident medical officer calls you to ask you to monitor Annie's INR. Her outpatient echocardiogram shows no signs of structural heart disease. Annie successfully undergoes cardioversion as an outpatient and remains on long-term anticoagulation.

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COMPETING INTERESTS: None.

Key points

- **Atrial fibrillation is the most common cardiac arrhythmia and requires active treatment to prevent life-threatening complications. There is about a 5% annual incidence of stroke in patients with atrial fibrillation.**
- **Patients with haemodynamic instability, heart failure and/or chest pain require urgent stabilisation, anticoagulation and rhythm control in an emergency department.**
- **The choice of long-term antithrombotic or anticoagulation agent for prevention of stroke is based on the patient's CHA_2DS_2-VASc score, taking into account relative and absolute contraindications in each patient.**